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Children's Self Perception of Weight

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CHILDREN'S SELF-PERCEPTION OF WEIGHT

By

CAROLYN MONTOYA

B.S.N, Nursing, University of New Mexico, 1976
M.S., Nursing, Yale University, 1981

DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy
Nursing

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Dedication

The decision to embark on the journey of a dissertation is not one that is made lightly and certainly not without the support of one's family, co-workers, and friends. My husband, Victor has been unfailing in his support of this endeavor and extremely patient with the roller-coaster of emotions throughout these five years. Life does not stop while earning a doctoral degree. We have had the joy of seeing two of our children married, Gabriel to his wife Jessica, and Alejandro to his wife Amy. We have been fortunate to be present at the birth of our two grandsons, Alexander and Constantine; and we have watched our youngest son, Andrés (Andy) start his college education. Along with the joy has come the sorrow of losing both of my in-laws, Horace and Dolly Montoya; both of whom supported my decision to pursue this degree and remain two of the finest individuals I have ever known. Although my own parents passed away many years ago, I would be remiss if I did not mention their unfailing belief in the importance of education for their children. Although neither of them, Adenago and Susie Jaramillo, went to college it was certainly a goal of theirs for their children and I owe them my gratitude. I have also been fortunate to be blessed with good health; the stamina to endure; and the grace of our Lord. I am thankful for all of these blessings and dedicate this dissertation to my Lord and my family.

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ABSTRACT

The purpose of this study was to determine whether there are differences in children's self-perceptions of weight based on age, gender, actual body mass index (BMI) category, grade level, and ethnicity compared with their clinically measured BMI and to determine the association of gender, age, grade level, race/ethnicity, and actual BMI category with their perception of ideal BMI category.

A total of 424 children from a rural community in New Mexico, aged 8 to 11 years and in Grades 3 through 5, participated in this study. Of this sample 70% (n = 299) is Hispanic; 19% (n = 80) is White; and 11% (n = 45) are other/multiracial. Children were assigned to one of the Centers for Disease Control and Prevention BMI categories: underweight, healthy weight, overweight, and obese. For this sample 55% (n = 235) of the children are healthy weight; 3% (n = 12) are underweight; 19% (n = 80) are overweight; and 23% (n = 97) are obese. 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.

Only clinically measured BMI category was found to be significantly associated with accurate perception, $\chi2(3) = 201.4$, $P < 0.001$, with only 9.0% of overweight or obese children selecting figures representing their clinically measured BMI category. Actual BMI category, $\chi2(3) = 8.8$, $P = 0.032$, and grade level, $\chi2(2) = 6.7$, $P = 0.036$, had a significant association with selection of an underweight ideal, although only actual BMI remained significant in a follow-up logistic regression analysis.

Regardless of gender, age, grade level, or race/ethnicity, prepubertal children who are either overweight or obese do not accurately perceive their weight status. However, it is concerning that 1/3 of this sample expressed a preference for not simply being thinner, but for being underweight.

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List of Abbreviations

AAP – American Academy of Pediatrics

ANOVA – Analysis of Variance

AOR – Adjusted odds ratio

BES – Body Esteem Scale

BMI – Body mass index

CBIS© – Children's Body Image Scale

CDC – Centers for Disease Control

CHD – Coronary heart disease

CI – Confidence Intervals

CINAHL – Cumulative Index of Nursing and Allied health Literature

CITI – Collaborative Institution Training Initiative

COI – Conflict of Interest

CoN – College of Nursing

DEBQ-R – Dutch Eating Behaviour Questionnaire-Restraint Scale

FID – Fell Minus Ideal Discrepancy index

HBM – Health Belief Model

HBSC – US Health Behavior in School-Aged Children

HRP – Human Research Protection

HRPO – Human Research Protections Office

HSC – Health Sciences Center

IOM – Institute of Medicine

IOTF – International Obesity Task Force

IRB – Internal Review Board

MGRS – Multicenter Growth Reference Study

NAPNAP – National Association of Pediatric Nurse Practitioners and Associates

NCHC – National Center for Health Statistics

NHANES – National Health and Nutrition Examination Survey

ns – not statistically significant

OMB – US Office of Management and Budget

OR – odds ratio

PI – Principal Investigator

PNP – Pediatric Nurse Practitioner

RA – Research Assistant

r_s – Spearman rank-correlation

RWJF – Robert Wood Johnson Foundation

SD – Standard deviation

SES – Socioeconomic status

STC – Starting the conversation

T2DM – Type 2 diabetes mellitus

UNM – University of New Mexico

WHO – World Health Organization

$\bar{x}$ – Mean

χ^2 – Chi Square

z_{obs} – The observed value of the statistic, computed from the sample data.

Chapter 1: Introduction

This chapter presents the significance of the study, which is followed by a review of the literature related to children's perception regarding weight. The purpose is included as well as are the specific aims and hypotheses, followed by the theoretical framework and definition of terms. This chapter concludes with a summary that introduces the three manuscripts and how they relate within the context of this dissertation.

Significance of Study

Using data drawn from the 2009-2010 National Health and Nutrition Examination Survey (NHANES), Ogden, Carroll, Kit, and Flegal (2012) reported that 16.9% of children in the United States between the ages of 2 and 19 are obese. This rate has tripled since 1980. The prevalence rate for overweight and obese children aged 2 through 19 is 31.8% (Ogden et al., 2012). Among minority populations, the prevalence of overweight children and obese children is even higher. Non-Hispanic White children between the ages of 2 and 19 have a combined prevalence rate for overweight and obesity of 27.9% while the rate for non-Hispanic Blacks and Hispanics is 39.1% (Ogden et al., 2012). Estimates for overweight and obesity in American-Indian children are as high as 39% for boys and 40% for girls (Story et al., 2003). Furthermore, the rates for obesity in adults as well as in children are predicted to increase over the next several decades. Based on an epidemiologic study, Wang, Beydoun, Liang, Caballero, and Kumanyika (2008) projected that by the year 2030, approximately 51.1% of all American adults will be obese. For children and adolescents, the authors estimated that the prevalence of obesity will increase to approximately 30%. Minority populations will continue to be disproportionately affected. According to these projections,

41% of Mexican-American young boys and Black adolescent girls will be obese, a full 10% above the general population.

Obesity has serious consequences. Complications include coronary heart disease (CHD); Type 2 diabetes mellitus (T2DM); endometrial, breast, and colon cancers; hypertension; dyslipidemia; stroke; liver and gallbladder disease; sleep apnea; osteoarthritis; and gynecologic problems, such as abnormal menses and infertility (Centers for Disease Control [CDC], 2011a). Obesity also has serious psychosocial consequences, including poor school performance, poor self-esteem, increased bullying, and depression (Sjoberg, Nilsson, & Leppert, 2005; Sullivan, 2010). Childhood obesity also has an economic impact. According to the Institute of Medicine ([IOM], 2012), the economic burden of childhood obesity in the United States is $14.1 billion.

Although studies continue to explore the issue of pediatric obesity, no one strategy has been identified as the most effective method for prevention and treatment. Additionally, although many policy changes related to obesity have been implemented in different communities, debate continues regarding the effectiveness of these policy changes. Would pediatric-obesity intervention programs and policies for children be more successful if they were in part based on knowledge regarding children's perceptions regarding weight? The American Academy of Pediatrics (AAP) in its 2010 policy statement on *Health Equity and Children's Rights* specifically notes that children should participate and be involved "…in decision making regarding issues that affect them" (p. 845).

Feldman, Feldman, and Goodman (1988) conducted a review to evaluate the quality of the evidence provided in the literature related to children's attitudes toward thinness and fatness. While the authors reviewed a number of studies related to this issue, they did not

specifically discuss the total number of studies reviewed and the time period covered in the reviews. Based on their review, they concluded that children develop values related to beauty before they reach adolescence and that girls value thinness far in advance of puberty. This review also is notable for questioning the results of studies related to children's attitudes regarding body perception, citing flaws in sample size, such as small and unrepresentative samples, measurement instruments that are not necessarily reliable or valid, and experimental designs that are biased.

Irwin and Johnson (2005) noted that the majority of research related to health issues of young children is derived from parental or health-care professional's perceptions of young children. The authors believe there is value in talking with children, saying, "If children had greater access to public voice through vehicles such as research, they would be able to contribute to the social structures that concern them" (Irwin & Johnson, 2005, p. 821).

Children's Weight Status Perception

Several studies have examined the perceptions of children and adolescents regarding weight and general health issues (Adams et al., 2000; Collins, 1991; Haff, 2009; Martin, Frisco, & May, 2009; Mikolajczyk, Iannotti, Farhat, & Thomas, 2012; Murtagh, Dixety, & Rudolf, 2006; Skemp-Arlt & Mikat, 2007; Snethen & Broome, 2007; Thompson, Corwin, & Sargent, 1997; Williamson & Delin, 2000). Three of the studies included only White and African American children ranging from age 7 to 12 (Adams et al., 2000; Collins, 1991; Thompson, Corwin, & Sargent, 1997); one study did not report ethnicity (Skemp-Arlt & Mikat, 2007); and several studies were conducted in countries outside of the United States (Abbot, Lee, Stubbs, & Davis, 2010; Gualdi-Russo et al., 2007; Maximova et al., 2008; Pauline, Selvam, Swaminathan, & Vaz, 2012; Saxton, Hill, Chadwick, & Wardle, 2009;

Truby & Paxton, 2002; Williamson & Delin, 2000). Three studies focused on adolescents and included African Americans and Hispanics (Haff, 2009; Martin et al., 2009; Mikolajczyk et al., 2012), and two studies specifically examined weight perceptions among Hispanic children (Figueroa, Ip, Gesell, & Barkin, 2008; Snethen, Hewitt, & Petering, 2007). Each of these studies will be reviewed in detail below.

Snethen et al. (2007) examined Hispanic parent's and children's perspectives about childhood overweight. The authors conducted focus groups with 12 mothers, 12 fathers, and eight boys and four girls ages 10-12. These groups were part of a community-based participatory-risk communication study. The purpose of the study was to gain an understanding of childhood overweight from one Latino community. The interview questions, developed collaboratively between researchers and leaders in this Latino community, were intended to explore beliefs about body weight, dietary intake, and activity levels. The authors specifically selected the 10-12 age group based on developmental factors, including increased decision-making ability, their preadolescent growth pattern, and their ability to respond independently to questions. Children in this study perceived overweight children as not being active, with one child saying, "…mostly you could see like the overweight ones are the ones that don't like exercising, and the ones that do exercise or are involved in sports, you can see that they're skinny…" (p. 370). No other details regarding the children's perceptions of weight are discussed. The 12 children selected to participate in the focus group were not selected on the basis of weight, and measurements of height and weight were not collected. Although questions related to how the children perceived themselves in terms of their own body weight were not obtained, this study does provide some insight related to Hispanic children's perception of children who are overweight.

Figueroa et al. (2008) examined the accuracy of self-perception and parental perception of Latino children between the ages of 8 and 11. The authors report that 123 parent/child dyads participated in the study. However, no specific information is provided related to the exact number of children, the number of children by age, or the number of male versus female children. The average age of the children was 9.3 years, and the authors said the number of male versus female children was approximately equal. Only children who had a body mass index (BMI) of $> 85\%$ but $< 95\%$ for gender and age (classified as at risk for overweight by the authors) and children with a BMI $> 95\%$ for gender and age (classified as overweight by the authors) were recruited for this study.

The participants had to self-identify as Latino and have one parent willing to participate in the study. The figural scale used to assess body-image perception by the children is described as a scale consisting of seven figures. Labels of underweight, ideal body size, at-risk-for-overweight, and overweight then were assigned to Figures 1-2, 3-4, 5-6, and 7, respectively, by health-care providers. Details regarding the health-care providers (i.e., nurses, doctors, nurse practitioners) are not provided. The authors reference an article by Bulik et al. (2001) as the basis for this designation, but the study by Bulik et al. establishes BMI norms for figural depictions of adults 18 and older. It is unclear if these adult figures were adapted for children. Using Pearson's correlation coefficient, the correlation between the child's figure selection and the child's actual BMI was 0.117 ($p = 0.20$), indicating that in this sample, Latino children do not accurately identify their own body size. Unfortunately, the lack of descriptive statistics related to the children as well as the lack of detail related to the child figural instrument severely limit drawing conclusions about self-perception among Latino children in this age group.

Three studies analyzed weight perceptions in adolescents using national survey data (Haff, 2009; Martin et al., 2009; Mikolajczyk et al., 2012). Martin et al. (2009) utilized a sample of 12,789 teens from the Wave II U.S. National Longitudinal Study of Adolescent Health to examine sex, race, and ethnic differences in weight perceptions. Wave I was conducted in 1994 and 1995 and consisted of interviews done in the home. In Wave II (1995, 1996), the same adolescents, with the exception of Wave I 12th graders, were reinterviewed, and heights and weights were obtained. Although the authors note that the participants included non-Latino Whites, non-Latino African Americans, non-Latino Asians, non-Latino Native Americans, and Latinos, they do not provide percentages or sample numbers for each of these groups other than to say the number of Native Americans in the sample was small (n = 536) out of a total sample of 12, 789 teens.

Latinos were classified into two categories, Mexican-American or other Latino. The percentage of boys and girls was nearly equal, 48.2% and 51.7%, respectively. Data related to age was not included. To determine weight perception, the adolescents were asked: "How do you think of yourself in terms of weight?" where 1 = "very underweight," 2 = "slightly underweight," 3 = "about the right weight," 4 = "slightly overweight," and 5 = "very overweight" (Martin, et al., p. 3). These perceptions were classified into three categories, underweight, about the right weight (normal weight), and overweight. Body-mass index was calculated based on objectively measured height and weight, and CDC age-specific and gender-specific criteria were used (underweight, $< 5^{th}$%; normal weight 5th% $< 85^{th}$%; overweight ≥ 85% $< 95^{th}$%; obese $\geq 95^{th}$%). Fifty-four percent of the adolescents subjectively perceived themselves to be "about the right weight" when BMI categories were determined when actually 68% of the sample was in the normal weight category. Sixteen

percent perceived themselves to be underweight, yet only 4% were actually in this category. Thirty percent of the sample perceived themselves to be overweight. Body-mass index values placed 15% of the teens in the overweight category and 13.5% in the obese category.

Using logistic regression, the authors examined accuracy of teen weight perception. Obese teens were found to be significantly more accurate regarding their weight category than teens in the underweight or normal categories ($p < .01$). For teens in the normal weight category, boys had higher odds of being accurate than girls (odds ratio [OR] = 1.22, 95% confidence interval [CI], [1.07, 1.40], $p < .01$). Using Whites as the comparison group, African American teens in the normal weight category had higher odds of being accurate (OR = 1.24, 95% CI [1.02, 1.52], $p < .05$) and Asians had lower odds of being accurate (OR = 0.68, 95% CI [0.48-0.95], $p < .05$). In the overweight and obese categories, boys were less likely than girls to accurately perceive themselves as overweight (OR = .32, 95% CI [0.24, 0.45], $p = 0.000$, in the overweight category; and OR = 0.24, 95% CI [0.15, 0.37], $p = 0.000$, in the obese category). African American teens were less likely than White teens to accurately see themselves as overweight or obese (OR = 0.52, CI = 95% [0.38, 0.72], $p = 0.000$, in the overweight category; OR = .41, CI = 95% [0.26-0.66], $p = 0.000$, in the obese category).

No significant differences were found between White and Latino teens (Mexican American and Other Latino categories). It should be noted that while there was very little missing data on objective variables such as weight, sex, race/ethnicity, and family background information, such as income, parental obesity and parental education had significant amounts of missing data. The authors dealt with this issue by utilizing multiple imputation. Missing data were replaced by predictions based on associations among the

variables. While this study does provide some insight regarding weight perception among adolescents, it should be noted that the data used in the study is 18 years old.

Haff (2009) also used national data (2001 Youth Risk Behavior Surveillance Survey) to look at racial/ethnic differences in weight perceptions among adolescent females. Her total sample size consisted of 6,089 females in Grades 9 through 12. The sample included just slightly more than 22% African American children (n = 1,407), 23.7% Hispanic or Latina (n = 1,489), and 50.8% White (n = 3,193). Weight perception was measured by answers to survey items asking participants to describe their weight as very underweight, slightly underweight, about the right weight, slightly overweight, or very overweight. Neither self-reported heights and weights or actual heights and weights were included in this study. No significant difference between White and African American adolescents was noted in terms of their weight perceptions. The percentage of Black and White teens who described their weight as "about right" was similar (54.9% and 52.2%, respectively).

Chi-squares were utilized to examine group differences in weight perceptions. Weight perceptions between White and Hispanic/Latina girls were significantly different in that Hispanic/Latina girls were noted to describe themselves as "very underweight" compared to White girls who were more likely to describe themselves as "slightly underweight (χ^2 = 28.62; p < .001). Hispanic/Latina girls were more likely to describe themselves as being slightly and very overweight compared to Black teens (χ^2 = 22.62; p < .001). Overall, Hath found that almost 50% of these adolescent girls were satisfied with their weight; 30% perceived themselves as overweight; and 12% perceived themselves as underweight. Because self-reported or actual height and weights were not included, no information can be provided regarding the accuracy of the adolescents' perceptions regarding weight.

Mikolajczyk et al. (2012) examined body satisfaction in U.S. adolescents aged 11-17 using the U.S. Health Behavior in School-Aged Children (HBSC) 2001 survey. This study analyzed HBSC data from a representative national sample of U.S. students in Grades 6-12. The authors included students in three ethnic groups: African American (n = 3,017, 22.7%); non-Hispanic Whites (n = 7,381, 55.6%); and Hispanics (n = 2, 869, 21.6%) for a total sample size of 13,267. Body satisfaction was measured using a five-point response of much too thin, a bit too thin, about the right size, a bit too fat, and much too fat in response to the question, "Do you think your body is…?" (p. 2). Body-mass index was calculated using self-reported weight and height and then converted to z-scores. The z-score values were then correlated with BMI percentiles, and regression models were used to examine the association between age and body satisfaction. These regression models also included a linear component to assess age and body satisfaction.

The linear trend for body satisfaction was not significant across age except for non-Hispanic White girls between the ages of 11 and 15 ($p < 0.05$). The number of girls in this group who considered themselves too fat nearly doubled. One third of the non-Hispanic White girls felt too fat even though their BMI-z scores were not in the overweight or obese categories. The authors note that, "African-American boys and girls were more tolerant than non-Hispanic-Whites and Hispanics regarding the BMI score at which they considered themselves too fat" (p. 7) even though African American girls had the highest BMIs (age-specific and gender-specific). In all three ethnic groups, the girls perceived themselves as too fat significantly more than the boys ($p < 0.05$). The African American children were less likely to perceive themselves as overweight even if they had high BMI scores. Although an obvious limitation of this study is the use of self-reported heights and weights to calculate

BMIs, it is one of the few studies regarding weight perception that includes a large number of African American and Hispanic children. A further limitation of this study is that neither chi-square or regression coefficient values were provided.

Two recent qualitative studies have examined children's perceptions regarding weight and health. Murtagh et al. (2006) conducted interviews and focus groups with 20 children, ages 7-15 attending a weight-loss clinic. Interviews were conducted with each child, and 17 of the 20 children participated in a focus group meeting. Although the purpose of the study was to identify physical and psychological factors affecting weight loss from a child's perspective, the findings also provide insight regarding children's self-perception regarding weight. Recognition of being overweight occurred for most of the children when they were victims of bullying. The children also identified a need to be "normal." Being overweight did not allow them to blend in with their peers and led to social torment. Although the sample size is small, the study does provide some information related to children's perceptions of body weight. The authors did not report the ethnicity of the children, which means it is unknown if the results are in any way applicable to children from underrepresented groups. The small sample size (n = 20) also prevents generalization of concepts related to self-perception.

Snethen and Broome (2007) used a phenomenological approach to study children's perceptions regarding weight, exercise, and health. Semi structured interviews were conducted with 17 children in the Midwestern part of the United States; they ranged in age from 8-12 and had BMIs greater than 95% for age and gender. Six of the children were boys (36%); 11 were girls (64%); seven (42%) were African American; five (28%) were White; and four (24%) were Latino. The average age of the participants was 10.8. One of the key

findings in this study is related to how the children perceive themselves. Although all 17 participants had a calculated BMI ≥ 95% (for age and gender), 30% of the children identified themselves as being of normal weight, and 12% identified themselves as underweight. The authors theorize that the children may be basing this view on their assessment of parental perceptions or "…as more children become overweight in the U.S., there may be a renormalizing of what is perceived as "normal" or average weight" (p. 147). It should be noted that the investigators calculated BMIs from height and weight information provided by the parents rather than by obtaining weights and heights using a calibrated scale and stadiometer.

Four studies were identified that examined body image and weight concerns in young children in the United States. Collins (1991) developed a pictorial instrument to be used with young children (Grades 1 through 3) to assess preoccupation with weight and to determine the attractiveness of being thin for children in this age group. The figures developed by Collins (see Appendixes A and B) were developed based on previous adult figures developed by Stunkard, Sorenson, and Schulsinger (1983). Participants included 1,118 preadolescent children from seven public elementary schools in Indiana. The average age of the participants was 7.97, with 51% being boys, 49% girls, 26% Black, and 74% White. The children were shown seven child figures and seven adult figures (same gender figure for either male or female for both the child and adult figures) and asked to select the following:

1. Self: Which picture looks most like you? (Same-gender child figure)

2. Ideal Self: Which picture shows the way you want to look? (Same-gender child figure).

3. Ideal Other Child: Which picture shows the way you think is best for girls/boys to look? (Other-gender child figure).

4. Ideal Adult: Which picture shows the way you want to look when you grow up? (Same-gender adult figure).

5. Ideal Other Adult: Which picture shows the way you think is best for grown-up women/men to look? (Other-gender adult figure). (p. 201-202)

After the children had completed selecting the figures, they were asked to respond (by circling responses) to two multiple-choice questions: "Self: I think I am: fat, skinny, in between. 2. Ideal Self: I would like to: lose weight, gain weight, stay the same" (p. 203). Heights and weights were obtained for all participants. Body mass index for all participants was calculated with the mean BMI being 16.72 for boys and 16.71 for girls. The ranking on the percentile for age using the 1987 National Health Center for Health Statistics placed the mean for boys at the 49th percentile for age and the mean for girls at just above the 50th percentile (50.67) for age. The figure scale developed by Collins does not correlate directly with BMI; therefore, no correlations between BMI and selection of actual body type could be determined. Collins did note that 42% of the girls and 30% of the boys selected an ideal figure thinner than their current figure. Although Collins provides detailed results regarding the children's selection of body figures, results related to the two multiple-choice questions related to self-perception are limited. She noted that in terms of the ideal self, "…over half the subjects expressed similar preferences both verbally and pictorially to lose weight, gain weight, or stay the same" (p.205). A definite preference toward thinness was found among females across all levels of age, weight, and race with 42% desiring thinner figures. Additionally, this preference for thinness was found in children as young as 6 and 7.

Thompson, Corwin, and Sargent (1997) used Collins (1991) pictorial figures in their random sample of 817 children from nine South Carolina elementary schools. The children were aged 8-12 (mean of 9.3 years); 51.8% were White, and 48.2% were Black. The primary purpose of this study was to assess racial and gender differences related to ideal body size among White and Black fourth-grade children. Independent variables included socioeconomic status (SES), race, and gender. Each school's percent total student enrollment in a free or reduced-lunch program was used as a proxy for SES. Using Collins' pictorial instrument, the authors asked the same five questions that Collins utilized in her study. An analysis of variance (ANOVA) was used to examine the interactions between the independent variables. Significantly heavier ideal sizes were selected by Black children than by White children for self ($\bar{x} = 3.63$; $p = 0.0004$), and boys chose a significantly heavier body size than girls ($\bar{x} = 3.53$; $p < 0.0001$). Although low SES participants selected larger sizes than high SES participants, this finding was inconsistent when race was included in the model. While this study did find differences related to body size satisfaction based on race, gender, and SES, data related to height, weight, and BMI were not collected; therefore, the weight category of the participants (underweight, healthy weight, overweight, obese) is unknown, and comparisons between ideal body size and actual BMI were not included.

Adams et al. (2000) also examined grade, race, SES, and weight concerns with fourth and seventh graders in South Carolina. A total of 1,597 children participated in two questionnaire surveys. The majority of the participants (55.1%) were in seventh grade, and 44.9% were in fourth grade. Fifty-three percent of the participants were White, and 46.9% were Black. Two surveys, which included questions related to weight-control practices, were administered to the participants. In terms of perceptions related to their own body size, the

participants were asked to describe their weight and height using closed-ended multiple-choice questions. The question, "How do you think of yourself?" included the following responses: very underweight, slightly underweight, about the right weight, slightly overweight, and very overweight. An analysis of variance was utilized to examine perceptions of body size. Seventh graders described themselves as being more overweight ($\bar{x}$ = 3.08) than fourth graders ($\bar{x}$ = 2.95; p = 0.0039), and girls described themselves as more overweight ($\bar{x}$ = 3.10) than boys ($\bar{x}$ = 2.93; p < 0.0001). White girls ($\bar{x}$ = 3.25) identified themselves as more overweight than Black girls ($\bar{x}$ = 3.07; p = 0.0129). This study demonstrates that for this population, older children perceive themselves to be more overweight than younger children and that White girls identify themselves as more overweight than Black girls. Like the study by Thompson, Corwin, and Sargent (1997), Adams et al. did not collect data related to height, weight, and BMI; therefore, the weight category of the participants (underweight, healthy weight, overweight, obese) is unknown. Comparisons cannot be made about self-perception of weight and actual or ideal weight status in either of these studies.

Skemp-Arlt and Mikat (2007) surveyed 215 pre-adolescent children (101 girls and 114 boys) from one public school and six parochial schools in Wisconsin to examine body-image perceptions and interest in weight manipulation. The participants included children in the third, fourth and fifth grades (mean age =10 years). Body-image perception was measured with two multiple-choice questions: I think I am: fat, skinny, in-between; and, I would like to lose weight, gain weight, stay the same. Participants had their height and weight measured, and their BMI was calculated and ranked according to the 2005 CDC guidelines. In terms of self-perception, 4% of the children identified themselves as "fat";

19% described themselves as "skinny; and 77% as "in between." When asked about weight loss, 25% of the children specified that they would like to lose weight; 7% indicated they would like to gain weight; and 67% selected "stay the same."

Overall, the children did have an accurate perception regarding their body weight. Children who thought they were fat had a mean BMI of 25.51 (> 97% for a 10 year old, both genders, by CDC guidelines); children who selected skinny had a mean BMI of 16.28 (< 50% for a 10 year old, both genders, by CDC guidelines); and children who selected "in between" had a mean BMI of 18.52 (at or below the 75% for a 10 year old, both genders, by CDC guidelines). Although the authors do not report the ethnicity of the participants, they do say a limitation of the study is that most of the participants were White and came from a middle-class background. Furthermore, the authors note that because parental consent was obtained for all children who participated in the study, it may be that parents of underweight, overweight, or obese children did not consent in order not to draw attention to their child's weight.

Studies related to children's self-perception regarding weight are not limited to the United States. Pauline et al. (2012) utilized a questionnaire to study body-weight perception of both urban and rural children in India. A total of 1,877 children aged 8-14 participated in the study. The authors examined current and ideal body perception by using the following two survey questions with five possible responses:

1. Current body weight perception – " 'I think my body weight/appearance is' …with options 'too thin', a little thin', normal', 'a little fat' or 'too fat' " (p. 2349).

2. Ideal body weight perception – " 'I want to be…' with options 'a lot fatter',
   'slightly fatter', 'as I am at present', 'slightly thinner' or 'much thinner' " (p.
   2349).

Heights and weights were obtained, and both BMI and BMI-for-age z-score values were
calculated. The authors utilized the 2006 World health Organizations growth reference which
is based on children in the Multicenter Growth Reference Study (MGRS). Children from
India were included in the MGRS. Using these standards, the children were grouped into one
of three categories: overweight, normal weight, and underweight.

Overall, 45% (n = 844) of the children accurately perceived their current body
weight. The majority of the children in the normal weight category, 56.7% (n = 671),
accurately perceived their weight. More children in the overweight category accurately
perceived their weight (33.7%, n = 58) than children in the underweight category (25%, n =
115). Using logistic regression, the authors found that the adjusted odds ratio (AOR) for
children in the overweight category underestimating their weight was significant, AOR =
4.66, 95% CI: (3.10, 7.03) $p < 0.0001$. Children in the underweight category had a
significant AOR for overestimating their weight, AOR =10.50, 95% CI: (7.70, 14.44), $p <$
0.0001.

For ideal body weight, 48% of the children (n = 907) expressed a desire to stay at
their current weight. For the overweight and underweight categories, 49% (n = 83) and 19%
(n = 85), respectively, expressed a desire to be thinner. Children in both of these categories
had significant AOR for expressing a desire to be thinner. Children in the overweight
category had an AOR = 2.51, 95% CI: (1.65, 3.81), $p < 0.001$ while the underweight children
had an AOR = .63, 95% CI (0.45, 0.88), $p < 0.001$. While 15.9% (n = 27) of the children in

the overweight category and 31.9% (n = 145) of the children in the underweight category expressed a desire to be fatter, neither of these findings produced significant AORs. The authors note that while some ethnic populations may have a positive view of being overweight, generalizations regarding what would be a socio-culturally desired weight in India should be avoided. They do, however, conclude that body-weight perception is an important component of designing intervention programs for pediatric obesity.

Gualdi-Russo et al. (2007) utilized the Collins (1991) Body Silhouette Chart with 866 (417 females and 449 males) school children (ages 8 and 9) in northern Italy to investigate their perception of body image. The students were asked to select the figure most similar to themselves as well as the silhouette representing their ideal self. A body-image dissatisfaction or Feel Minus Ideal Discrepancy (FID) index was utilized to explain the discrepancy between the self-figure and the self-ideal figure. An FID score of 0 indicates no discrepancies; a positive FID score indicates the self-figure to be larger than the self-ideal figure; and a negative score indicates the self-figure to be thinner than the self-ideal figure.

The children were then weighed and measured, BMI was calculated, and children were classified as normal weight, overweight, or obese. The authors correctly note that the Collins Body Image silhouettes do not fit defined BMI categories; however, in their study they found that an increase in mean BMI value occurred with the increasing value of the silhouette. A total of 35.8% of the girls and 37.2% of the boys in this study were overweight. Using the Spearman rank-correlation (r_s), the authors found self-figure perception and BMI to be significantly correlated (girls: $r_s = 0.6769$, $p < 0.001$; boys: $r_s = 0.5347$, $p < 0.001$). Boys and girls showed a preference for thinner figures as both genders had significantly lower mean values of the self-ideal figures (girls: 3.40 ± 0.97; boys: 3.82 ± 1.34, $p < .0.001$)

than of the actual self-figures (girls: 3.84 ± 1.07; boys: 4.19 ± 1.20 [no p value provided]). Although 41.6% of the girls and 39.4% of the boys expressed a desire to be thinner, a greater degree of dissatisfaction with their weight occurred in the children who were overweight or obese (76.4% of the overweight/obese girls and 63.4% of the overweight boys). Among the overweight/obese children, 5.7% of the males and 8.8% of the females wrongly perceived themselves as thinner than their actual weight. The authors note that these findings play a critical role in the development of programs aimed at preventing and treating the problem of childhood overweight and obesity.

Williamson and Delin (2000) investigated the accuracy of reporting body size in Australian children aged 5-10. The instrument used in this study consisted of 10 figures, five boys and five girls, whose size ranged from very thin to fat (height held constant). These pictures, in contrast to the Collins (1991) figures, were presented as individual laminated cards in a random, nonsequentially arranged order. A total of 195 participants (94 boys and 101 girls) participated in the study. The authors developed a 5-point ordinal scale for BMI: 1, underweight; 2, borderline; underweight; 3, normal weight; 4 overweight; and 5, obese. The BMI ordinal scale score was subtracted from the children's figural selection of their current size to determine the accuracy of their size selection. Children were also asked to select their ideal figure using these same figures.

Like Gualdi-Russo et al. (2007), Williamson and Delin (2000) found no significant difference between boys ($\bar{x} = 0.88$, SD = 0.79) and girls ($\bar{x} = 0.82$, SD = 0.78) in terms of the accuracy of their figure selections. The girls tended to select a figure larger than the one selected by the boys when describing their current body size, but this finding was not significant. For the ideal self, the girls showed a significant preference for a smaller figure

than the boys ($t\ 193 = 5.42$, p $= 0.0001$). This study is one of the only studies in which the majority of elementary children correctly identified their own body size.

A second and larger study of Australian children by Abbott et al. (2010) examined perception of weight status in 3,043 children and adolescents aged 5-17. Rather than using pictorial figures, perception of weight status was determined by using a survey instrument (Healthy Kids Queensland Survey). Because accuracy of weight-status perception for children younger than 12 was determined by parents and not by the children, the discussion will center on the results obtained from the adolescents. The parent or teen was asked to answer the question, "How would you describe your child's (or self) current body weight?" Three responses were given: too thin, about right, too fat. Children and teens were weighed and measured, and BMI was calculated. The authors used the international cutoff points developed by Cole, Bellizzi, Flegal, and Dietz (2000) for determining overweight and obese status (age specific and gender specific). Teen boys significantly underestimated their weight status compared with the girls (26.4% vs. 10.2%, p < 0.05). Similar to Williamson and Delin (2000), the adolescent girls in this study significantly overestimated their weight (11.8% vs. 3.4%, p < 0.05). An obvious limitation of this study is that while the authors used Pearson chi-square tests for these analyses, no actual values were provided.

Maximova et al. (2008) also examined weight-status perception in their study of 3,665 Canadian children ages 9, 13, and 16. Perceived weight status was measured using the Collins (1991) figures. Height and weight measurements were obtained, and BMI was calculated. Like Gualdi-Russo et al. (2007) study, a misperception score was calculated as the difference between the perceived weight and the actual BMI (weight scores assigned Z-scores, and BMI values transformed into Z-scores). Utilizing ANOVA, Maximova analyzed

weight perception. In contrast to the studies done by Williamson and Delin (2000) and by Abbott, Lee, Stubbs, and Davies (2010), only 1.6% of the children and teens perceived themselves as being overweight even though 24% of the children were overweight or obese. Overweight children were inaccurate perceivers ($\bar{x}$ = -1.19, standard deviation [SD] = 0.67) compared to the children who were not overweight ($\bar{x}$ = -0.53, SD = 0.96, F = 214.25, p < 0.001). Obese children also were inaccurate perceivers ($\bar{x}$ = -1.27, SD = 0.78, F = 1777.35, p < 0.001).

Truby and Paxton (2002) explored the accuracy of body-size perceptions in Australian children aged 7-12 to develop a pictorial scale to measure body image in young children. Their tool, the Children's Body Image Scale (CBIS[©]) (see Appendix C and D), differs from the Collins (1991) tool in that the scale uses photographs of children of known BMI percentile ranges for gender and for the ages 7-12 (using the 1979 National Center for Health Statistics [NCHC] percentiles). This tool will be described in depth as the CBIS[©] will be the tool used in this study.

Children aged 7-12 from the Royal Children's Hospital were asked to participate in the original development of the instrument. After obtaining parental consent and child assent, the children were weighed and measured, and their BMI was calculated. One boy and one girl, each 10 years old, who had a BMI that fit one of the seven NCHC percentiles (3rd, 10th, 25th, 50th, 75th, 90th and 97th), was photographed. The 14 photographs (seven boys; seven girls) then were scanned into a computer, and a generic male or female head was substituted on to the bodies (see Appendix C and D). The final range of BMIs represented for boys and girls is shown in Table 1 below.

Table 1. *BMI Representation by Gender for CBIS*[©]

Figure label and NCHC percentile	Male BMI range	Female BMI range
#1 or "A" (3rd %)	14.0-14.6	13.0-13.5
#2 or "B" (10th %)	14.7-15.5	13.6-14.9
#3 or "C" (25th %)	15.6-16.5	15.0-16.6
#4 or "D" (50th %)	16.6-18.5	16.7-17.7
#5 or "E" (75th %)	18.6-24.9	17.8-19.4
#6 or "F" (90th %)	25.0-28.4	19.5-24.6
#7 or "G" (97%)	28.5-29.0	24.7-28.5

Truby and Paxton caution that absolute BMI categories cannot be compared directly between boys and girls as, "…the thinnest figure for girls was thinner than that for boys in order to accommodate the normal sex variation in BMI distribution apparent in young children…" (p. 189). The tool then was utilized with 312 children from Grades 2 through 6 (ages 7-12) from four primary schools in Australia. While the authors do not provide exact numbers related to ethnic groups, they note that the majority of the children were White and that 12% were primarily of Chinese and Vietnamese descent. Construct validity was determined by asking all participants two questions:

Do you think your body is: 1. much too thin, 2. too thin, 3. just right, 4. a little too fat, 5. much too fat? and 'Would you like your body to be: 1. much thinner, 2. a little thinner, 3. stay the same, 4. a bit fatter, or 5. much fatter? (p. 192).

None of the boys described themselves as much too thin: 13% selected too thin; 72% selected just right; 9% selected a little too fat; and 6% selected much too fat. The results for the girls were similar to that of the boys in that 3% selected much too thin; 15% selected too thin; 66% selected just right; 15% selected a little too fat; and 1% much too fat. In terms of the question related to being thinner or fatter, 1% of the boys selected much thinner; 30% selected a little thinner; 54% selected stay the same; 15% selected a bit fatter; and none selected much fatter. Of the girls, 1% selected much thinner; 41% selected a bit thinner; 46% selected stay the same; 11% selected a bit fatter; and like the boys, none selected much fatter. Truby and Paxton (2008) in their study related to the reliability of the CBIS© note that the interview for boys could be improved if the question related to fatness (ideal figure) was changed to represent being more broad or muscular, thus possibly leading to further insight related to gender differences regarding ideal body shapes.

A total of 163 girls (mean age 9.0 years) and 149 boys (mean age 9.2) participated in the study. The mean BMI percentile for the girls was 6l.7, and for the boys, 63.6. According to the CDC definitions (see operational definitions), these mean BMI percentiles represent a healthy weight. The children were asked to identify the body figure most like their own (perceived figure), and they were asked to identify the figure they would most like to look like (ideal figure). A perceived-ideal discrepancy was defined as the difference between the category number of their perceived figure and the category number of their ideal figure. The authors used this discrepancy as a measure of body-size dissatisfaction. A positive score indicated the children who wanted to be thinner while a negative score indicated those children who wanted to be heavier. A nondirectional indicator of body dissatisfaction was

determined by an absolute discrepancy score and was calculated by subtracting the perceived figure from the ideal figure.

For data analysis, the participants were divided into three groups: < 8 years of ages; 8 and 9 years of age; and ≥ 10 years of age. The authors conducted correlations between actual BMI category and perceived BMI category. For both boys and girls, the correlations were significant; however, the strength of those correlations differed based on gender and age. For girls, the correlation was strongest among the older group ($r = .60$, $p < .001$, 10-12 years). Although the correlation was significant for older boys ($r = .35$, $p < .01$, 10-12 years), it was not as strong as the correlation for girls. The authors note that the boys in the youngest age group (< 8 years) were not able to match their own body size with the body figure of a similar BMI, and therefore the authors do not consider this tool reliable for boys younger than 8.

The difference between the actual and the perceived CBIS$^{©}$ category across the three age groups was examined by conducting a one-way ANOVA. As previously discussed, girls significantly underestimated their CBIS$^{©}$ category ($t(161) = 11.53$, $p < .001$); however, there was no significant difference across the age group for the girls ($F(2,159) = .69$, not statistically significant [ns]). The boys also significantly underestimated their CBIS$^{©}$ category ($t(147) = 5.59$, $p < .001$), and there was a significant effect related to age ($F(2,145) = 7.9$, $p < .001$). A post hoc Bonferroni test was conducted, which determined that the significance was between the youngest age group and both of the older age groups. The authors caution against comparing the responses of girls and boys directly because the CBIS$^{©}$ figures have slightly different ranges for boys than girls. They discuss the use of a 2 (sex) by 3 (age group) ANOVA as a suggestive analysis between actual, perceived CBIS$^{©}$ scores.

Their analysis revealed that girls significantly underestimated their actual size to a greater extent than did boys (F(1,304) = 17.29, p < .001). Age group by sex interaction also was found to be significant (F(2,304) = 3.51, p < .05), and the post hoc test indicated that in the two younger age groups, girls underestimated their body size more than boys. It is interesting to note that while girls significantly underestimated their actual size when compared to boys, the actual percentage of overweight or obese children in this study was very small. The mean BMI percentile for girls was 61.7, and for boys it was 63.6 (using 1970 NCHC percentiles for gender and age). Only 19.2% of the girls and 2.6% of the boys were in the overweight or obese categories. Like previous studies (Gualdi-Russo et al., 2007; Maximova et al., 2008), Truby and Paxton utilized the difference between the category number of their perceived and ideal figures as a measure of body size satisfaction (perceived-ideal discrepancy). For girls, 48% chose a thinner ideal body figure; 42% chose the same size, and 10% chose a larger figure than their perceived figure (across age groups). For boys, 36% showed a preference for a smaller body figure than their own; 44% selected the same size figure, and 20% chose a larger figure than their perceived figure. The authors also note the concern that 55% of the girls and 45% of the boys selected a BMI figure below the 10th percentile as ideal. These findings are somewhat startling considering that so few of the boys or girls in this study were overweight or obese.

A subset of 133 students participated in assessments of three additional body image and eating behavior tools. The first tool was a 24-item Body Esteem Scale (BES). Four items on this scale specifically assess weight dissatisfaction. The Cronbach's alpha for this sample was .84. A subscale of three items was combined to form a BES-Weight subscale. The Cronbach's alpha for this subscale was .61; however, according to Field (2005),

questionnaires with fewer than 10 items typically result in a Cronbach alpha of less than 0.7. For dieting behavior, the 10-item Dutch Eating Behaviour Questionnaire-Restraint Scale (DEBQ-R) was administered. The Cronbach's alpha for this sample was .89; however the authors caution that there is some question about the ability of children younger than 12 to fully comprehend the items on the scale.

Truby and Paxton (2002) also examined the construct validity of a perceived-ideal discrepancy in terms of measuring body dissatisfaction. They studied correlations between the perceived-ideal discrepancy score and the two questions related to weight ("think too thin/fat; "like to be thinner/fatter," p. 196) as well as a perceived-ideal discrepancy and the DEBQ-R. In general, the strongest correlations occurred with the older children (aged 10-12) and when the age groups were combined.

In 2008, Truby and Paxton tested the reliability of the CBIS$^©$ on 281 children in Grades 3 through 6 (aged 7-11) in the United Kingdom over a three-week period. Of the total participants, 141 were girls (mean age, 8.9 years), and 142 were boys (mean age, 8.9 years). The mean BMI (not percentile) for the total sample was 17.9. The results obtained by Truby and Paxton with this population of children were similar to the results of their original work (Truby & Paxton, 2002). In terms of body image perception, both boys and girls chose a body figure less than their measured BMI (boys were less accurate than girls). Mean scores using paired *t* tests were not significantly different between times one and two (three-week period). The correlations between times one and two were significant for both girls and boys across all categories (perceived BMI, ideal BMI, perceived-ideal discrepancy score, and actual-perceived discrepancy score) at p < .001. The *r* values were quite strong, ranging from .67 to .87, which demonstrates solid test-retest reliability of the CBIS$^©$.

Truby and Paxton (2008) also compared the CBIS$^{©}$ to the CDC 2000 growth charts, the United Kingdom 90 BMI charts, and to the International Obesity Taskforce BMI Cut-Offs (see Appendix E). In their original work on the development of the CBIS$^{©}$, Truby and Paxton (2002) utilized the1979 NCHC percentiles to determine the BMI ranges for the seven boy and girl figures in the CBIS$^{©}$. In their more recent article, Truby and Paxton (2008) discuss the alteration of the BMI categories for use with the 2000 CDC growth charts. They conclude that for the CBIS$^{©}$ girls, Category 6 now represents the 85%, and the Category 7 figures (both boys and girls) are more than the 97%. In terms of the CBIS$^{©}$ boy figures, Category 6 represents the 85%. The authors conclude that while the CBIS$^{©}$ is representative of the current population, they caution the categories for boys and girls cannot be directly compared because they represent different BMI ranges.

In terms of limitations, the authors correctly note that the CBIS$^{©}$ has been tested almost exclusively in White populations. Additionally, the figures used are based on pictures of White children. Gardner and Brown (2010), in their review of figural drawing scales, argue that figures containing facial features or clothing (such as those utilized in the CBIS$^{©}$) rather than a plain silhouette may distract participants from focusing on the size and shape of the drawing. Utilizing the CBIS$^{©}$ in this study, where it is anticipated that the majority of participants will be Hispanic, will provide initial data regarding the use of this tool in this population.

Saxton, Hill, Chadwick, and Wardle (2009) utilized the CBIS$^{©}$ to study associations between weight status and body-size perception in a cross-sectional survey of 399 children aged 7-9 (205 boys and 194 girls) in the United Kingdom. The children's height and weight was measured, and BMI was calculated. The CBIS$^{©}$ body-image scale was used to assess

children's perceived body size along with a one-item verbal descriptor consisting of: "Do you think your body is: much too thin, too thin, just right, too fat, or much too fat…" (p. 945). The categories of "much too fat" and "too fat" as well as "much too thin" and "too thin" were combined because very few children chose the extremes. While 25% of the children had a BMI at or above the CBIS$^{©}$ ranges of 5, 6, and 7 (75th, 90th, and 97th percentiles respectively), only 10% selected those figures as their actual body size. Forty-five percent (n = 179) of the children significantly underestimated their body size when using the CBIS$^{©}$ (r = .43, p < 0.001). Girls had significantly stronger correlations (r = .49, p < 0.001) than boys (r = .31, p < 0.001; z observed [z_{obs}] = -2.02). The verbal ratings showed significant correlation with both BMI and SD (r = 0.41, p < 0.001); however, unlike the results with the CBIS$^{©}$, no significant differences were found between boys and girls. It is worth noting that 58% of the overweight and 52% of the obese children selected verbal reporting of the weight as "just right."

The authors collected ethnicity data for Black/mixed Black, Asian/mixed Asian or Other, but then recoded the data to White/non-White. While 52% of the participants were non-White, no findings were presented based on ethnicity. It should be noted that the authors of this study altered the CBIS$^{©}$ tool by obscuring the facial features of the seven figures on the scale (both boys and girls). No explanation is given for this change in the scale; however, Gardner and Brown (2010), in their review of figural drawing scales, note that some scales have greater reliability and validity with absent facial features. While this study, like other studies previously discussed, confirms that many children underestimate their body size, the authors suggest that for young children, "…the fewer who feel body dissatisfaction, the better" (Saxton et al., 2009, p. 947). They recommend considering using this knowledge

about children's weight perceptions in a sensitive manner when developing weight management programs for young children.

Several of the studies discussed confirm that, in varying degrees, overweight children do not perceive themselves as overweight, and children, in general, select an ideal figure thinner than their current figure (Collins, 1991; Gualdi-Russo et al., 2007; Saxton et al., 2009; Skemp, Arlt, & Mikat 2007; Snethen & Broome, 2007; Thompson, Corwin, & Sargent, 1997; Truby & Paxton, 2002). Two of the studies, both conducted in countries outside of the United States, found that a majority of overweight/obese teens accurately reported themselves as "too fat" (Abbot et al., 2010; Maximova et al., 2008). The three studies that utilized national databases to study body-weight perceptions in adolescents included Hispanics, African-American, and Hispanic children (Haff, 2009; Martin et al., 2009; Mikolajczyk et al., 2012). Only Martin et al. (2012) included Native American children, and Haff (2009) included only adolescent females. None of these three studies had significant findings in terms of differences between the White and Hispanic ethnic groups.

Overweight children in the qualitative study by Murtagh et al. (2006) identified the need to be normal and being overweight did not allow them to blend in with their peers. Adams et al. (2000) and Thompson et al. (1997) had sample sizes that included a significant number of Black children (46.9% and 48.2% respectively). Black children in the study by Thompson et al. selected significantly heavier ideal sizes than did White children, but in the study by Adams et al., White females identified themselves as more overweight than Black females. Only two studies were identified that focused on the perceptions of overweight Hispanic children (Figueroa et al., 2008; Snethen et al., 2007). Snethen conducted small focus groups of Hispanic children and parents regarding their perspectives about childhood

overweight. The primary finding from the children's focus groups was a sense that overweight children were not active. While Figueroa found that overweight children did not accurately identify their own body size, there were methodological problems with the study.

The majority of the studies reviewed identified accurate weight perception by children as an essential part of developing prevention and intervention strategies for overweight and obese children. Although guidelines exist regarding obesity prevention and treatment in children (Barlow, 2007; National Association of Pediatric Nurse Practitioners [NAPNAP], 2006), no one strategy has been proven to be the most effective especially among minority children. Only two of the studies discussed (Figueroa, 2008; Snethen, 2007) were designed to understand weight perception in young children. The study by Snethen provided limited insight in to children's perceptions regarding weight, while the study by Figueroa lacked methodological detail. There is a lack of current research in relation to Hispanic children's perceptions regarding weight. Given the fact that the prevalence rate for overweight and obesity among Hispanic children is 39.1% compared to 27.9% for non-Hispanic White children (Ogden et al., 2012), it is essential to understand perceptions related to body weight among Hispanic children. Misperception regarding body weight in Hispanic children may indicate that they are less likely to participate in prevention and treatment programs. Further research regarding Hispanic children's perceptions regarding weight is necessary as the first step toward planning effective prevention and treatment strategies.

Purpose of the Study

The purpose of this study is to describe preteen children's self-perception regarding weight.

Specific Aims and Hypotheses

1. To determine if there are differences based on age, grade level, gender, actual BMI category, and race/ethnicity for the accuracy of children's selection of BMI category (underweight, healthy weight, overweight, obese) using figures from the CBIS$^{©}$ versus their clinically measured BMI for children aged 8-11.

   H_o There will be no differences between the accuracy of the children's selection of a BMI category based on gender, age, grade level, race/ethnicity, and the actual BMI category for children aged 8-11.

2. To determine the associations of gender, age, grade level, race/ethnicity, and actual BMI category (underweight, healthy weight, overweight, obese) with the ideal BMI category using the CBIS$^{©}$ for children aged 8-11.

   H_o There will be no associations between children's gender, age, grade level, race/ethnicity, and actual BMI category (underweight, healthy weight, overweight, obese) and ideal body BMI category for children aged 8-11.

Theoretical or Conceptual framework

The Health Belief Model (HBM) originated in the 1950s and was first attributed to a study related to the identifying factors associated with the decision to obtain X-rays for the detection of tuberculosis (Rosenstock, 1974). Hochbaum (as cited in Rosenstock, 1974) conducted research to determine if perceived susceptibility to tuberculosis as well as the perceived benefit of early detection of tuberculosis would result in individuals obtaining a voluntary chest X-ray. According to Rosenstock, "…four out of five people who exhibited both beliefs took the predicted action, while four of five people who accepted neither of the beliefs had not taken the action" (p. 361).

The HBM (see Appendix F) focuses on three areas: individual perceptions, modifying factors, and likelihood of action (Janz & Becker, 1984). In terms of individual perceptions, perceived susceptibility to disease and perceived severity of disease are key beliefs. Modifying factors included demographic variables such as age, sex, race, and ethnicity; sociopsychological variables such as personality, social class, and peer pressure; and the perceived threat that a person would contract a disease or condition. Rosenstock (1974) noted that to trigger the decision-making process, a stimulus was needed. Thus, the model includes cues to action that are intended to serve as a trigger or catalyst to change behavior. Examples of cues to action include media campaigns, advice from others, reminder cards from a health-care provider, or, more dramatically, the death of family member or friend. The likelihood that an individual will take action is based on the perceived benefits of the preventive action minus the perceived barriers to the action.

One of the first reviews of studies using the HBM was published by Rosentstock (1974). None of the studies reviewed utilized the HBM for weight control or weight loss in either children or adults; however, Rosenstock mentions a study involving children and health motivation related to dental disease (Gochman, Bargramian, & Sheiham, 1972). Upon further investigation, it was found that there were several articles by Gochman that dealt with aspects of the HBM and children (Gochman, 1970; Gochman, 1971a; Gochman, 1971b). Gochman's initial studies (Gochman, 1970; Gochman, 1971a) examine the concept of children's vulnerability to illness. These two studies will be discussed because they emphasize the importance of the concept of individual perceptions as part of the HBM and provide a framework for using the HBM to understand children's perceptions regarding weight.

Gochman (1970) examined children's perceptions related to vulnerability in terms of illness and accidents. Initially, he presented participants with a series of 10 questions related to their expectancy of developing certain illnesses (e.g., rashes, colds, fevers, accidents) along with 15 questions related to their normal activities (e.g., likelihood of being invited to a friend's party). Participants were asked to select a reply based on a scale of seven responses (from no chance to certain) that reflected their expectancy for each item. This study utilized a sample of 134 children aged 7-17 from Ann Arbor, MI, who were Boy Scouts (n = 75) and Girl Scouts (n = 59). Information related to ethnicity is defined simply as "White versus non White," and specific percentages or numbers of children in each group are not provided. Grochman conducted correlations between the children's answers to questions about one health problem in relation to the answers of other questions about health. Of 45 possible pairs of expectancies, 34 were statistically significant (no p values provided). Gochman concluded, "It seems that the degree to which a child expects a particular illness or accident to occur is related to the degree to which he expects other such events to occur" (p. 71). In this study, no significant differences were noted between younger (< 10 years of age) and older children (10-16 years of age) regarding specific expectations; however, there were differences based on gender. Boys had higher expectations that they would remain healthy.

In his second study, Gochman (1971a) expanded his health expectancy questions from 10 to 16, interspersed with the questions related to normal activities from the first study. Participants in the second study included 108 children enrolled in a summer camp at a major university. The children were aged 7-18, and all were identified as White. In this study, 81 of 105 possible pairs of expectancies were statistically significant (no p values provided). Gochman examined the results by age: those younger than 10 (n = 53) and those 10-18 (n =

55). The older children had significantly more consistency in terms of their expectations than the younger children. Again, the results indicated that the expectation of a particular illness or accident occurring is related to the extent the child expects other episodes to occur.

Although these studies by Gochman are more than 40 years old and are limited in terms of representing specific populations (Boy and Girl Scouts, children from a summer camp, primarily White) and lacking detail regarding statistical significance, they demonstrate that children have perceptions related to vulnerability of health problems. The articles, while not specific to weight perception in children, demonstrate that children do, to some extent, view themselves as vulnerable to a specific set of illnesses or accidents. It is critical to understand children's perception regarding vulnerability to health problems, such as those related to being overweight or obese, for the development of effective prevention and treatment strategies.

Roden (2004) proposed a modification of the HBM for the purposes of applying it to young families and their health-promotion needs. Specifically, Roden incorporated parental perceptions and de-emphasized the perceived threat of disease by including a perceived notion of health, thus ensuring health awareness and positive health (see Appendix G). She added the constructs of perceived behavioral control and behavioral intention to the model. Rodent argues that her revision provides nurses with a model that can be used to promote health promotion for families with young children.

Finding current studies that use the HBM in relation to childhood obesity has proven to be elusive. The following online databases were searched using the terms HBM and body weight (included weight gain or loss; thinness and birth weight); or BMI; or obesity; or attitude toward obesity: Cumulative Index of Nursing and Allied Health Literature

(CINAHL); Psych Info; Pub Med; and Anthro Source. Inclusion criteria included English-only articles, peer reviewed, and children up to age 18. A total of 15 articles were retrieved using these search criteria from the four databases. Of the 15 articles, one relevant article for the purposes of this proposal was identified (O'Connell, Price, Roberts, Jurs, & McKinley, 1985).

O'Connell et al. (1985) utilized the HBM to predict the dieting and exercising behaviors of obese and nonobese adolescents. The authors examined seven variables contained in the health belief model, including perceived susceptibility to the causes of obesity. Participants included high school freshmen and sophomores; however, details about the ages of the participants are limited to saying those older than 16 were eliminated. All final participants were White. Initially, open-ended surveys were used to determine beliefs related to obesity, dieting, and exercise.

A final questionnaire containing Likert-type questions (total number of questions not included) regarding beliefs was administered, and participants answered based on a response range of strongly agree to strongly disagree. Participants also completed a 12-item True/False/Uncertain obesity knowledge instrument developed by the researchers and Seltzer's four-item Weight Locus of Control scale. Using discriminant analysis, the authors determined classification of the adolescents as obese or not obese by their dieting and exercise behaviors. Then the authors used stepwise discriminant analysis to identify variables in the HBM that significantly contributed to the classification. Five variables, social approval for exercise, susceptibility to obesity, cues to dieting, benefits of dieting, and evaluation of the severity of obesity, were identified as predictors of adolescents being either obese or

nonobese. Unfortunately, these five variables explained only 17% of the total variance, leading the authors to conclude that the HBM failed to predict obesity.

In terms of dieting behavior, the variables of social approval and benefits of dieting accounted for 23% of the variance, indicating that the HBM did, to some degree, predict dieting behavior of obese adolescents. Interestingly, in the nonobese adolescents, social approval and susceptibility to the causes of obesity accounted for 19% of the variance in terms of explaining their dieting behavior. In terms of the HBM predicting exercise behavior of obese adolescents, 14% of the variance was explained by peer pressure (external cue) and by poor health and poor muscle tone (internal cue). Among the nonobese teens, no significant variables emerged to predict their exercise behaviors. Based on these findings, the authors recommend that weight-control programs for adolescents should emphasize the benefits of dieting and should focus on internal and external cues to encourage participation in exercise. While this study is more than20 years old, it is interesting to note that their recommendations regarding dieting and exercise programs are similar to recommendations proposed by the American Academy of Pediatrics in its summary report on the prevention, assessment, and treatment of child and adolescent overweight and obesity (Barlow, 2007).

More recently, Vann et al. (2011) used portions of the HBM to guide the development of a pediatric healthy eating and physical activity screening and counseling tool, Starting the Conversation (STC). The authors note that identifying perceived barriers to taking positive actions toward changing behaviors is an important first step for families, saying, "…helping families develop plans of action that reduce the adverse effects of barriers" (p. 405). Although Vann et al. does not include a revision of the HBM, her emphasis on health promotion is similar to the modification of the HBM proposed by Roden (2004). Cues to

action or "tips" are included in the STC, which help provide parents with strategies for improving health behaviors and serve as a reminder of the plans they made for implementing behavioral changes.

Literature regarding the use of the HBM with children, in general, is limited. The studies by Gochman (1970; 1971a; 1971b), while indicating that children do experience a sense of vulnerability in relation to health problems, are 40 years old. Roden (2004) proposed modifying the HBM to be more focused on health promotion for young children, while Vann et al. (2011) used the HBM to develop a healthy eating and physical activity screening and counseling tool (STC). Only one study was identified that used the HBM to examine the issue of obesity in adolescents, and the results were inconclusive (O'Connell et al., 1985). The purpose of this study is to use the construct of individual perceptions from the HBM to understand children's perceptions regarding weight. Specifically, do children aged 8-11 accurately identify their body figure type when compared to their actual BMI percentile (healthy weight, underweight, overweight, or obese), and is there a difference in weight perception between White and Hispanic children.

Definition of Terms

Race and Ethnicity

The standard categories for a combined format of race and ethnicity as defined by the U.S. Office of Management and Budget ([OMB], 1997) are: American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, and White.

The OMB (1997) specifically defines Hispanic or Latino as a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin

descent, regardless of race. The term, "Spanish origin," can be used in addition to "Hispanic or Latino." Throughout this study, Hispanic is used to denote "Hispanic or Latino."

Underrepresented, according to the *National Institutes of Health* (2011), is defined as: "The following racial and ethnic groups have been shown to be underrepresented in biomedical research: African Americans, Hispanic Americans, Native Americans/Alaska Natives who maintain tribal affiliation or community attachment, Hawaiian Natives and natives of the U.S. Pacific Islands."

Gender

Gender refers to male or female. A separate Child Information Form in English and Spanish (Appendix H and I respectively) was included in the consent packet sent home to the parents and included an area for a parent to select gender.

Age

Age was calculated using years and months. A separate Child Information Form in both English and Spanish (Appendix H and I respectively) was included in the consent packet sent home to the parents and included an area for a parent to enter the date of birth of their child.

Height

Height was measured in inches using a Seca™ portable stadiometer (Model 217).

Weight

Weight was measured in pounds using a Seca™ portable floor digital scale (Model 869).

Body-Mass Index and BMI Percentiles

Body-mass index is the weight in kilograms divided by the square of height in meters (CDC, 2011b). To account for the variability of children's weight with sex and age, BMI is compared with sex-specific and age-specific reference values (Ogden & Flegal, 2010). The 2000 CDC charts functioned as the reference values for the calculation of BMI percentiles. The Children's BMI Tool for Schools (CDC, 2011c), an Excel spreadsheet, was utilized to calculate BMI and BMI percentile. No names were entered into this Excel spreadsheet. Each child's identification code, along with their corresponding sex, date of birth, date of measurement, and height and weight, was entered.

Body Mass Index (BMI) Categories

Underweight: Less than fifth percentile on CDC BMI-for-age and gender growth charts (CDC, 2011b).

Healthy weight: Fifth percentile to less than 85th percentile on CDC BMI-for-age and gender growth charts (CDC, 2011b).

Overweight: Eighty-fifth percentile to less than the 95th percentile on CDC BMI-for-age and gender growth charts (CDC, 2011b).

Obese: Equal to or greater than the 95th percentile on CDC BMI-for-age and gender growth charts (CDC, 2011b).

The range of BMI categories developed by Truby and Paxton (2002) for the CBIS[©] were based on the 1979 U.S. National Center for Health Statistics percentiles. In a follow-up article, Truby and Paxton (2008) compared the CBIS[©] BMI scale with international standards for body-mass index (see Appendix E). They compared the CBIS[©] figure category and BMI categorization with the CDC 2000 percentile charts, the United Kingdom 90 BMI percentiles,

and with the International Obesity Task Force cutoff categories for acceptable weight, overweight, and obese. The original BMI representations and percentiles for the CBIS[©] figures based on the 1979 CDC percentile charts as compared to the 2000 CDC percentile charts are shown below in Table 2 with the changes highlighted in bold. Note that for boys, the 2000 BMI ranges are, for some categories, larger and that the BMI percentiles have changed. For Figures E (No. 5), F (No.6) and G (No. 7), the percentiles have been changed from the 75th to >75th percentile, 90th to >85th percentile, and 97th to >97th percentile, respectively. The BMI ranges for girls have remained the same. For the girl BMI percentiles, Figures F (No. 6) and G (No. 7) have been changed from the 90th to the 85th percentile and from the 97th to >90th percentile, respectively.

Table 2. *Comparison of Figure Labels/CBIS[©] BMI Representations for 1979 and 2000 CDC BMI Percentiles*

Figure label	1979 Male BMI range & percentile	2000 Male BMI range & percentile	1979 Female BMI range & percentile	2000 Female BMI range & percentile
A (No. 1)	14.0-14.6 3rd	14.0-14.6 3rd	13.0-13.5 3rd	13.0-13.5 3rd
B (No. 2)	14.7-15.5 10th	14.7-15.5 10th	13.6-14.9 10th	13.6-14.9 10th
C (No. 3)	15.6-16.5 25th	15.6-16.5 25th	15.0-16.6 25th	15.0-16.6 25th
D (No. 4)	**16.6-18.5 50th**	**16.6-20.0 50th**	16.7-17.7 50th	16.7-17.7 50th
E (No. 5)	**18.6-24.9 75th**	**20.1-25.1 >75th**	17.8-19.4 75th	17.8-19.4 75th
F (No. 6)	**25.0-28.4 90th**	**25.2-28.4 >85th**	**19.5-24.6 90th**	**19.5-24.6 85th**
G (No. 7)	**28.5-29.0 97th**	**28.5-29.0 >97th**	**24.7-28.5 97th**	**24.7-28.5 >90th**

Assignment of Figures to BMI categories

    Males. The following assignment of figures to weight categories is based on the data presented in Table 2.

Underweight ($< 5\%$): Figure A (No. 1).

Healthy weight ($> 5\%$ to $< 85\%$): Figures B (No. 2), C (No. 3), D (No. 4).

Overweight (85% to $< 95\%$): Figure E (No. 5)*.

Obese ($\geq 95\%$): Figure F (No. 6)**, G (No. 7).

*Figure E (No. 5) is listed at $> 75^{th}$ percentile for the 2000 BMI percentile. The decision was made to include this figure in the overweight category because the BMI category of 20.1 is above the 85% for males who are 8, 9, and 10 years of age, considered overweight by CDC definitions. For age 11, a BMI category of 20.1 is at the 85%, which also is considered overweight by CDC definitions. Additionally, Truby and Paxton (2008) relate Figure E (No. 5) to the 91st percentile of the United Kingdom 90 BMI percentiles as well as to the overweight category by the International Obesity Taskforce (see Appendix E).

**The BMI ranges for Figure F (No. 6) (25.2-28.4) meet the CDC definition of obesity ($\geq 95\%$) for males in the age group of children included in this study (aged 8-11). In the table provided by Truby and Paxton (2008), this figure is listed as being $> 98^{th}$ % by the United Kingdom 90 BMI percentiles and as obese by the International Obesity Taskforce (see Appendix E). Therefore, this figure was labeled as obese.

    Females. The following assignment of figures to weight categories is based on the data presented in Table 2.

Underweight ($< 5\%$): Figure A (No. 1).

Healthy weight (> 5% to < 85%): Figures B (No. 2), C (No. 3), D (No. 4),

E (No. 5).

Overweight (85% to < 95%): Figure F (No. 6)**.

Obese (> 95%): Figure G (No. 7)

** Like the male Figure E (No. 5), the female Figure F (No. 6) contains a large BMI

range (19.5-24.6). Truby and Paxton (2008) place this BMI category as comparable to

the 85th % (see Appendix E); however, the upper-range BMI category of 24.6

represents a percentile ≥95% for girls aged 8-11and therefore is defined as obese by

the CDC standards. In this case, the decision was made not to fractionate the BMI

category for the female Figure F (No. 6). In this case, the table provided by Truby and

Paxton (2008) includes Figure F (No. 6) in the United Kingdom 90 BMI percentile of

>85th % and as overweight by the International Obesity Taskforce (see Appendix E).

The ideal BMI is defined as the CBIS[©] BMI figure selected by the children when

asked to select a figure that looks like what they would like to look like.

Accurate Perceivers and Misperceivers

Rahman and Berenson (2010), in their study of self-perception of weight in young

reproductive-aged women, placed the participants into four categories using their BMI and

self-perception of weight:

Overweight misperceivers (overweight women who described themselves as

underweight or normal weight), overweight actual perceivers (overweight women

who described themselves as overweight), normal-weight misperceivers (normal

weight women who described themselves as overweight) and normal-weight actual

perceivers (normal-weight women who described themselves as normal weight or under-weight; p. 1275).

This model was modified to divide the participants in this study into two categories:

- Accurate perceivers: children who select a CBIS$^©$ BMI figure that matches their true BMI category (underweight, healthy weight, overweight, obese).

- Inaccurate perceivers: children who select a CBIS$^©$ BMI figure that does not match their true BMI category (underweight, healthy weight, overweight, obese).

Method

Study design. The design for this study was a cross-sectional, descriptive non-experimental design.

Sample. A convenience sample was utilized. Children aged 8-11 from seven elementary schools in a nonmetropolitan rural community in the southern portion of New Mexico were included in this study. Another school in this district, which had a combination of students who were home-schooled as well as students in traditional classroom settings, did not respond to several communications regarding this study and therefore was not included.

Inclusion criteria included:

Children aged 8-11 who are able to speak, read, and understand English (self-identified). Parents must be able to read and understand either English or Spanish because consent forms will be written in both English and Spanish.

Exclusion criteria:

Children who have a medical condition that affects their weight or ability to eat independently or who are being treated with chronic steroids, chemotherapy, or

immune suppressants. Children who are currently receiving medical treatment for obesity also were excluded.

Data Collection and Procedures

Setting. The history of the community of interest is captured in the book, *El Rio Abajo* (Chavez & Espinosa, 1973). The title translates to "river below" and captures the history of the area south of Albuquerque, from Isleta Pueblo on the north to Sabinal on the south. The authors note that on April 20, 1598, Don Juan de Onate claimed the New Mexico area as a possession of Felipe II of Spain. Several grants were dispersed in 1740 by Gov. Gaspar Doninquez de Mendoza to Capt. Diego de Torres to several families to establish communities south of Albuquerque along El Rio Abajo.

The 2010 census lists the population of New Mexico as 2,059,179 with the following percentages by race: 68.4% White; 2.1% Black or African- American; 9.4% American Indian and Alaska Native; 1.4% Asian; and 0.1% Native Hawaiian and other Pacific Islander (U.S. Census Bureau, 2011a). By ethnicity, 46.3% of the population identifies themselves as Hispanic and 40.5% as White persons not Hispanic (U.S. Census Bureau, 2011a).

The community of interest is located in Valencia County. The population for this county is 76,569, and by ethnicity, the county reflects the state in that the majority of the population (58.3%) identifies itself as Hispanic or Latino and 36.2% identifies itself as White persons not Hispanic (U.S. Census Bureau, 2011b).

The population of the town where this study was conducted is 7,269, and the racial makeup is65.3% persons of Hispanic or Latino origin, 30.7% White persons not Hispanic, 1.4% Black, 2.6% American Indian and Alaska Native, 0.4% Asian, and 0.1% Native Hawaiian and other Pacific Islander. A total of 4.8% of the population includes persons

reporting two or more races (U.S. Census Bureau, 2011c). The age group of interest for this study, children between the ages of 8 and 11, is represented as follows: children aged 5-9, 6.4%; and aged 10-14, 6.5% (U.S. Census Bureau, 2011d).

The school district participating in this study covers 1,081 square miles (N.M. Public Education Department, 2002), and the total enrollment in the district is 4,659 students (N.M. Education Department, 2010a). The district has eight elementary schools and 2,621 students (T.S. Chavira, personal communication, September 7, 2011). Of those 2,621 students, 39% (1,014) are in Grades 3, 4, and 5 and represent the age group of interest (ages 8-11) for this study. The ethnicity of the students in Grades 3, 4, and 5 is as follows: 74% Hispanic, 22.8 % White persons not Hispanic, 1.7% Native American, .83% African American, .28% Asian, and .28% unclassified (T.S. Chavira, personal communication, September 7, 2011).

According to the N.M. Public Education Department (2010b), only one elementary school has fewer than 50% of its students who qualify for free or reduced-priced lunches, and that school is a family school with an enrollment of 83 students. Of the remaining seven elementary schools, two have between 73% and 77% of the students qualifying for free or reduced lunch; four have between 81% and 88% qualifying; and one has 90% qualifying.

Meetings were conducted with the superintendent of the school district and the eight elementary school principals to discuss the study and obtain consent. Verbal consent was obtained from the superintendent and the eight principals. Letters of support were obtained from the superintendent and seven of the eight principals. The principal of the home school did not respond to further requests regarding participation, and therefore this school was not included in the study.

Recruitment. Recruitment consisted of several strategies. This school district maintains a traditional nine-month schedule. Teachers do not work in the summer months until August when school begins, but administrators, including principals, are on 12-month contracts. The decision to schedule data collection in the fall term allowed for time in the summer to schedule meetings with school principals to plan recruitment activities. Principals of the seven participating schools granted permission for the investigator to attend fall open-house events to recruit families. I was able to attend six of the seven open houses (one school scheduled its open house on the same day and time as another school). Initially, the plan was to distribute information packets and obtain consent at these open houses; however, after the first open house, it was clear that parents did not have the time to read through the consent forms. A flyer in both English and Spanish was developed (Internal Review Board [IRB]; Appendix J and K respectively) approved and distributed at the open houses. A Spanish translator, approved by the IRB, was hired to translate recruitment and consent forms into Spanish.

Packets were distributed to interested parents at all open houses, and one parent did return a signed consent form. Additionally, at three of the schools, the principals held a brief group orientation for all parents at the beginning of the open house. The principals allowed me to present a summary of my study proposal to all of the parents. The open houses also provided me the opportunity to introduce myself to the elementary school teachers whose students would be recruited for the study.

Three of the principals allowed me to present my study proposal to the elementary school teachers during a staff meeting. While brief, these presentations provided me with the

opportunity to introduce myself to the teachers and discuss the impact the data collection would have on their teaching schedule.

The school district has a website, and each school has a web page. Permission from the school superintendent was obtained to post an announcement about this study (IRB approved; Appendix L) on both the district website as well as on all seven of the school's web pages. The study proposal also included a plan to include an announcement (IRB approved; Appendix M) in individual school newsletters; however, because data collection began one week after the open houses, announcements in newsletters were not published.

A county paper, with twice weekly delivery, is published in this community. I was interviewed by a reporter, and an article regarding the study was published one month after the school term had begun and data collection had begun.

The following forms (IRB approved), in one packet, were sent to all parents of children enrolled in Grades 3, 4, and 5 in the seven participating elementary schools.

- Introduction letter in English (Appendix N).

- Introduction letter in Spanish (Appendix O).

- Parental consent form in English (Appendix P).

- Parental consent form in Spanish (Appendix Q).

- Child assent form in English (Appendix R).

- Child assent form in Spanish (Appendix S).

- Child information form in English (Appendix H).

- Child information form in Spanish (Appendix I).

The information packets were given to the school nurse, who gave them to the teachers. The teachers distributed the packets to the children to take home to their parents.

Part of the consent form included an option for parents to receive the results of their child's weight/height/BMI measurements along with an explanation regarding the meaning of the BMI. Parents also had the option not to receive this information. The consent forms were returned to the teachers, who then gave them to the school nurse. All information contained in the packet was approved by the University of New Mexico (UNM) Health Sciences Center (HSC), IRB.

An incentive of a $10 gift card to Walmart (one is located in the community) was distributed to the children participating in the study. The school nurses and the Health Services Coordinator (also a nurse) received $100 incentive for participating in the study. One nurse declined the incentive. Those nurses who participated in data collection (weighing and measuring children) were required to complete the UNM, HSC online Human Research Protections (HRP)/Collaborative Institutional Training Initiative (CITI) and a conflict of interest (COI) from. Five of the seven school nurses and the Health Services Coordinator completed the training. Additionally, two Pediatric Nurse Practitioners (PNP), who volunteered to help with data collection, completed the training, and were added to the study as investigators.

The initial proposal did not include an incentive for the teachers. Interestingly, at two of the three teacher meetings where the study was discussed, a teacher raised the issue of offering an incentive for the teachers. Although individual teacher incentives were not distributed, a $90 gift card (funds left over from the child incentive budget) was given to each of the seven principals to use at their discretion as a thank you for participating in the study.

Collection of data. Data collection was done in the school setting and coordinated through the school nurse. The rooms used for administering the survey and obtaining the children's heights and weights varied by school. Some of the nurses' offices were as large as a classroom and contained tables and chairs where the survey could be administered and privacy screens could be used for the measurements. Nurse offices were used in three of schools. In one school, the gym was used (tables and chairs were brought in) as well as an audio-visual office. A large arts activity center which included tables and chairs, provided the setting for data collection at another school. In the two remaining schools, a gym and cafeteria were used for data collection. In all settings, privacy screens were used during height and weight measurements, one child at time.

Prior to collecting the data, the principal investigator (PI) and one of the PNP co-investigators organized the consent and assent forms as well as the Child Information Sheet. Either the PI, one of the co-investigators, one of the school nurses, or the Health Services Coordinator administrative assistant then would go the child's classroom and escort the children to the area where the data was collected. The school nurses had informed the teachers of this process the day before data collection began. Additionally, some of the schools included an announcement about the data collection in their morning schoolwide broadcast. The number of children brought to the data collection area varied from a minimum of one to a maximum of seven. Several factors influenced the number of children brought in at each time, including the size of the room, the number of co-investigators available to assist with data collection, and number of participants. These factors also impacted the number of visits necessary to complete data collection at each school. One school required three

appointments to complete data collection; one required two appointments, and five required one appointment.

Only children whose parent had signed a consent form and children who had given assent were included in the study. While the majority of children had signed the assent form, which was included in the information packet, many of them did not remember signing the form. Before beginning data collection, verbal assent was obtained by explaining to the children the following:

- You will be looking at pictures of figures of children and asked to select a figure that looks most like you on the first page.

- On the second page, you are asked to select a figure that looks like what you would like to look like.

- You then will have your weight and height measured privately behind a screen.

- If at any time you do not want to participate, you can return to their classroom.

- You will receive a $10 gift card to Walmart as a thank you for participating.

    None of the children declined to participate.

Survey administration. The children were given a folded paper with their specific study code number and the appropriate CBIS$^{©}$ (Appendix T-1, T-2, U-1, U-2). The following directions were given to the children: Select the figure that most looks like them (first CBIS$^{©}$). Then they were asked to look at the CBIS$^{©}$ (appropriate to gender) on the second page and select the body figure they would most like to have (ideal figure). When groups of children were completing the survey at the same time, they were reminded to look only at their paper (survey) and to turn their paper over upon completion. The only identifiers on the completed papers were the code number and date of birth. The master sheet with student

names, code numbers, and dates of birth is kept by the PI in a locked file in the office of the

PI at the College of Nursing (CoN) at UNM. Per approval by the Human Research

Protections Office (HRPO), this master data sheet will be destroyed after data analysis is

complete.

Height and weight measurements (see instrument section for type of scales to be

used) were completed behind privacy screens, one child at a time. One child became "teary

eyed" at the point when she was being weighed, saying that, "I am just so big." I explained to

her that she also was tall and discussed with her the importance of being healthy rather than

focusing on a number. No other child showed obvious signs of distress during data

collection; however, several of the children wanted to know their height and weight and to

know if they were "fat." The PI and co-investigators dealt with this issue by letting these

children know their height and weight and talking to them about the importance of health

rather than their weight. The participants received a $10 Walmart gift card after the data

collection for each child was completed, and they returned to their classroom.

After completing data collection at each school, the PI entered the date of data

collection, date of birth, and the child's height and weight into the Children's BMI Tool for

Schools (CDC, 2011c). This Excel spreadsheet was utilized to calculate BMI and BMI

percentile. Percentiles for height and weight were calculated using an online growth chart

percentile calculator (http://pediatrics.about.com/cs/growthcharts2/a/percentiles.htm) based

on the CDC 2000 growth charts. Letters then were sent to all parents who asked to receive

their child's results. Parents who signed the English consent forms and indicated they wanted

these results received the English version of the results letter (Appendix V), and parents who

signed the Spanish consent forms and indicated they wanted these results received the

Spanish version of the results letter (Appendix W). Result letters were sent to those parents

who did not indicate their preference for receiving results. From the final sample size of 424,

13% (n = 55) of parents received the Spanish results letter; 3.3% (n = 14) opted not to receive

the results letter; and 1.1% (n = 5) did not mark a preference (a results letter was sent).

The result letters were placed in a sealed security envelope with the child's name

written on the outside of the envelope. All result letters were returned to the appropriate

teacher and then given to the children to take home to their parents. The PI's contact

information was included in the results letter with the instructions that if the parent had any

concerns about their child's results, they could contact the PI. One phone call was received

from a mother who was upset that her daughter was in the overweight category and that her

daughter's perceptions regarding weight were not included in the letter. The mother said her

daughter was active in karate, did not watch a great deal of television, and that she made sure

her daughter had a good diet. I commended the mother on these "healthy habits," reinforced

that this measurement was not diagnostic and discussed with her that the results related to

perception would be presented at a school forum when the analysis was complete. No other

parents contacted the PI with concerns regarding their child's results.

Instruments

The CBIS$^©$ (see Appendix C and D) was the instrument selected to test the two

hypotheses. Permission was gained to utilize the CBIS$^©$ for this study from Dr. H. Truby,

who developed the CBIS$^©$ (personal communication, August 24, 2011). Truby noted that the

CBIS$^©$ has not been used in children aged 6 and younger and that in children as young as 7,

and for boys in particular, the accuracy of body-size perception is questionable. Truby

granted permission to use this scale with the condition that it not be altered in any way and

that use of the CBIS[©] be referenced in reports and publications that may arise from this research project.

   Validity. The CBIS© was administered to 312 children aged 7-12 in Victoria, Australia (Truby & Paxton, 2002). Construct validity was determined by using a survey of two questions: Do you think your body is: 1. much too thin, 2. too thin, 3. just right, 4. a little too fat or, 5. much too fat? and Would you like your body to be: 1. much thinner, 2. a little thinner, 3. stay the same, 4. a bit fatter or, 5. much fatter? (Truby & Paxton, 2002, p. 192). None of the boys described themselves as much too thin; 13% selected too thin; 72% selected just right; 9% selected a little too fat; and 6% selected much too fat. The results for the girls were similar to that of the boys in that 3% selected much too thin; 15% selected too thin; 66% selected just right; 15% selected a little too fat; and 1% much too fat. In terms of the question related to being thinner or fatter, 1% of the boys selected much thinner; 30% selected a little thinner; 54% selected stay the same; 15% selected a bit fatter; and none selected much fatter. Of the girls, 1% selected much thinner; 41% selected a bit thinner; 46% selected stay the same; 11% selected a bit fatter; and none selected much fatter.

   A subset of 133 students participated in assessments of three additional body image and eating behavior tools. On the Body Esteem Scale (BES), four items were aimed at assessing weight dissatisfaction. The Cronbach's alpha for this sample was .84. A BES-Weight subscale of three items resulted in a Cronbach's alpha of .61. Although this is below the recommended level of 0.7, Field (2005) notes that it is not uncommon to have a Cronbach alpha of less than 0.7 for questionnaires with fewer than 10 items. The 10-item Dutch Eating Behaviour Questionnaire-Restraint Scale (DEBQ-R) was administered to assess dieting behavior. Although the Cronbach's alpha for this scale was 0.89, the authors caution that

there is some question about the ability of children younger than 12 to fully comprehend the items on the scale.

   Reliability. The reliability of the CBIS© over time (three-week period) was tested by administering the tool to 281 children in Grades 3 through 6 (aged 7-11) in the United Kingdom (Truby & Paxton, 2008). Of the total participants, 141 were girls (mean age 8.9 years), and 142 were boys (mean age 8.9 years). The mean BMI (not percentile) for the total sample was 17.9. Mean scores using paired t tests were not significantly different between times one and two (three-week period). The correlations between times one and two were significant for girls and boys across all categories (perceived BMI, ideal BMI, perceived-ideal discrepancy score, and actual-perceived discrepancy score) at $p < .001$. The r values were strong, ranging from 0.67 to 0.87, which demonstrates solid test-retest reliability of the CBIS©. Truby and Paxton note that the interview for boys could be improved if the question related to fatness (ideal figure) was changed to represent being more broad or muscular, thus possibly leading to further insight related to gender differences regarding ideal body shapes.

   Limitations. In terms of limitations, the authors correctly note that the CBIS[©] has been tested almost exclusively in White populations. Additionally, the figures used are based on pictures of White children. Gardner and Brown (2010), in their review of figural drawing scales, argue that figures containing facial features or clothing (such as those in the CBIS[©]), rather than a plain silhouette, may distract participants from focusing on the size and shape of the drawing. Utilizing the CBIS[©] in this study, where 70% of participants are Hispanic, will provide initial data regarding the use of this tool in this population.

Summary and Introduction to Three Manuscripts

The prevalence of childhood obesity continues to increase with higher rates seen in minority populations (Ogden et al., 2012; Wang et al., 2008). Obesity in childhood has serious physical and psychosocial consequences (CDC, 2011a; Sjoberg et al., 2005; Sullivan, 2010). The purpose of this study is aimed at examining children's perceptions regarding weight in order to help frame successful prevention and intervention programs.

One of the first steps in designing any program is to have a good understanding of the problem. The first manuscript (Chapter 2) *Childhood obesity: A Wilsonian concept analysis,* which has been published in the *Journal of Pediatric Nursing,* is a concept analysis of childhood obesity. This concept analysis provides a clarification of the scientific usage of the term obesity as applied to children and includes both operational and conceptual definitions. Four cases, a model, related, contrary, and borderline case, are presented to help clinicians understand how overweight and obesity are used in relation to children. The social and emotive contexts also are discussed. Clarification of the concept is aimed at helping parents and clinicians understand the meaning behind the words overweight and obesity.

The second paper (Chapter 3), yet to be published, is tentatively titled *Study of children's self-perception regarding weight: Successful strategies for conducting weight-related research with rural Hispanic children in elementary schools.* The intended journal for this paper is *The Journal of School Health.* The purpose of this paper is to describe strategies that were utilized in planning, recruiting, and collecting data for this study, resulting in a response rate of 42% (n = 424 out of 1,014 eligible). The paper will discuss the planning necessary when conducting research in school settings as well as the considerations that are specific to rural and Hispanic populations (i.e., travel, language barriers, etc.).

Specific strategies, such as early involvement of administrators and school nurses, as well as the need for sufficient research assistants, will be highlighted. The publication of this paper is intended to encourage research in school settings by providing strategies that minimize the disruptions for the students and teachers.

The third paper (Chapter 4) will present the results of the study. The tentative title for this yet unpublished paper is *Results of children's self-perception regarding weight in a rural Hispanic community,* and the intended journal is *Pediatrics.* The third paper will discuss the significance of the finding that the overweight and obese children in this sample do not accurately perceive themselves as either overweight or obese. Building on the two previous papers, the concept analysis and successful strategies for doing research in schools, the third paper will discuss the implications of this result in terms of developing obesity prevention and treatment programs.

The final chapter (Chapter 5) of this dissertation will be a comprehensive discussion of the findings. Recommendations for additional research related to the importance of understanding children's perceptions regarding weight will be included.

Chapter 2

Childhood Obesity: A Wilsonian Concept Analysis

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Childhood Obesity: A Wilsonian Concept Analysis

Using data drawn from the 2007-2008 National Health and Nutrition Examination Survey (NHANES), Ogden, Carroll, Curtin, Lamb, and Flegal (2010) reported that 17% of children in the United States between the ages of 2 and 19 years are obese. This rate has tripled since 1980. According to the Centers for Disease Control and Prevention (CDC, 2010), the combined prevalence rate for overweight and obese children aged 2 through 19 years is 31.9%. Furthermore, the rates for obesity in both adults and children are predicted to increase over the next several decades. Based on a recent epidemiologic study, Wang, Beydoun, Liang, Caballero, and Kumanyika (2008) projected that by the year 2030, approximately 51.1% of all American adults will be obese. For children and adolescents, the authors estimated that the prevalence of obesity will increase to approximately 30%.

Obesity has serious consequences. Complications of obesity include coronary heart disease (CHD); type 2 diabetes mellitus (T2DM); endometrial, breast, and colon cancers; hypertension; dyslipidemia; stroke; liver and gallbladder disease; sleep apnea; osteoarthritis; and gynecologic problems, such as abnormal menses and infertility (CDC, 2009b). Effective treatment and prevention strategies need to be implemented to reverse the trends of obesity in the United States. The first step in planning any intervention is to have a clear understanding of the problem. The purpose of this analysis is to clarify the scientific usage versus the perception associated with the term *obesity* as applied to children using the Wilson (1963) method of concept analysis. The goal of such an analysis is to provide information that could be used to influence the development of successful strategies to prevent as well as combat childhood obesity.

Selection of the Concept and Right Answers

Several disciplines, including medicine, nursing, philosophy, social sciences, humanities, and anthropology, were identified as having involvement with the concept of obesity. The following online databases were searched for related articles: Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, Philosophers' Index, Academic Search Complete, and Anthropological Literature. Initially, obesity was the only search term entered; however, simply entering this one word resulted in more than 22,000 entries in CINAHL and more than 15,000 in PubMed. Therefore, the following inclusion criteria were developed: English-only articles, children from 0 to 18 years, human research, and the use of the term *identification* in relation to obesity. The search was also limited to articles published between 2003 and 2010. With these limits applied, the CINAHL search resulted in 58 articles, and the PubMed results decreased to 615 articles. The Academic Search Complete resulted in 89 articles, whereas the Philosophers' Index produced 19 articles. Anthropological Literature resulted in 44 articles. Relevant articles retrieved from these databases were reviewed. Additionally, the *Oxford English* and *Merriam-Webster* online dictionaries and *Roget's Thesaurus* were consulted for definitions of the word obesity ("Obesity," 2010a, 2010b).

Wilson (1963) discusses the need to isolate the questions of a concept, noting that a concept does not necessarily contain just one question but usually deals with several. In his discussion of right answers, he notes that, in general, there are no clear-cut solutions to questions of concept. More often than not, when someone is asked about the use of a particular concept, Wilson states that the answer is usually, "It depends what you mean by . . . ." (p. 24).

Definitions of pediatric overweight and obesity in the United States are currently

based on calculating the child's body mass index (BMI) by dividing the weight in kilograms

by the height in meters squared and then comparing this calculation to sex-specific and age-

specific values (CDC, 2009a). Although these definitions are utilized in the United States, no

one classification system for childhood obesity is universally accepted (Neovius, Linné,

Barkeling & Rössner, 2004). Several authors note that the nomenclature for overweight and

obesity has varied over the years, and the cut-off points defining overweight and obesity

have, to some degree, been arbitrarily defined (Flegal, Tabak, & Ogden, 2006; Neovius et al.,

2004; Ogden & Flegal, 2010).

In addition, when dealing with childhood obesity, parental consent and involvement

are needed. For parents to become involved, they must first be aware that their child is obese.

Several studies have shown that parents have very low levels of recognition regarding their

children's obesity (Durand, Logan, & Carruth, 2007; Eckstein et al., 2006; Grimmett, Croker,

Carnell, & Wardle, 2008; Jackson, McDonald, Mannix, Faga, & Firtko, 2005; Reifsnider et

al., 2006). Walker and Avant (2005) state, "When concepts are already available in the area

of interest but are unclear, outmoded, or unhelpful, the second situation occurs in which

concept development is needed" (p. 37). To design effective prevention and intervention

programs based on outcome measures, nurses and other health care providers need to have a

thorough understanding of the concept of childhood obesity.

Uses of the Concept

Terminology. The literature uses a variety of terms when discussing obesity,

including *overweight*, *at risk for overweight*, *adiposity*, *BMI*, and *fat*. The *Oxford English*

Dictionary online ("Obesity," 2010b) defines obesity as the condition of being extremely fat

or overweight, whereas *Merriam-Webster's Online Dictionary* ("Obesity," 2010a) defines it as a condition characterized by the excessive accumulation and storage of fat in the body. Stunkard, LaFleur, and Wadden (1998) discussed a Japanese scroll from the 12th century, which portrays obesity as a disease state. The woman depicted in the scroll is described as follows:

> She ate all kinds of rich foodstuffs, her body became fat and her flesh too abundant. She could not walk easily and when doing so she needed the help of her servant-girls. Even with assistance, however, she perspired profusely, gasped for breath and suffered without let-up. (p. 1141)

Sweeting (2007) made the distinction that body fat or adipose tissue defines obesity, not weight. She used a cut-off level of 30% fat in females and 20% to 25% fat in males to define obesity; however, she did not cite any cut-off levels for children. She did discuss the differences in body fat among races, citing a lower percentage among Black African children and a higher percentage among some Asian and Hispanic groups (compared with Caucasians). Sweeting classified the methods for measuring body fat into four main categories: density-based, scanning, bioelectrical impedance, and anthropometric. Density-based methods include underwater weighing and air displacement plethysmography. Scanning methods include computerized tomography and magnetic resonance imaging. Bioelectrical impedance analysis evaluates fat based on electrical currents. Anthropometric methods include skinfold measurements, waist circumference, and waist–hip ratio. Whereas BMI determines weight in relation to height, measuring body fat is a more complex process involving more intrusive measurements than BMI.

Operational and conceptual definitions. Adolphe Quetelet, a 19th-century Belgian astronomer, mathematician, and statistician, is credited with developing the formula for BMI (Oliver, 2006). Quetelet collected height and weight measurements from men in the French and Scottish armies. He determined the average weight of these men and noted that the average was proportional to their height squared. Quetelet was enamored of the concept of the mean. He believed that "actual individuals are mere imperfect copies of the virtuous golden mean" (Gigerenzer et al., 1989, p. 54). Thus was born the formula for BMI.

Originally, children with a BMI at or between the 85th and 95th percentiles for age and sex were defined as being at risk for overweight. Children with a BMI at or above the 95th percentile for age and sex were defined as overweight, not obese. According to Ogden and Flegal (2010), the decision to use the term overweight for a BMI at or above the 95th percentile rather than the term obesity was due to the fact that BMI did not directly measure fat. It was the intent that children who were deemed overweight would then have additional assessments to determine who was actually obese as opposed to overweight. Children identified as obese would have more in-depth assessments and evaluations.

The current changes in terminology began with the publication of the Institute of Medicine's (IOM) report, *Preventing Childhood Obesity: Health in the Balance* (Koplan, Liverman, & Kraak, 2005). Although the authors noted the limitations of using BMI to define obesity as well as the stigma associated with the word obese, they determined that "the term 'obese' more effectively conveys the seriousness, urgency, and medical nature of this concern than does the term 'overweight,' thereby reinforcing the importance of taking immediate action" (p. 80). The authors also concluded that there was sufficient evidence that

high BMIs in children were also associated with comorbidities, such as high blood pressure, elevated lipid levels, and insulin resistance.

Whereas the IOM report utilized the term "obese" to refer to children (ages 2-18 years) whose BMI was at or greater than the 95th percentile for age and gender, the American Medical Association Expert Committee report recommended using both "obesity" and "overweight" (Barlow & the Expert Committee, 2007). This committee recommended replacing "overweight" with "obesity" (BMI ≥ 95th percentile) and replacing "at risk for overweight" with "overweight" (BMI at 85th-94th percentile). Recognizing the limitations of BMI, the authors noted that "clinicians should rely on BMI as a *useful tool* [emphasis added] that triggers concern and assessment but they should recognize that other clinical information influences the need for intervention" (p. S-167).

Currently, the CDC (2009a) defines children with a BMI in the 85th to < 95th percentiles as overweight and those with a BMI ≥ 95th percentile as obese (all values standardized for age and sex). The International Obesity Task Force (IOTF) and the World Health Organization (WHO) define obesity for 18-year-old children as having a BMI that passes through the points of 25 and 30 kg/m^2 (Sweeting, 2007). Sweeting (2007) raises the question about the utility of having a single definition for obesity by stating that "ethnic differences in body composition and the percentage of body fat associated with adverse health consequences mean that a single definition of obesity may not be appropriate" (p. 5). Articles vary as to which definition is used, with some authors using the CDC definitions and others using the definitions provided by the WHO or the IOTF. The terms obesity and overweight are often used interchangeably, even though they actually have two very different definitions as well as varying methods of measurement.

Walker and Avant (2005) discussed the fluidity of concepts, noting that concepts do, in fact, change over time, which has been the case with the conceptual definitions of obesity. James (2008) discussed the epidemiology of obesity, noting that the origin of "normal" weights was derived from U.S. insurance statistics related to death rates. The burden of disability from a disease was not factored into these normal weights. Additionally, the normal BMIs tended to be based on selected societies because little to no data were available from the Middle East, Latin America, Asia, or Africa.

Like Sweeting (2007), James (2008) discussed the confusion surrounding the use of the NHANES data to determine the cut-off points for BMI, particularly with the use of mortality rates to establish the cut-off points. James made a case for using a method called receiver operating characteristics to determine the BMI cut-off points. This method is meant to set cut-off points based on sensitivity and specificity analyses related to complications from weight gain. In terms of pediatrics, James noted that although the problem of childhood obesity was gaining recognition in the United States in the early 1980s, it took longer for the international community to recognize it as a problem outside of Western countries. It was not until 2000 that the IOTF established standard definitions for child overweight and obesity based on a research study presented by Cole, Bellizzi, Flegal, and Dietz (2000). This study included 97,876 males and 94,851 females from birth to 25 years of age from Brazil, Great Britain, Hong Kong, the Netherlands, Singapore, and the United States. Body mass index cut-off points for overweight and obesity by sex and age (2-18 years) were defined as passing through the adult BMI values of 25 and 30 kg/m^2, respectively. This definition of pediatric overweight and obesity, although not perfect, does recognize that childhood obesity is not a problem solely found in Western countries.

Synonyms. No synonyms were found for the word obesity. Synonyms for the words obese ("Obese," 2009) and overweight ("Overweight," 2009) were exactly the same and included: *having too much flesh, corpulent, fat, fatty, fleshy, gross, overblown, porcine, portly, stout*, and *weighty*. It is interesting that the synonyms for obese and overweight were the same, whereas the definitions for these two words were quite different. As previously mentioned, it is not unusual to find the terms overweight and obesity used synonymously in the literature. Synonyms for the word fat included: *adipose tissue, excess, glut, overage, overflow, overrun*, and *overstock* ("Fat," 2009).

Although no uses other than medical were found for the term obesity, obese is often used as an adjective to describe everything from corporate executives to the U.S. government. Also, a new related word, *obesogenic*, has found its way into the literature. The *Oxford English Dictionary* online ("Obesogenic," 2010) noted that this word was first used in 1983. It is defined as tending to cause obesity and is used as a reference to factors that contribute to obesity, such as inadequate exercise and the availability of high-calorie foods. The definition also noted that nutritionists identify society as obesogenic.

Antecedents. Walker and Avant (2005) defined antecedents as "those events or incidents that must occur prior to the occurrence of the concept" (p. 73). Additionally, they noted that antecedents cannot be a defining attribute or a consequence. At its most basic level, pediatric obesity is the occurrence of an imbalance between energy being taking in and energy being expended (Daniels et al., 2005). There are many issues that contribute to this imbalance including genetic, environmental, and behavioral factors.

In their review of obesity in children and adolescents, Schneider and Brill (2005) noted that there is a genetic component to obesity. Children younger than 10 years of age

who have obese parents have more than double the risk of becoming obese adults. Studies of twins reveal that the rate for inheriting obesity is as high as 40% to 70% (Schneider & Brill, 2005). Additionally, alterations in the levels of certain hormones, such as leptin, have been associated with obesity. Environmentally, children are less active, spend more time watching television and playing video games, and spend less time engaging in physical activities than previously (Perrin, Finkle, & Benjamin, 2007; Schneider & Brill, 2005). James (2008) noted the decline in walking and cycling due to safety issues and the lack of adequate bike and pedestrian paths. Additionally, fast foods are more available, and the consumption of fruits and vegetables has decreased (James, 2008; Schneider, & Brill, 2005; Wofford, 2008).

Golan and Crow (2004) discussed the changes that have occurred in home eating patterns. More meals are being consumed away from home, children have more access to sweet snacks, and there is less supervision of what snacks are consumed. All of these antecedents lead to the development of childhood obesity and its consequences.

Consequences. Numerous studies have documented the risks and consequences associated with childhood obesity, including T2DM, metabolic syndrome, hyperandrogenism, hypertension, heart disease, asthma, sleep disorders, nonalcoholic fatty liver disease, gallbladder disease, Blount's disease, and pseudotumor cerebri (Daniels et al., 2005; Flynn et al., 2006; Schneider, & Brill, 2005; Speiser et al., 2005). The consensus statement on childhood obesity written by Speiser et al. in 2005 discussed all of these consequences and their implications for the health of children. The authors cited the fact that in pubertal children, T2DM accounts for up to one fifth of the new diagnoses of diabetes in the United States, Europe, Japan, and Australia.

In terms of metabolic syndrome, there are currently no criteria that are specific to children; however, Speiser et al. cited the rate of metabolic syndrome in children as 4.2% when adult criteria are used, with it increasing to nearly 50% in severely obese children when modified criteria are applied. Of particular concern is the effect that childhood obesity has on CHD. A seminal study on the effects of childhood obesity on the cardiovascular system was conducted between 1973 and 1991 on a selected population in the city of Bogalusa, Louisiana, and became known as the Bogalusa Heart Study (Freedman et al., 2004). Overall, more than 12,500 persons, including children, completed studies related to the Bogalusa Heart Study. Freedman et al. (2004) examined participants (203 men, 310 women) who had measurements of BMI and triceps skinfold thickness performed between the ages of 4 and 35 years. They then assessed the relationship of these traits to the carotid intima-media thickness (an index of generalized atherosclerosis) at age 35 years. They found that adult intima-media thickness was associated with both BMI and triceps skinfold thickness. High intima-media thickness levels were seen in overweight children who became obese adults, whereas overweight children who were not obese in adulthood, as well as thinner children who became obese adults, did not have these high intima-media thickness levels.

In addition to the physical consequences of pediatric obesity, there are also psychological consequences, as well as issues related to bias and discrimination. An interesting study conducted by Murtagh, Dixey, and Rudolf (2006) surveyed the opinions of obese children. Although the sample size of 20 was small, this study was one of the few analyses that provided data from actual interviews with obese children. The study included children aged 7 to 15 years. These children identified humiliation, social torment, and

exclusion as their primary reasons for wanting to lose weight. All 20 children acknowledged that they had been bullied.

A study conducted by Young-Hyman et al. (2006) examined depression, anxiety, body size dissatisfaction, and weight-related peer teasing in 164 children (83 girls, 81 boys). The average age of the participants was 11 years, 9 months. Fifty-eight of the subjects were Black, and 106 were White. Overall, the authors found that heavier children reported more psychological and weight-related distress. Boys reported less weight-related stress than girls, and Black children reported more anxiety and body size dissatisfaction than White children. It should be noted that the study did not use the word obese, but rather used the definitions of at risk for overweight and overweight as associated with BMI.

Puhl and Latner (2007) provided an exhaustive review of the literature involving stigma and obesity in children. They concluded, "The stigmatization directed at obese children, by their peers, parents, educators, and others, is pervasive and often unrelenting" (p. 574). Furthermore, they suggested that experiencing weight stigma may actually account for an increase in blood pressure and other physical responses because obese children are exposed to persistent psychosocial stress.

Puhl and Brownell (2001) noted that there are no federal laws prohibiting discrimination against obese individuals; however, some states do have laws prohibiting discrimination on the basis of physical characteristics, including weight. In terms of nurses, one study (Bagley, Conklin, Isherwood, Pechiulis, & Watson, 1989) found that 24% of nurses ($N = 107$) were repulsed by obese patients. In a comprehensive review of nurses' attitudes toward obese *adult* patients, Brown (2006) critiqued the Bagley et al. (1989) study, accurately noting that the report is only four paragraphs long and does not provide sufficient

detail regarding the methodology. The *Web Of Knowledge*[SM] (2010) database reports that the

Bagley et al. study continues to be cited (at least 30 times through 2010), implying that the

study accurately reflects nurses' attitudes toward *adult* obese patients. Brown (2006)

concludes, however, that although the studies do suggest a bias by nurses against obese

(adult) patients, the methodology of the studies, including the study by Bagley et al. (1989),

is weak, and further research with more rigorous methodology is needed.

In terms of understanding a concept, Walker and Avant (2005) and Wilson (1963)

both advocate for the development of cases to clearly demonstrate what the concept is as well

as what it is not. Model, related, contrary, and borderline cases are presented to further

clarify the concept. Except for the borderline case, all of the cases are taken from the first

author's practice as a pediatric nurse practitioner in an ambulatory pediatric setting. The

names have been changed, and any information that could identify the subject has been

eliminated.

Model case. Ben was a 9-year-old boy who was being seen for a well-child

examination. He was 54.25 inches tall (75th percentile) and 108 pounds (> 97th percentile).

His BMI was 26 kg/m^2 (> 95th percentile). His blood pressure was 138/78 mm Hg, which is

above the 99th percentile for the systolic reading and at the 90th percentile for the diastolic

reading. He had asthma, and his medications included 5 mg of montelukast daily, 100 mcg of

fluticasone and salmeterol daily, and albuterol, as needed. His maternal great-grandmother

had T2DM and hypertension.

Ben lived with his mother and two siblings (3 and 14 years of age). His father was not

involved. His mother worked outside the home and stated, "We all struggle with our weight."

Ben was in the fourth grade and was performing well, with grades of As, Bs, and a few Cs.

His diet history revealed that he ate breakfast and dinner at home and lunch at school. His mother reported that he ate mostly bread, meat, and potatoes, and consumed about 24 ounces of juice per day and an average of two soda cans per week. The family used whole milk, and Ben consumed between 8 and 16 ounces per day. He drank low-fat (2%) milk at school with his lunch.

Ben played football in the Young American Football League (YAFL) in the fall; otherwise, he mostly watched television and played video games. He slept through the night without difficulty. His physical examination was normal, with the exception of an elevated blood pressure level and the fact that he had gained 14½ pounds since his last well-child visit a year earlier. The average weight gain for a child Ben's age is 4 to 7 pounds per year.

Because Ben's blood pressure was abnormal, a follow-up appointment was made for 2 weeks. Ben's blood pressure remained elevated at the next visit, so a third appointment was made. Because his blood pressure remained elevated at the third visit, a diagnosis of hypertension was made. The diagnosis was discussed with Ben's mother, and laboratory studies and a renal ultrasound scan were ordered. Ben cried. The renal ultrasound was normal; however, Ben's cholesterol level was elevated, at 218 mg/dl (normal, < 200 mg/dl), as was his low-density lipoprotein level, at 140 mg/dl (normal, < 100 mg/dl). His high-density lipoprotein level was normal, at 50 mg/dl (desired is > 40 mg/dl). His triglyceride level was 142 mg/dl (normal, < 150 mg/dl). All other laboratory values, including kidney, liver, and thyroid function tests, were normal. A fasting glucose level was within normal limits. Ben was referred to the cardiology department for an echocardiogram, at which time, he cried again.

His echocardiogram revealed a mild thickening of the interventricular septum and the left ventricular wall, which was interpreted as mild changes and most likely due to the hypertension. Ben was referred to the nephrology department for evaluation of his hypertension, and he cried again. A 24-hour ambulatory blood pressure monitoring evaluation was conducted to assess Ben for "white-coat" hypertension because he was noted to be very anxious whenever his blood pressure was measured. The evaluation revealed normal blood pressure, so Ben was diagnosed with white-coat hypertension.

At Ben's 10-year-old well-child visit, his weight was 127 pounds (**>** 95th percentile), and his height was 57.5 inches (75th percentile). His BMI was 27 kg/m^2 (**>** 95th percentile). His echocardiogram was repeated, with normal results. His total cholesterol level decreased from 218 to 193 mg/dl. His low-density lipoprotein level decreased from 140 to 117 mg/dl, although his high-density lipoprotein level decreased from 50 to 44 mg/dl. His triglyceride level increased from 142 to 160 mg/dl.

Bens' physical examination was normal, with the exception that his blood pressure remained high; however, the nephrology staff diagnosed him as having white-coat hypertension, with instructions to monitor his blood pressure annually and to return if his blood pressure remained consistently above the 95th percentile. His diet was without restrictions, but the family stopped adding salt to their food, and his mother reported that Ben drank little to no juice. She also stated that he was eating more fruits and vegetables. He continued to play in the YAFL in the fall. He gained 19 pounds in 1 year. Ben did not cry at this visit.

Related case. Sarah was an 11-year-old girl being seen for the first time for a well-child examination, with no significant medical and family history. She passed fifth grade and

was scheduled to start sixth grade. Sarah was an only child who lived with her mother and father. She described herself as active, although she was not involved in an organized sport. Her mother reported that she ate a wide variety of foods, including fruits, vegetables, and meats. The family drank 2% milk, and Sarah consumed between 8 and 16 ounces per day. She rarely drank soda. Overall, the majority of meals were consumed at home, although Sarah ate lunch at school. She enjoyed reading and only watched television about 1 hour per day, with perhaps a bit more on the weekend.

Sarah's physical examination was normal, except for her weight, which was 117 pounds (80th percentile). Her height was 60 inches (90th percentile), and her BMI was 23 kg/m^2 (**>** 90th percentile but < 95th percentile). Sarah was overweight but not obese (according to the CDC definitions described earlier). Sarah returned 1 year later for her 12-year-old well-child visit. She weighed 131 pounds (**>** 90th percentile but < 97th percentile) and was 62.25 inches tall (80th percentile). Her BMI was 24 kg/m^2 (**>** 90th percentile but < 95th percentile). Although Sarah was not classified as obese, she had gained 14 pounds in 1 year. If she continued to gain weight at this rate, even with a gradual increase in height, her BMI would inch up and eventually rise above the 95th percentile.

Contrary case. David was an active 3-year-old boy being seen for a well-child examination with no significant medical and family history. He was accompanied by his father, who was concerned because David was such a picky eater. David was an only child who lived with his father and mother. He attended day care for about 6 hours per day during the week, where he ate breakfast and lunch. His father described David as very active, always "on the go," and difficult to get to sit down at meal time. David drank 2% milk at the day care center but did not usually drink milk at home. He rarely consumed juice but did drink

water. He ate fast food two to three times per week. David met all of his developmental milestones, and his physical examination was normal. David weighed 27½ pounds (10th percentile) and was 34 inches tall (5th percentile). His BMI was 16 kg/m^2 (25th percentile).

David's father was reassured about his son's eating pattern and was advised to let him eat when he was hungry, stop when he was full, and focus on a variety of foods rather than quantity. David returned a year later for his 4-year-old well-child visit. His weight was 32 pounds (10th percentile), and his height was 37 inches (5th percentile). His BMI was 16 kg/m^2 (60th percentile). His father remained concerned about David's picky eating habits. The father was informed that David had gained the expected amount of weight for a child his age (4-7 pounds per year) and that although he was small, he was growing. When David returned for his 5-year-old well-child examination, his weight was 36 pounds (25th percentile), and his height was 39.5 inches (slightly above the 5th percentile). His BMI for this visit was 16 kg/m^2 (60th percentile). His father was no longer concerned about his eating patterns.

Borderline. Carlos was a 16-year-old junior high school student who was very athletic. He played football, basketball, and baseball. Carlos lifted weights about four times per week to maintain muscle mass. His weight was 220 pounds (> 97th percentile), his height was 72 inches (90th percentile), and his BMI was 30 kg/m^2 (> 95th percentile). He did not drink soda and ate fast food one to two times per week. He was very conscious of what he ate, and his diet included a wide variety of fresh fruits and vegetables, chicken, and fish. He drank about three glasses of skim milk per day and six to eight glasses of water per day. He rarely had time to watch television and spent about an hour per day on video games. His medical and family history were not significant, and his physical examination was normal.

He had been seen by an exercise physiologist, and his body fat was just below 10%. Although he was obese by CDC standards, he did not meet the true definition of obesity because his body fat was well within normal limits. Carlos will be at risk for obesity if he significantly decreases his exercise pattern and his weight remains the same or increases.

Social context. Wallis Simpson, Duchess of Windsor, is generally credited with the following quote, "You can never be too rich or too thin" (Bartlett, 2002, p. 850). In their review of the literature related to discrimination and obesity, Puhl and Brownell (2001) made the case that the only remaining acceptable form of discrimination is against obese individuals. Childhood obesity has even been questioned as a moral and ethical issue: "*Society as well as individual parents* have both a responsibility and interest in the well being of children. That interest morally justifies state intrusion in familial life to prevent avoidable childhood obesity" (Lotz, 2004, p. 300).

It is rare to pass a magazine rack without seeing numerous headlines on the latest diet or celebrity who has lost weight. Although children are bombarded with media images in which thinness is the ideal, the environment of high-density foods, super-sized meals, and lack of access to physical activity make achieving a normal weight almost impossible.

Obese children who become obese adults face a myriad of social problems. The Yale Rudd Center for Food Policy and Obesity (2008) notes that obese individuals face discrimination in terms of being hired, earn less than non-overweight individuals holding similar positions, and are less likely to be promoted. In terms of health care, overweight individuals are less likely to seek medical care and often do not access preventative health care.

Emotive context. One needs only to take a look at the synonyms for obesity to understand the emotional context of the word. These terms—having too much flesh, corpulent, fat, fatty, fleshy, gross, overblown, porcine, portly, stout, and weighty—are laden with negative connotations. In their study of opinions of obese children, Murtagh et al. (2006) described the humiliation, social torment, and exclusion felt by obese children. When asked about bullying, one of the subjects in the study stated, "You're fat, you're slow, you're ignorant, you're useless" (p. 921). Obese children are often viewed by their peers as lazy, stupid, ugly, mean, and unhappy (Yale Rudd Center for Food Policy and Obesity, 2008).

Practical results. Wilson (1963) discussed the need to consider practical results that arise from a concept analysis. As noted previously, the terms obesity and overweight are used interchangeably, when in fact they have very different meanings. Clarifying the meaning of the word obesity will assist clinicians and researchers not only to accurately identify those children who meet the CDC definition of obesity but also to consider the individual impact this diagnosis has on both the child and the family. Identification is the first step in terms of developing successful prevention and treatment strategies aimed at decreasing the prevalence of childhood obesity. Additionally, clarifying the concept may help parents of obese children to actually recognize that their child is obese and act on this information. A study by Rhee, DeLago, Arscott-Mills, Mehta, and Davis (2005) demonstrated that parents who perceived that their child's weight was a health problem were more likely to be in an "action" stage of change than parents who did not perceive that their child's weight was associated with health problems. A more accurate understanding of obesity would help parents to be aware of the factors that contribute to childhood obesity and to recognize when their child is obese and the health consequences associated with the problem.

Results in language. In terms of the language, the word fat is more often cited in popular literature than the term obesity. Writing in a magazine intended for teen readership, Paulos (2006) described the negative words and phrases used by teen girls to describe their bodies, such as, "You're so fat, or Your butt looks huge" (p. 7). Paulos makes the point that the language of fat is widespread among teenage girls and women and is also becoming more prevalent among teen boys.

The familiar saying "It ain't over until the fat lady sings" is used frequently in contemporary language (Bartlett, 2002, p. 850). The quote is meant to evoke a picture of a very large female opera performer singing the final aria. Most typically, this phrase is used to refer to a sporting event in which the score is either tied or very close.

The word *food* appears in many famous quotations. One of the most intriguing quotes stems from the 1700s. "Tell me what you eat and I will tell you what you are" is attributed to the French gastronome, Jean Anthelme Brillat-Savarin (Bartlett, 2002, p. 370). This quote is still in use today and has the connotation that food is responsible for the personality of an individual.

Questions of concept and defining attributes. How is obesity truly defined in children? What is the difference between obesity and overweight? As previously discussed, overweight and obesity are often used interchangeably when in fact they are different concepts. Obesity is the excessive accumulation and storage of fat in the body, whereas overweight is determined by cut-off points for BMI. However, because the methods for measuring fat are more difficult than obtaining height and weight measurements, standards have been developed to define obesity based on BMI. The defining attributes for obesity include the following: BMI for sex and age, $\geq$ 95th percentile (CDC definition); BMI for sex

and age, which passes through the adult BMI of 30 kg/m^2 (IOTF definition); and skinfold or waist circumference measurements that exceed established norms in children. These defining attributes are in contrast to antecedents such as genetics, decreased physical activity, and more access to sweetened snacks, which precede the occurrence of obesity.

Reanalyze initial concept. Wilson (1963) discussed the need to have an internal and ongoing dialogue regarding the process of analysis. One of the first steps in this analysis is to search for definitions of the concept and to explore meanings in both the scientific and popular literature. Although no additional uses for the term obesity were found other than in the health literature, related readings from philosophy and psychology helped to provide a more complete analysis of the concept. The process of case development also aided in the iterative process of analysis because one has to reexamine the meaning of the concept to clearly identify appropriate cases.

The initial review of the literature demonstrated confusing definitions for exactly what constitutes obesity. Although it is possible to identify defining attributes, it is more likely that different definitions of obesity are necessary. Certainly, there are different definitions regarding adult versus childhood obesity. As more research is conducted regarding childhood obesity, it seems necessary to have differing definitions based not only on age and sex but also related to race and ethnicity.

Potential uses of this concept analysis. The goal of this concept analysis is to clarify the concept of childhood obesity to assist in the development of successful strategies to prevent as well as combat childhood obesity. It is generally accepted that childhood obesity involves an imbalance between calories consumed and calories expended. However, the causes of this imbalance are complex and multifactorial. Accurate identification of the

antecedents of obesity assists researchers and clinicians with the development of prevention strategies. Recognizing that one definition for obesity may not fit all children may assist researchers in finding successful strategies for dealing with the problem of obesity in different populations. Clarification of the concept also helps parents to identify when there is an issue with their child's weight and to understand the health consequences of obesity. Olshansky et al. (2005) have predicted that if the prevalence of obesity continues to increase, children will have a shorter life expectancy than their parents. Clarification of the concept of childhood obesity is the first step in preventing this potential tragedy.

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Chapter 3: Successful Research Strategies With Small Grant Resources: Children's

Self-Perception of Weight in a Rural, Hispanic Community

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Acknowledgments

Abstract

Background: We describe the strategies employed in conducting a successful study of children's self-perception regarding weight utilizing limited grant funding and a limitation of 5 months for recruitment, consent/assent, and data collection. This study was conducted in a rural school district in New Mexico in a predominately Hispanic community.

Methods: Recruitment consisted of community engagement on multiple levels and use of incentives for participants, nurses, and schools. Study materials were printed in both English and Spanish. Volunteer research assistants were utilized for data collection. The total budget for this research was $10,400.

Results: Recruitment and data collection occurred over 2 and 3 months, respectively. The participation rate was 42%. Expenditures were 2% under budget, with incentives accounting for 56% ($5790) of the budget. Grade level, gender, and race/ethnicity were not found to be significantly associated with study participation.

Conclusions: Early involvement of school and community personnel is crucial. Challenges in rural settings include the added expense and time involved in travel. Spanish-speaking populations need study materials in Spanish. Study personnel who speak Spanish are an asset. Limited budgets necessitate the exploration of involving volunteers to assist with the research process.

Keywords: child, self-perception, rural, Hispanic.

Although strategies related to successful consent, recruitment, and retention activities for implementing obesity-related research in school settings have been published, these strategies have been based on studies with relatively large budgets and multiyear commitments. The purpose of this article is to describe the challenges and strategies for conducting weight-related research when resources are limited. The exemplar for this article is a 2012 study of children's self-perception of weight in a rural, primarily Hispanic, elementary school setting.

Background

Many articles discuss successful recruitment strategies for school-based research.[1-7] However, few provide actual figures related to the amount spent on recruitment. Although 2 studies were identified that provided actual figures related to the cost of recruitment, both involved randomized controlled studies related to pediatric obesity.[8,9] Raynor et al. reported the cost of passive and active recruitment methods, evaluating these methods within the context of a randomized controlled study for pediatric weight control trials.[8] Active recruitment included pediatrician referral and targeted mailings, and depended on participants being identified by either the researcher or health care provider. Passive recruitment consisted of newspaper, bus, and Internet advertisements, and distribution of study information at different community events and centers. This method relied on participants self-identifying for the study. The cost of recruitment over a 22-month period was slightly more than $90,000 for an enrollment of 164 randomized families. The least expensive methods of recruitment were advertisements on the Internet and on employee earnings statements from school of medicine-affiliated hospitals. These methods yielded the fewest families (3 and 2, respectively). The most successful strategies, pediatrician referral

and targeted mailings, were also the most expensive, with mailings costing $45,746.78. The authors recommended the use of multiple recruitment strategies, noting that researchers need to be aware of the significant amount of resources that need to be allocated for recruitment.

Robinson et al. reported a cost of $25,817.06 to recruit 70 randomized families for their obesity prevention trial involving young children.[9] The average cost per randomized family in this study was $368.82. More families were recruited using direct mailings which proved to be the least expensive method of recruitment per family ($227.76/family). Newspaper ads and posters and brochures proved to be the most expensive strategies.

The role incentives may have played in recruitment in the studies by Raynor et al.[8] and Robinson et al.[9] is not discussed. However, incentives are frequently recommended as a recruitment strategy in school-based research and can consume a great deal of a research budget.[10] Recipients of incentives in schools may include several groups: children, parents, teachers, nurses, classrooms, and entire schools. Child incentives must be appropriate for the type of study being conducted, need to take into consideration the age of the child, and must not be considered coercive.[11] Some institutions require Social Security numbers, home addresses, and signatures of children receiving monetary incentives. Rice and Broome noted that in some cases, monetary incentives are required to be distributed to the parents of participating children.[11] These types of accounting requirements may not only place the principal investigator (PI) at odds with the human resource and protection office (HRPO), but may lead to less participation, particularly among vulnerable populations.

Recruitment strategies play a large part in determining the success of a research project and can be both time-consuming as well as expensive. The recruitment strategies included in this article are discussed within the context of a successful study of children

between the ages of 8 and 11 years and their self-perceptions related to weight. This study was conducted under the limitation of a 2-month time frame for recruitment, a 3-month time frame for data collection, and a total budget of $10,400. The study aims included exploring the accuracy of children's self-perceptions of weight based on age, gender, actual body mass index (BMI) category, grade level, and race/ethnicity. We also examined the associations of gender, age, grade level, race/ethnicity, and actual BMI category with children's perception of ideal BMI category. The results of this study are currently under review for publication.

Methods

Participants. The study utilized a convenience sample from a rural, primarily Hispanic community in southern New Mexico. The population of New Mexico is slightly more than 2 million, with 46.3% of residents self-identifying as Hispanic and 40.5% as White, non-Hispanic.[12] The school district participating in this study covers 1081 square miles, and the total enrollment in the district at the time of the study was 4659 students. Thirty-nine percent (n = 1014) were in Grades 3, 4, and 5 and represented the age group of interest (ages 8-11) for this study. The race/ethnicity of the students in Grades 3, 4, and 5 was as follows: Hispanic, 74%; White, non-Hispanic, 22.8%; Native American, 1.7%; African American, 0.83%; Asian, 0.28%; and unclassified, 0.28%. Only 1 elementary school, a family school with an enrollment of 83 students, had fewer than 50% of students who qualified for free or reduced-priced lunches. Of the remaining 7 elementary schools, 2 had between 73% and 77% of the students qualifying for free or reduced-price lunch, 4 had between 81% and 88% qualifying, and 1 had 90% qualifying. Of the 8 elementary schools, only 1 school, the family school, declined participation.

A total of 424 children participated in this study. Boys constituted 49% (n = 206) of the participants (girls, 51%; n = 218). Nineteen percent of the sample (n = 80) were White; 70% (n = 299) were Hispanic; and 11% (n = 45) were Other/Multiracial. The average age was 9.3 (SD = 0.94) years.

Instruments. The Children's Body Image Scale (CBIS), developed by Truby and Paxton, was utilized to assess actual and ideal perceived body weights.[13] This scale consists of 7 gender-specific child figures that have been correlated with specific BMI ranges and several international BMI categories (Centers for Disease Control and Prevention categories included) and has demonstrated construct validity and reliability.[14] Children were weighed and measured using the same portable scale (model 869; Seca, Birmingham, UK) and stadiometer (model 217; Seca).

Procedure.

Who Should Be Contacted First? The PI, a pediatric nurse practitioner (PNP) with conversational Spanish skills, began communication with the school system by contacting the Health Services Coordinator, who is also a nurse. The Health Services Coordinator discussed the study with the school nurses and provided invaluable advice regarding recruitment, consent, and data collection strategies that would work in this community. Several studies note the importance of contacting the school superintendent before contacting prinicipals.[2,4-6] However, this school district was in the process of hiring a new superintendent, so the school principals were contacted before the superintendent. Initial contact consisted of sending letters to the principals explaining the study and requesting a meeting.

Not all principals responded to the request for a meeting. The "cold call," in which the PI would simply drop in, introduce herself to the office staff, and explain that she did not

have an appointment but would simply like to leave contact information, often resulted in a meeting with the principal. Although it was helpful to have the support of the Health Services Coordinator, several principals expressed reluctance to commit to participation without a signed letter of support from the superintendent. Once a permanent superintendent was in place, a meeting was held with him and approval was obtained. The signed letter of support from the superintendent was sent to the principals, and all principals of the 7 traditional elementary schools agreed to participate.

What Forms Need HRPO Approval? Although HRPOs may differ by institution, in general, all materials related to the study need to be approved, including study information packets, consent and assent forms, school announcements and flyers, and any advertisements, including radio and television ads. A newspaper article regarding this study, not written by the research team, did not need HRPO approval.

It is important that the translation of forms into another language, in this case Spanish, be done by someone who is familiar with any nuances that may be specific to the use of the language in a particular community. Because New Mexico has a large Spanish-speaking population, the institution's HRPO has staff able to review forms translated into Spanish.

Nurses who agreed to participate in the measurements and the 2 volunteer research assistants (RAs) were required to complete the online Collaborative Institutional Training Initiative (CITI) and institution's Conflict of Interest (COI) modules. Five of the 7 nurses and the Health Services Coordinator completed these training modules.

In addition to obtaining University HRPO approval, many school districts also have an internal review board (IRB) to review research applications. In general, schools require

university HRPO approval before granting their own IRB approval. This school district did not require an additional IRB approval.

What Are the Best Recruitment Strategies to Use in a School Setting? Recruitment consisted of several strategies. This school district maintains a traditional 9-month schedule. Teachers and nurses do not work in the summer months until August when school begins, but administrators, including principals, are on 12-month contracts. The decision to schedule data collection in the fall term allowed for time in the summer to schedule meetings with school principals to plan recruitment activities. Principals of the 7 participating schools granted permission for the PI and 1 of the RAs to attend fall open-house events to recruit families. The PI and RA attended 6 of the 7 open houses (2 schools scheduled their open houses on the same day). A flyer in both English and Spanish, which included contact information for the PI, was distributed at the open houses. At 3 of the schools, the principals held a brief group orientation for all parents at the beginning of the open house, and the PI was allowed to briefly discuss the study at these sessions. Many of the parents at several schools only spoke Spanish; therefore, it was helpful that the PI had sufficient Spanish skills to answer questions from these families related to the study.

It was crucial to have the support of both the school nurses and the teachers. The Health Services Coordinator allowed the PI and RA to explain the study to the school nurses at their summer workshop. Three of the principals allowed the PI to present the study proposal to the elementary school teachers during staff meetings. Although brief, these presentations provided the opportunity to solicit input regarding data collection that would have the least impact on the teaching schedule. Minimizing the disruption of the school schedule is often cited as a key strategy to success with school-based research.[2-6] The PI also

utilized the open house events to network with the teachers of the third, fourth, and fifth grades. It was helpful to meet the teachers on an individual level so that they would be familiar with the PI before actual data collection began. It also provided an opportunity to provide information related to the study and to answer any questions.

Approved announcements about the study were posted on the school district's website, and each individual school's web page. An article describing the study, with a picture of the PI, was printed in the local newspaper approximately 1 month before the beginning of data collection.

Information packets contained the following forms: introduction letter, parental consent form, child assent form, and child information form (name, date of birth, gender, race/ethnicity). The decision was made not to mail these packets to the families because the cost would have been prohibitive. Additionally, feedback from the school personnel indicated that sending packets home from the school was more likely to produce a better response rate. The packets were given to the school nurse, who distributed them to the teachers. All of the forms were written in both English and Spanish. The Spanish translation was printed on the back of the forms, rather than making separate forms in Spanish, thus decreasing the amount of paper contained in the packets. The consent and assent forms for this study were printed on neon yellow paper to distinguish them from the massive amount of forms sent home to parents in the initial weeks of the school term, per the recommendation by Fletcher and Hunter.[15] Whenever possible, a picture of the school wide district mascot or the study logo was included on printed materials.

All packets were distributed at least 2 weeks prior to actual data collection. Although child participants were required to read and speak English, a Spanish version of the child

assent form was also included in the packet so that Spanish-speaking-only parents had the opportunity to read the child assent form. The teachers distributed the packets to the children to take home to their parents, with the instructions to return the consent, assent, and child information forms (the yellow forms). The school nurses collected these forms from the teachers, and the PI and RA collected the forms from the nurses. Reminder forms were not distributed because the time frame between packet distribution and actual data collection was 3 weeks or less.

Should Active or Passive Consent Be Utilized, and How Should Consent and Assent Be Obtained? Several studies discuss the use of active versus passive consent for school-based research.[1,16,17] This study involved active consent (signed parent consent needed for all participants) because the children involved in the study were young, protected health information (date of birth) was collected, and weight and height measurements were obtained. The original plan was to obtain some of the consent and assent forms at these meetings. However, it was clear after the first open house that parents did not have time to complete the 5-page consent form. Consent and assent forms were distributed in the information packets, with instructions to return the forms to the child's teacher.

For some participants, the time frame between signing the assent form and actual data collection was as long as 3 weeks. Many of the children who had returned a signed assent form did not remember signing the form or did not remember what was involved in the study; therefore, verbal assent was also obtained from all consented participants.

What Incentives, if any, Should Be Offered? School-based studies have included incentives as a strategy to improve return rates for signed consent forms regardless of participation status (decline or consent).[6,15,16,18,19] Table 1 provides a description of incentives

and participation rates for 5 representative studies related to school-based research. The table includes the range of incentive recipients, including students, parents, teachers, and school systems. Incentives included in these studies varied from pizza parties and raffles to gift certificates, movie tickets, and cash.

Children who participated in this study received a $10 gift card to a national retail store located in the local community. The nurses and the Health Services Coordinator received $100, even if they did not complete the CITI or COI training. One nurse declined the incentive, and this money was then allocated to the Health Services Secretary, who assisted with the study. The initial plan did not include incentives for the teachers. However, there were sufficient funds remaining from the participant incentives to allocate $90 to each participating school. These incentives were given to the principals to use at their discretion. The incentive for the parents was the opportunity to receive a letter containing the results of their child's height, weight, and BMI, with a brief explanation of the results and a message related to a healthy lifestyle. Parents who signed the Spanish consent form and opted to receive results were provided with the results letter in Spanish. The result letters were placed in a sealed security envelope with the child's name written on the outside of the envelope. All result letters were returned to the appropriate teacher and then given to the children to take home to their parents. The PI's contact information was included in the results letter, with the instructions that if parents had any concerns about their child's results, they could contact the PI.

How Can Data Collection Be Managed in a School Setting? Data collection occurred in a variety of settings, including school nurse offices, administration offices, gym and cafeteria areas, and in one situation, an open arts area. Although the initial plan was to

have the school nurses assist either in retrieving children from classrooms or in obtaining the

actual measurements, this proved unrealistic because the nurses were fully occupied with

their duties. The Health Services Coordinator was able to assist with some of the data

collection. However, like the nurses, the Coordinator also had a very full schedule.

It became quite challenging to complete data collection before the district holiday break.

Although the budget did not include money for RAs, the PI was able to recruit 2 volunteers

as RAs for this study, a retired PNP and a PNP who worked in one of the primary care clinics

in the community. The Health Services Secretary, a person very familiar to school personnel,

assisted with retrieving children for data collection and returning them to their classrooms.

Adding additional personnel to the study markedly increased the ability to complete the data

collection over a 3-month period.

Survey administration (CBIS) was done in groups of 4 to 6, depending on the space

available. Each child was weighed and measured by either the PI or one of the RAs behind

privacy screens after they completed the survey. The participants received their $10 gift card

after the data collection was completed and then were returned to their classrooms.

What About Unanticipated Events? One day of data collection in this study was

cancelled due to a "lock down" of all elementary schools in response to a student bringing a

gun to school at one of the middle schools. Although this study was completed before the

school shooting in Newtown, Connecticut, it should be noted that security measures in all

schools across the country may be increased as a result of this horrific incident.

Data analysis. Meetings were tracked on a calendar, mileage was determined by an

online mapping system, and field notes were kept following each recruitment visit and data

collection session. Receipts were kept for all purchases to reconcile the budget.

A series of chi-square tests of independence was conducted using SPSS 20.0 for Windows (SPSS Inc, Chicago, IL) to explore the association of grade level, gender, and race/ethnicity with study participation. Statistical significance was set at $P < .05$ for the chi-square tests. A power analysis was conducted using GPower 3.1 (Institut für Experimentelle Psychologie, Dusseldorf, Germany) to determine a minimal sample size for the projected analyses of the study aims for children's self-perception of weight. The estimated sample size for a planned analysis of variance across 4 weight categories was 180 (medium effect size, Cohen's $f = 0.25$; alpha of .05; and power of 0.8).

A budget was developed based on the minimum number of participants needed for the study. When it became apparent that the eligible number of participants was 1014, additional funding was secured to plan for a larger sample size (see Table 2).

Results

The budget for this study was $10,400. Funding was received from The Robert Wood Johnson Foundation; Nurse Practitioner Healthcare Foundation/Astellas Promoting Heart Health Across the Age Span Award program; and the Dean's Scholar program.

Table 2 displays the budgeted items, actual expenses, and expenses by percent of the total budget. Incentives accounted for the largest percentage of the budget (56%), whereas translation services accounted for the smallest percentage (2.6%). Total spending was $10,232, or 2% under budget. The RAs who participated in this study were volunteers and therefore were not included in the budget.

The participation rate for this study was 42% (n = 424), with an average of $24 spent per participant, of which $10 was allocated for the incentive. Grade level, gender, and race/ethnicity were not found to be significantly associated with study participation. Thirteen

percent (n = 55) of the parents received the results letter in Spanish. Only 3% of the parents (n = 14) opted not to receive the results letter. One percent (n = 5) did not mark a preference, but a results letter was sent anyway in the event that not selecting a preference was an error of omission. Only one parent contacted the PI with concerns, which were related to weight category, and those concerns were addressed.

Table 3 provides the participation rates by school, as well as observations specific to each school. Note that the most rural school, which was also the school with the largest percentage of Spanish consent forms returned, had the highest participation rate by percent.

Discussion

This study confirms many of the successful strategies reported in the literature for conducting health-related research in schools. Although there was a great deal of community engagement in this study, participation rates may have been improved if incentives had been directly allocated to teachers and if there had been a plan to engage individual classrooms in some form of competition for participation, such as those reported in the literature.[18,19] The 2 schools that had the largest number of participants (not the largest percentage; see Table 3) may be a reflection of the 2 nurses engaging in a friendly competition to see who could have the most participants. Two of the studies reviewed provided pizza parties as incentives for the return of consent forms.[18,19] The study by Ji et al.[18] was related to school achievement, whereas the study by Secor-Turner et al.[19] involved school-based health surveys. It would seem that any studies related to health would either avoid food options as an incentive or use the opportunity to provide healthful foods.

Similar to other results reported in the literature,[18-20] this study did not show that race/ethnicity was associated with participation rates. However, it is interesting to note that

the school with the largest percentage of Spanish consent forms returned had the highest

participation percentage of the 7 schools. This school was also the must rural in the district.

Although the average cost per participant was low ($24) and the costs of this study

did not exceed the budget, it should be noted that if participation rates had been higher, the PI

would have had to assume the travel expenses to pay for additional incentives. The use of

volunteer RAs also allowed funds originally budgeted for data collection to be re-allocated

for participant incentives. The second largest portion of the budget, printing and supplies,

was also defrayed by the use of volunteers to collate study packets.

Limitations

Although the participation rate for this study (42%) was adequate for the planned

analysis, the study could have been strengthened by increasing the number of participants.

Strategies that were not implemented in this study that may have led to greater participation

rates include: (1) providing brief presentations to all of the grades eligible for participation;

(2) providing incentives for teachers for reaching a certain percentage of returned consent

forms; (3) providing incentives for classrooms reaching a specific percentage of returned

consent forms; and (4) conducting a second recruitment phase.

Conclusions

Although a research project involving human participants can be done with limited

funding and time, it is a challenging process. Reviewing the literature related to successful

strategies involving school-based studies in the planning phase allows the researcher to tailor

recruitment activities that will work with a specific community. Although extra time and

expense are necessary when doing research in rural, bilingual communities, it is imperative

that these populations have the opportunity to be represented in the research arena.

Implications for School Health

Schools need to be focused on education, and students need to be healthy in order to learn. Schools provide a captive pool of potential participants for health-related studies. It is possible to conduct research that minimizes schedule disruptions in school settings, allows for a learning opportunity for teachers and students, and ultimately benefits the health outcomes for children. Adequate community engagement, including dissemination of results, can lead to successful partnerships between schools and researchers.

Human Subjects Approval Statement

This study was approved by the university's human research protections office.

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Tables

Table 1. *Study Incentives and Participation Rates*

Study	Incentive[a]	Participation Rates/Type of Consent
Elder et al.[6]	$10 provided to parents who returned signed consent forms.	80% baseline 85% posttest 89% follow-up Active consent for all phases
Fletcher and Hunter[15]	$5 gift certificates to local educational store for teachers who signed consent form.	85% school-based portion of the project Active consent
Chartier et al.[16]	$1 coupon to the school store and the opportunity to be entered into a prize raffle for returning signed consent forms.	85% passive permission 66% active permission (2nd phase)
Ji et al.[18]	Pizza party if 90% or more of the students returned signed consent forms. Teachers offered gift certificate (amount not specified) if the 90% return rate for consent forms was achieved.	79% active permission
Secor-Turner et al.[19]	Provided movie tickets for students returning signed consent forms. Classrooms achieving 90% return rate received a pizza party. Each teacher involved in the process received $50 gift certificate. Schools given $200 to cover administrative costs.	67.4% active permission

[a]Incentives for returning signed consent forms were distributed regardless of participation.

Table 2. *Budget: Children's Self-Perception of Weight Study*

Budgeted Items	Expenses, $	Expense by % of $10,400 Budget
Equipment		
Seca 869 floor scale, digital	355	3.41
Seca adapter	45	0.43
Seca 217 portable stadiometer	235	2.25
Seca 414 case for 869 and 217	68	0.65
Shipping	39	0.38
Equipment total	742	7.13
Incentives[a]		
Participant gift cards ($10/child)	4360[b]	41.92
School gift cards ($90/school)	630	6.05
School nurses ($100 cash/nurse)	800	7.69
Incentives total	5790	55.67
Printing and supplies total	1928	18.53
Translation services total	275	2.64
Travel		
Mileage	1144	11.00
Meal expenses	353	3.39
Travel total	1497	14.39
Total expenses	10,232	98.38

[a]A total of 500 participant and school gift cards were purchased. The 1 remaining gift card ($10) was not used and therefore returned to the accounting department.
[b]Of the 436 participants, 12 were eliminated from the study either due to not meeting the age criteria or missing data.

Table 3. *Participation Rates and Observations by School*

School Code & Grade	Students, n	Sample Size, n	Response Rate, %	Observations
A-1				First school where data were collected;
4	91	39	42.8	took a total of 3 separate days to collect
5	96	36	37.5	data simply due to refining procedure for
Total	187	75	40.1	data collection; no 3rd grades.
B-2				
3	40	6	15.0	This was the first year the nurse at this
4	42	14	33.3	school had worked as a school nurse.
5	48	13	27.0	
Total	130	33	25.3	
C-3				
3	32	18	56.2	Most rural location of the 7 schools in the
4	30	19	63.3	district; highest participation percentage;
5	40	25	62.5	largest percentage of Spanish consent
Total	102	62	60.7	forms returned.
D-4				
3	102	43	42.1	1st through 3rd grades only at this
Total	102	43	42.1	school.
E-5				
3	49	20	40.8	School nurse at E-5 & F-6 in competition
4	63	29	46.0	for who would have largest number of
5	54	33	61.1	participants.
Total	166	82	49.3	
F-6				
3	70	25	35.7	Took 2 trips for data collection due to
4	80	34	42.5	RAs not being available for data
5	74	35	47.2	collection.
Total	224	94	41.9	
G-7				
3	30	8	26.6	Principal quit on the first day of school;
4	36	17	47.2	took additional time to obtain permission
5	37	10	27.0	of new principal.
Total	103	35	33.9	
Total	1014	424	41.8	

Chapter 4: Mirror, Mirror on the Wall: Children's Self-Perceptions of Weight in a Rural Hispanic Community

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Short Title: Rural Hispanic Children's Perceptions of Weight

Abbreviations:
BMI—body mass index
CBIS—Children's Body Image Scale
CDC—Centers for Disease Control and Prevention
CI—confidence interval
OR—odds ratio

Key Words: Child, self-concept, rural health, obesity, overweight, Hispanic Americans

What's Known on This Subject
Many parents, including Hispanic parents, underestimate their children's weight status. Studies involving the accuracy of prepubertal children's weight perceptions have had mixed findings. Although Hispanic children have a greater prevalence of obesity, little is known about their weight perceptions.

What This Study Adds
Prepubertal children who are either overweight or obese do not accurately perceive their weight status, regardless of gender, age, grade level, or race/ethnicity. Alarmingly, approximately one-third of this sample expressed a preference to be underweight.

Contributor's Statement:

Carolyn Montoya: Ms. Montoya conceptualized and designed the study, drafted the initial manuscript, and approved the final manuscript as submitted.

Marie L. Lobo: Dr. Lobo supervised the data collection at all sites, critically reviewed the manuscript, and approved the final manuscript as submitted.

Blake Boursaw: Mr. Boursaw supervised the initial analyses, reviewed and revised the manuscript, and approved the final manuscript as submitted.

Structured Abstract

OBJECTIVE: To determine whether there are differences in children's self-perceptions of weight based on age, gender, actual body mass index (BMI) category, grade level, and race/ethnicity compared with their clinically measured BMI and to determine the association of gender, age, grade level, race/ethnicity, and actual BMI category with their perception of ideal BMI category.

METHODS: A total of 424 children from a rural community in New Mexico, aged 8 to 11 years and in Grades 3 through 5, participated in this study. Children were assigned to one of the Centers for Disease Control and Prevention BMI categories: underweight, healthy weight, overweight, and obese. 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.

RESULTS: Only clinically measured BMI category was found to be significantly associated with accurate perception, $\chi^2(3) = 201.4$, $P < 0.001$, with only 9.0% of overweight or obese children selecting figures representing their clinically measured BMI category. Actual BMI category, $\chi^2(3) = 8.8$, $P = 0.032$, and grade level, $\chi^2(2) = 6.7$, $P = 0.036$, had a significant association with selection of an underweight ideal, although only actual BMI remained significant in follow-up regression analyses. Overall, 32% of children selected an underweight figure as ideal.

CONCLUSION: Regardless of gender, age, grade level, and race/ethnicity, prepubertal children who are either overweight or obese do not accurately perceive their weight status.

Although the latest prevalence data on obesity trends among children and adolescents in the United States indicate that these rates may have reached a plateau, childhood obesity remains a significant problem, with a prevalence rate of 17%.[1] Hispanic children are disproportionally affected, with a prevalence rate of 21%.[1] Several studies also indicate that children living in rural areas are at greater risk for obesity than their non rural counterparts.[2-6] Although several studies have documented Hispanic parents' misperceptions regarding their children's weight status,[7-14] studies examining preadolescent Hispanic children's self-perception of weight are limited.

Figueroa et al. 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.[10] Snethen and Broome[15] and Snethen et al.[16] 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 body mass index (BMI) $\geq$ 95% (parent-reported heights and weights); yet, 30% identified themselves as being of normal weight, and 12% identified themselves as being underweight.[15] Children who participated in the focus group study were not targeted based on their weight status, and height and weights were not obtained.[16] These children perceived overweight children as not being active.

Three studies were identified that utilized data from national studies, included a large percentage of Hispanics, and examined perceptions related to weight. Martin et al. utilized data from the Wave II US National Longitudinal Study of Adolescent Health to examine weight perceptions among adolescents.[17] Although black teens were less likely than white

teens to accurately see themselves as overweight or obese, no significant differences were found between white and Hispanic teens. Haff used data from the 2001 Youth Risk Behavior Surveillance Survey to examine racial/ethnic differences in weight perceptions among 6089 females in Grades 9 through 12.[18] Hispanic girls were noted to describe themselves as "very underweight" compared with white girls, who were more likely to describe themselves as slightly underweight. Compared with black teens, Hispanic girls were more likely to describe themselves as being slightly and very overweight. Mikolajczyk et al. also examined body satisfaction in US teens between the ages of 11 and 17 using data from the 2001 US Health Behavior in School-Aged Children survey.[19] Hispanic and non-Hispanic whites had similar perceptions of body appearance across gender and age spectrums. Black children in the youngest age group had better perceived body appearance than either Hispanic or non-Hispanic whites for this age group. The authors concluded that perceived appearance most likely occurs before the age of 10 and remains fairly consistent throughout adolescence.

Although Hispanics were included in these large studies based on national data, the primary focus was on the adolescent population. The aims of the current study were to determine whether there are differences among children between the ages of 8 and 11 years based on age, gender, actual BMI category, and race/ethnicity for (1) the accuracy of children's selection of BMI category versus their clinically measured BMI, and (2) their perception of ideal BMI category.

Methods

Sample. This study was approved by the University of New Mexico Health Sciences Center Human Research Protections Office. It was conducted in a nonmetropolitan rural community in southern 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.[20] 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 7 elementary schools were included in the study. The 8th school in this district, a combination of home schooling/in-class instruction, was not included in this study.

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, there were 1014 children enrolled in Grades 3 through 5 in these 8 schools. A total of 436 children participated in this 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, leaving a final sample of 424. Response rates of the final sample are displayed in Table 1 by gender, grade, and race/ ethnicity. 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 principal investigator's contact information in case of any questions.

Measures. A study packet was distributed in each of the appropriate grade levels in the 7 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 use a check box to indicate the

race/ethnicity of their child from the following 7 categories: American Indian or Alaska

Native, Asian, black or African American, Hispanic or Latino, Native Hawaiian or other

Pacific Islander, white, and other. The form did not include an option for indicating a primary

race/ethnicity versus a secondary race/ethnicity, nor was there a category for multiracial;

however, 24 parents indicated a secondary race/ethnicity for their child. Due to the low

numbers of participants in the categories of black or African American (n = 5, 1.2%),

American Indian or Alaska Native (n = 10, 2.4%), and other (n = 9, 2.1%), a recoded variable

was created for race/ethnicity. This variable included the categories of Hispanic, white, and

other/multiracial, along with children whose parents indicated a secondary race/ethnicity in

the category of other/multiracial. Since parents of three children indicated a primary

race/ethnicity coded to other and secondary race/ethnicity, the total number of children in the

other/multiracial category was 45 (see Table 1).

The parent information form also included spaces to indicate the child's gender and

date of birth. 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, UK) and portable digital scale (model 869; Seca). The Children's

BMI Tool for Schools was utilized to calculate BMI and specific BMI percentiles for age and

gender.[21] Children were assigned 1 of the following 4 weight categories based on the Centers

for Disease Control and Prevention (CDC) BMI percentile designations: underweight, < 5th

percentile; healthy weight, 5th percentile to < 85th percentile; overweight, 85th percentile to

< 95th percentile; and obese, ≥ 95th percentile.[22]

The Children's Body Image Scale (CBIS), developed by Truby and Paxton, was

utilized for this study.[23] The tool consists of 7 figures for boys and 7 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 4 items: 2 questions related to body size satisfaction and 2 scales related to body esteem and dieting behavior.[23] Reliability was established in a second study, with significant correlations ($P < 0.001$) between test–retest intervals (3 week period) and Pearson's *r* values ranging from .67 to .87.[24] Truby and Paxton also compared the CBIS with the CDC 2000 growth charts, the United Kingdom 90 BMI charts, and the International Obesity Taskforce BMI cut-offs.[24] Based on a synthesis of these values and the gender-specific BMI ranges established by Truby and Paxton,[23] 1 of the 4 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.

Statistical analysis. All statistical analyses were conducted using SPSS 20.0 for Windows (SPSS Inc, Chicago, IL). Statistical significance was set at $P < 0.05$ for all statistical tests. Planned sample size was based on projected analyses using GPower 3.1 (Institut für Experimentelle Psychologie, Dusseldorf, Germany). For a planned analysis of variance across 4 weight categories, with an anticipated medium effect size (Cohen's $f = 0.25$), alpha of 0.05, and power of 0.8, the estimated sample size was 180. Bivariate analyses included independent samples *t* tests (2-tailed) for the difference in means of continuous

variables and chi-square tests of independence to explore the association between categorical variables. Finally, logistic regression was performed as a follow-up analysis when multiple chi-square tests of independence exhibited significance.

Results

Results for actual BMI, CBIS perceived categories, and ideal BMI categories for the overall sample according to gender and race/ethnicity are presented in Table 2. The average age of the children was 9.3 years, and the average weight was 86 pounds ($SD = 27$) for girls and 82 pounds ($SD = 25$) for boys. The average height for both boys and girls was 54 inches ($SD = 3.0$). More than half of the participants (55.0%, n = 235) had an actual BMI percentile in the healthy weight category. The combined BMI categories of overweight and obesity constituted 42.0% of the sample (n = 177), and 3.0% (n = 12) of the participants were in the underweight category.

Our first aim was to determine whether there were differences based on age, gender, actual BMI category, grade level (3rd, 4th, 5th), and race/ethnicity for the accuracy of children's selection of BMI category using figures from the CBIS scale versus the children's clinically measured BMI. Children were classified as "accurate perceivers" if their selected CBIS scale figure reflected the same BMI category as their clinically measured BMI.

There was no significant difference, $t(422) = 1.593$, $P = 0.16$, in mean age in months between accurate perceivers ($\bar{x} = 118.08$, $SD = 11.13$) and inaccurate perceivers ($\bar{x} = 116.33$, $SD = 11.51$). The effect size for the differences in the means was calculated using GPower 3.1 and was small (Cohen's $d = 0.15$).

Table 3 displays the results of the chi-square tests conducted to determine the association between the independent variables of gender, age (categorized by age -in-years),

race/ethnicity, grade, and BMI category and accuracy of self-perception of weight status.

Clinically measured BMI was the only independent variable that was significantly associated

with accurate perception, $\chi^2(3) = 201.4$, $P < 0.001$, and the effect size was large (V = 0.69).[25]

In both the overweight and obese categories, only 9.0% of the children were accurate

perceivers. In contrast, 79.0% (n = 186) of the children in the healthy weight category and

25.0% of the children in the underweight category were accurate perceivers (Table 3).

The second aim was to determine the association of gender, age, grade level,

race/ethnicity, and actual BMI category with perceptions of ideal BMI category using the

CBIS. Because none of the boys selected the overweight or obese CBIS figures as ideal, and

the overweight and obese figures were only selected by 1 girl each, the 4 possible ideal BMI

categories were collapsed into 2 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.

There was no significant difference in mean age, $t(422) = 1.506$, $P = 0.13$, between the ideal

category of underweight ($\bar{x}$ = 115.97, SD = 11.28) and the "not underweight" categories ($\bar{x}$

= 117.75, SD = 11.357). The effect size for the differences in the means was small ($d = 0.16$).

Table 3 also displays a series of chi-square tests conducted to determine whether

there was any association between gender, age, race/ethnicity, BMI category, and grade level

and the selection of the underweight figure as ideal. Actual BMI category, $\chi^2(3) = 8.8$, $P =$

0.03, V = 0.14, and grade level, $\chi^2(2) = 6.7$, $P = 0.04$, V = 0.13, both had a significant

association with selection of an underweight ideal, albeit with a small effect size. As a

follow-up analysis, a logistic regression was performed, with ideal underweight selected as

the dependent variable and both BMI category and grade level as independent variables. In

this model, grade level was eliminated as a significant predictor, odds ratio (OR) = .82, 95% confidence interval (CI): 0.63-1.07, $\chi^2(1) = 2.14$, $P = 0.14$. The omnibus test of BMI category remained significant, $\chi^2(3) = 8.56$, $P = 0.04$, with children in all higher weight categories having greater odds of selecting an underweight ideal than underweight children. However, individual contrasts with underweight children did not emerge as significant. For example, healthy-weight children had 2.9 times the odds of selecting an underweight ideal than did underweight children, OR = 2.92; 95% CI: 0.62, 13.645, $\chi^2(1) = 1.85$, $P = 0.17$. This logistic regression model correctly classified the underweight preference of 68% of the children. This percentage was the same percentage as the null model, indicating poor overall fit.

Discussion

This study did not show age, gender, or race/ethnicity to have a significant effect on the children's perceptions of their current body weight. These findings differ from other studies,[26-28] where age, gender, or race/ethnicity was shown to have a significant effect on children's perceptions of their body weight. However, Hispanic children did not participate in any of these studies.

Studies involving accuracy of prepubertal children's weight perception have had mixed results, with some studies[27,29,30] indicating that this age group of children are fairly accurate in terms of their body weight perception. The 1991 study by Collins was one of the first studies to use figural drawings to assess prepubertal children's self-perception of weight.[27] The study by Skemp-Arlt and Mikat is more current.[29] However, like Collins, Hispanic children were not included. The study by Williamson and Delin was conducted in Australia.[30] Pauline et al. found socioeconomic status in India to be associated with body weight perception and overweight children had 4 times the odds of perceiving themselves as

thinner than their actual weights as opposed to children who were normal weight[31].
Maximova et al. found that overweight and obese Canadian children and teens significantly
misperceived their weight.[32] In that study, overweight and obese children, regardless of age,
gender, grade level, or race/ethnicity, were overwhelmingly more likely to misperceive their
actual weight category than were children in the healthy weight category.

In terms of preference for thinness among prepubertal children, findings tend to be
consistent, starting with the study by Collins, who noted a preference for thinness among
female children across all age levels, races (black and white), weight categories, and
school/community settings.[27] Thompson et al. noted that black girls wanted to be thinner than
their current size; however, body dissatisfaction was more prevalent with girls and whites
than with boys and blacks.[28] Skemp-Arlt and Mikat concluded that prepubertal children show
a desire to be thinner than their actual body type.[29] Several international studies also found
that children, most often girls, had either a high degree of body dissatisfaction or a preference
for thinness.[23,30,33,34] Although the current study did not find that gender, age, or
race/ethnicity had an effect on underweight preference, both actual BMI category and grade
level were found to be significant. However, both of these effect sizes were small, and grade
was eliminated as a significant predictor in the regression analysis. Whereas 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
express this preference. Even though race/ethnicity was not found to be significant in terms
of underweight preference, it is worrisome that approximately one-third of each racial/ethnic
group expressed a preference to be underweight.

Limitations

There are several limitations to this study. Caution should be exercised when generalizing these findings to other populations. In terms of the measures, it should be noted that the majority of studies discussed include more than 1 measure of self-perception for weight (ie, survey questions, weight-related survey instruments), whereas this study only included the measure of figural drawings for self and ideal weight perception. The CBIS figures, based on pictures of white children, have been tested almost exclusively in white populations; however, no differences in selection of either self or ideal figures was found between Hispanic, white, or other/multiracial children in this study. The figures in this study were presented exactly as developed by Truby and Paxton (sequential order, with facial features).[23] In their review of figural drawing scales, Gardner and Brown 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.[35]

Conclusion

Regardless of gender, age, grade level, or race/ethnicity, prepubertal children who are either overweight or obese do not accurately perceive their weight status. This finding has significant implications for planning obesity prevention and intervention programs. 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. Additionally, it is worrisome that approximately one-third of the children in this study expressed a preference for not simply being thinner, but for being underweight. These findings suggest that instead of focusing solely on weight programs, the emphasis needs to be on healthy lifestyles and choices.

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Tables

Table 1. *Population and Sample Characteristics with Response Rates*

Characteristic	Population[a] n (%)	Sample n (%)	Response Rate[b] %
Total	1014	424	42
Gender			
Male	523 (52)	206 (49)	39
Female	491 (48)	218 (51)	44
Grade			
3rd	323 (32)	120 (28)	37
4th	342 (34)	152 (36)	44
5th	349 (34)	152 (36)	43
Race/Ethnicity			
White	223 (22)	80 (19)	36
Hispanic	763 (75)	299 (70)	39
Other/multiracial	28[c] (3)	45[d] (11)	

[a]Provided by the school system.
[b]Response rates by race/ethnicity are approximate due to differences in categorization of race/ethnicity between the school system and the study sample.
[c]Includes children whose parents indicated "other" for race/ethnicity; no multiracial category.
[d]Includes black or African American, American Indian or Alaska Native, other, and multiracial.

Table 2. *Actual, Perceived, and Ideal BMI Categories by Gender and Race/Ethnicity*

	Weight Category	Actual BMI Category n (%)	CBIS Perceived BMI Category n (%)	CBIS Ideal BMI Category n (%)
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)
Gender				
Male	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	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)
Race/Ethnicity				
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)
Other/multiracial	Underweight	1 (2.2)	9 (20.0)	16 (35.6)
	Healthy weight	23 (51.1)	31 (68.9)	29 (64.4)
	Overweight	11 (24.4)	4 (8.9)	0 (0)
	Obese	10 (22.2)	1 (2.2)	0 (0)

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

Table 3. *Characteristics of Participants by Accuracy of Perception and Expressed*

Preference for Underweight

Characteristic	Total Sample n (%)	Accurate Perceivers n (%)	Effect Size and Significance V (*P* value) $\chi^2(df)$	Underweight Preference n (%)	Effect Size and Significance V^a (*P* value) $\chi^2(df)^b$
Gender			0.08 (0.10) $\chi^2(1) = 2.8$		0.07 (0.14) $\chi^2(1) = 2.2$
Male	206 (49)	91 (44.2)		59 (28.6)	
Female	218 (51)	114 (52.3)		77 (35.3)	
Age, y			0.07 (0.54) $\chi^2(3) = 2.2$		0.08 (0.42) $\chi^2(3) = 2.8$
8	98 (23.1)	41 (41.8)		33 (33.7)	
9	141 (33.3)	71 (50.4)		51 (36.2)	
10	141 (33.3)	71 (50.4)		41 (29.1)	
11	44 (10.4)	22 (50.0)		11 (25.0)	
Race/Ethnicity			0.10 (0.15) $\chi^2(2) = 3.8$		0.04 (0.67) $\chi^2(2) = 0.8$
Hispanic	299 (70)	152 (50.8)		92 (30.8)	
White	80 (19)	37 (46.3)		28 (35.0)	
Other	45 (11)	16 (35.6)		16 (35.6)	
Grade			0.11 (0.08) $\chi^2(2) = 5.0$		0.13 (0.04) $\chi^2(2) = 6.7$
3	120 (28)	48 (40.0)		39 (32.5)	
4	152 (36)	81 (53.3)		59 (38.8)	
5	152 (36)	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	12 (2.8)	3 (25.0)		2 (16.7)	
Healthy weight	235 (54.4)	186 (79.1)		87 (37.0)	
Overweight	80 (18.9)	7 (8.8)		26 (32.5)	
Obese	97 (22.9)	9 (9.3)		21 (21.6)	

V, Cramér's V; df, degrees of freedom.

Chapter 5: Summary, Conclusions and Recommendations

This chapter presents the summary, conclusions and recommendations of this study. The chapter concludes by presenting health policy implications of this study.

Summary

Childhood obesity remains a significant problem in the United States with approximately 17% of children between the ages of 2 and 19 being obese and combined rates of obesity and overweight being 32% (Ogden, et al., 2012). Minority children, tend to be disproportionately affected with the prediction that by the year 2030 41% of Mexican-American young boys and Black adolescent girls will be not just overweight but obese (Wang, et al., 2008). While Wang does not include predictions specific to Native-American children, current rates of obesity and overweight for this population have been noted to be as high as 40% (Story, et al., 2003).

Obesity has long ranging consequences for children both physically and emotionally (CDC, 2011a; Sjoberg, et al., 2005; Sullivan, 2010). The economic burden for childhood obesity in the United States is estimated to be $14.1 billion in direct medical costs (IOM, 2012). Although studies exist which address issues related to prevention and treatment of childhood obesity, no one strategy has proven to be most effective. One of the first steps in confronting any issue is having sufficient data related to all aspects of the problem. The IOM (2004) report on the state of children's health in the United States notes the importance of having comprehensive data related to children's health in order to accurately identify problems and to understand significant associations with the problem. This study was designed to understand children's perceptions of weight in order in to influence obesity prevention and intervention programs.

While studies exist which examine children's perceptions related to weight, few studies include Hispanic children's perceptions regarding weight. The lack of research in this particular group of children is disturbing given that the prevalence rate for overweight and obesity among Hispanic children is 39% compared to 28% for non-Hispanic White children (Ogden et al., 2012).

This study was designed to: 1. determine differences based on age, grade level, gender, actual BMI category, and race/ethnicity for the accuracy of children's selection of one of the four CDC, BMI categories (underweight, health weight, overweight, and obese); and 2. determine the associations of gender, age, grade level, race/ethnicity and actual BMI category, again using the 4 CDC categories, and ideal body BMI category for children between the ages of 8-11. The conceptual framework utilized for this study was the Health Belief Model ([HBM], Rosenstock, 1974) with an emphasis on the individual perceptions (see Appendix F). In this case the focus was on individual children's perceptions of weight.

In order to truly understand the issue of childhood obesity a concept analysis using the Wilsonian technique (Wilson, 1963) was completed and published (Montoya & Lobo, 2011). The concept analysis helped to define the term obesity in relation to children. While high BMI levels have been linked to cardiovascular disease risk factors (Daniels, 2009; Freedman & Sherry, 2009) it is important to understand that BMI determines weight in relation to height; and therefore is not a direct measurement of body fat. The article further clarifies the use of the terms overweight and obesity and provides a perspective on how the definitions for these two terms have changed over time. This publication comprises Chapter 2 of the dissertation.

Chapter 3 of the dissertation describes the strategies employed in conducting this study and has been submitted to the *Journal of School Health* for review. The focus of this paper is the use of successful strategies for conducting weight-related research in school settings within a limited time frame (5 months) and a limited budget ($10,400). A unique aspect of this paper is that it also discusses the issues related to conducting research in a rural setting within a bilingual community.

The results of the study are presented in an article submitted to *Pediatrics* for review and presented in Chapter 4. The article describes the aims, methods and results of the study. This article adds to the literature on children's self-perception related to weight and is unique in that of the 424 child participants, 70% (n = 299) are Hispanic and the study was conducted in rural community.

Conclusions

The literature review related to children's perception of weight identified that children, do indeed, develop perceptions related to weight far in advance of puberty (Feldman, et al., 1988). The importance of obtaining the child's perspective regarding health issues was also noted (AAP, 2010; Irwin & Johnson, 2005). Guidelines for the prevention and treatment of obesity in children have been established (Barlow, 2007; National Association of Pediatric Nurse Practitioners [NAPNAP], 2006). However, no single strategy has been noted to be most effective in all populations. What seems to be missing in regards to obesity prevention and treatment guidelines is the perspective of the population most affected by this problem – the child. The results of this study demonstrate that children between the ages of 8-11, who are either overweight or obese, do not accurately perceive their weight status.

Recommendations

The results of this study demonstrate more research in the area of children's perceptions of weight is needed. One of the limitations of this study is the use of only one measure of weight perception (CBIS[©]). The study should be replicated using additional measures of weight perception. Although no significant differences were found based on age, grade level, gender, or race/ethnicity the study should be replicated in other rural, ethnically diverse populations in order to determine if these findings are replicable. A study comparing urban versus rural populations would also be useful in terms of generalizing the findings.

Because this study was conducted in a school district where 7 of the 8 elementary schools had more than 50% of the students qualifying for free or reduced lunch and several of the schools provide food backpacks for children on the weekend, socioeconomic status was not included as a variable in this study. The role of socioeconomic status in children's perception regarding weight is unknown and should be included as a variable in further studies.

Studies have also indicated that there is a relationship between food insecurity and childhood obesity (Bauer, et al., 2011; Gross, Mendelsohn, Fierman, Racine, & Messito, 2011; Metallinos-Katsaras, Must & Gorman, 2012). Considering the fact that so many of the schools in district had a large number of children qualifying for free or reduced lunch future research should include the role of food insecurity on children's perceptions of weight.

The racial diversity of the town where the study was conducted is a strength of this research. What is unknown is the number of undocumented families in the community. Conducting research related to undocumented children and/or families presents many

challenges; however, it may be that these children have a different self-perception regarding weight.

Several studies have confirmed that parents do not accurately perceive their children's weight status, particularly in Hispanic populations (Bayles, 2010; Crawford, et al.; De La, et al., 2009; Figueroa, et al., 2008; Glassman, et al., 2011; Killion, et al., 2006) and at least one study (Figueroa, et al., 2008) has compared children's perceptions of weight with parental perceptions. Figueroa et al., noted that, in general Hispanic parents and their children do not have an accurate perception of body size; however, the sample size was relatively small (n = 123 dyads). Perceived susceptibility to disease, as defined in the HBM, is one of the key factors in determining whether someone is likely to participate in a preventative health action. More research in this area is necessary in order to understand just how significant perceptions related to weight in both parents and children contributes to participation in obesity prevention and intervention programs.

Recognition by practicing clinicians that overweight/ obese children do not recognize themselves as being overweight or obese is imperative in terms of approaching this topic with families. More research related to effective communication with families regarding the problem of obesity in children will help health providers develop effective partnerships that may lead to better outcomes for these children.

It is disturbing that a third of this sample indicated a preference for being underweight. This finding needs to be further explored to determine if it is consistent in other groups of children and if so, then factors associated with this perception need to be identified.

Policy Implications

The findings of this study will be shared with the Superintendent of the school systems by providing him with a summary of the study as well as specific policy recommendations for this community (Appendix X). Included in these recommendation is the suggestion to determine the prevalence rates of obesity and overweight in the elementary schools considering that this convenience sample revealed prevalence rates higher than the national average. These data will be helpful should the community decide to implement policy changes related to nutrition and exercise programs in the elementary schools.

The often quoted study by Olshansky, et al., published in 2005, noted that if this epidemic of childhood overweight and obesity does not change, we may be raising the first generation of children who do not live longer lives than their parents, with minority children being disproportionally affected. First Lady Michelle Obama took this finding one step further when she stated, "The physical and emotional health of an entire generation and the economic health and security of our nation is at stake" (Let's Move, n.d., Learn the Facts section, para.1).

The results of this study indicate that overweight and obese children do not recognize themselves as obese. This finding has implications for the development of obesity prevention and intervention programs. Rather than targeting overweight and obese children there needs to be a shift to encouraging programs that incorporate healthy habits (nutrition and exercise) for all children. The finding that 1/3 of this sample chose an underweight figure as ideal underscores the need that such programs should focus on health rather than weight.

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overweight or at-risk-for overweight children. *Obesity, 14*(12), 2249-2258.

Appendices

Appendix A – Collins' Child Pictorial Instrument

Figure 1. Mean selections of Self, Ideal Self, and Ideal Other-gender Child by male and female subjects.

Collins, M. E. (1991). Body figure perceptions and preferences among preadolescent children. *International Journal of Eating Disorders, 10*(2), p. 201.

Appendix B – Collins' Adult Pictorial Instrument
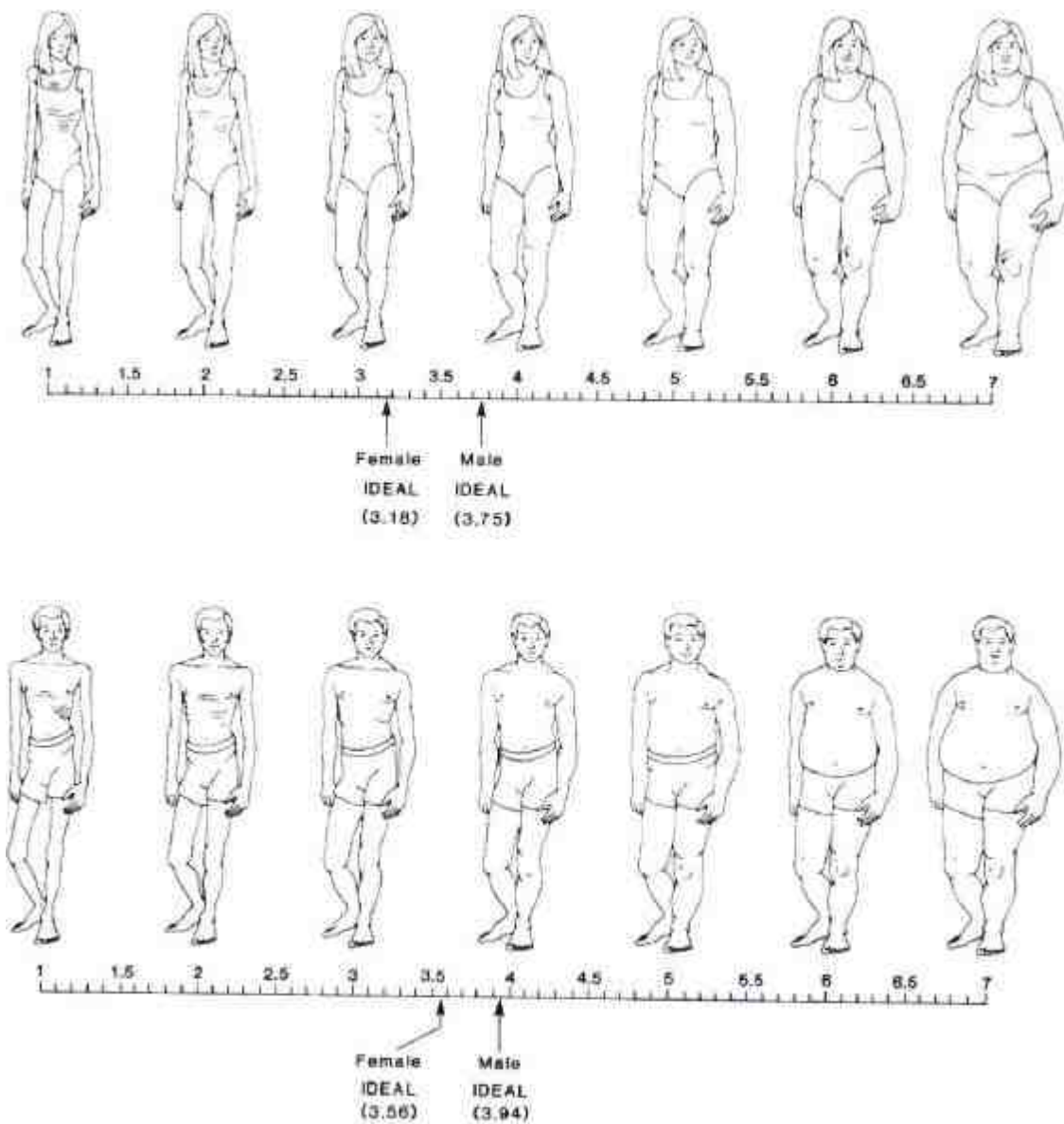
Figure 2. Mean selections of Ideal Adult figures by male and female subjects.

Collins, M. E. (1991). Body figure perceptions and preferences among preadolescent children. *International Journal of Eating Disorders, 10*(2), p. 202.

Appendix C – The Children's Body Image Scale© - Male
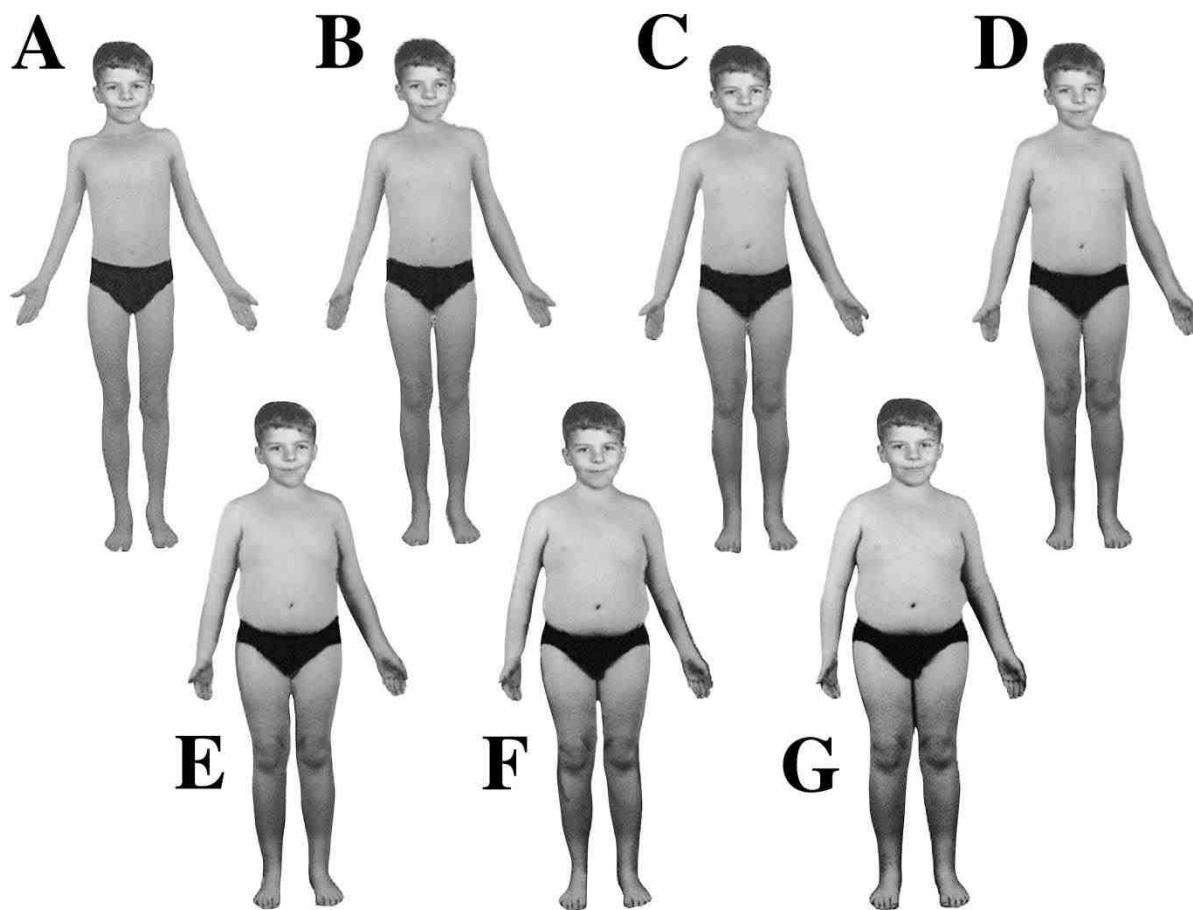
Permission to reprint the Children's Body Image Scale obtained from Helen Truby (H. Truby, personal communication, August 24, 2011).

Appendix D – The Children's Body Image Scale© – Female
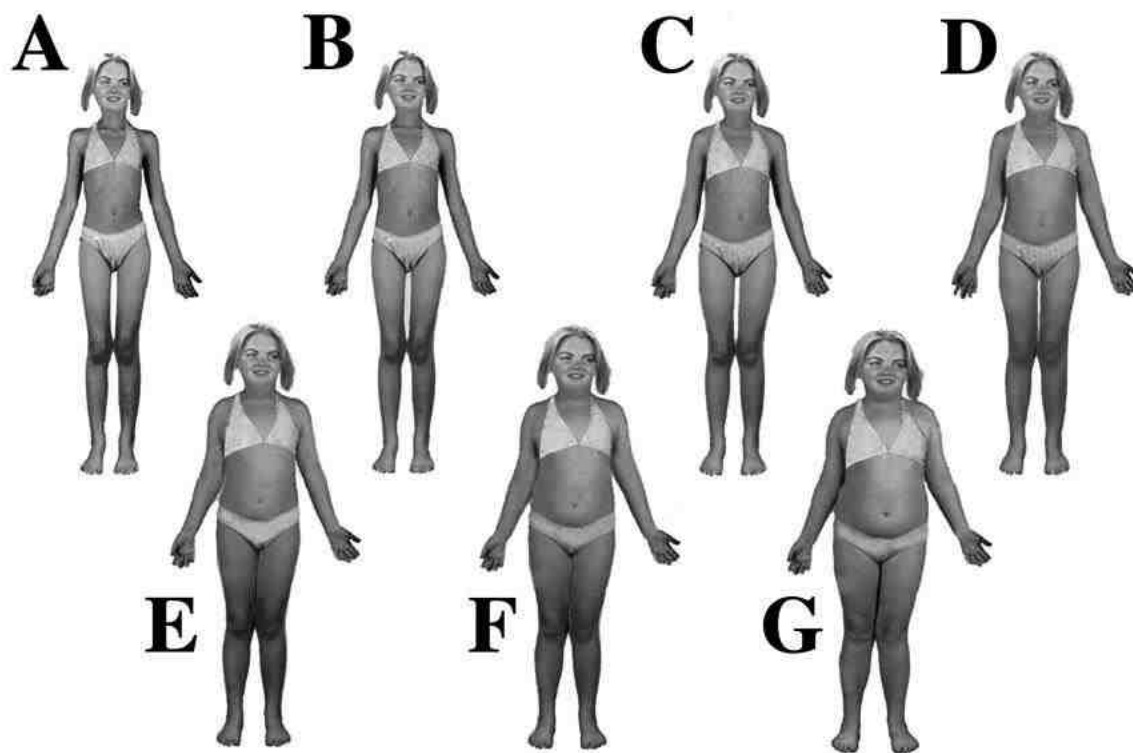
Permission to reprint the Children's Body Image Scale obtained from
Helen Truby (H. Truby, personal communication, August 24, 2011).

Appendix E – Comparison of the CBIS BMI scale with CDC 2000, the UK 90 BMI

charts and the international obesity taskforce BMI Cut-Offs

Table 2. Comparison of the CBIS BMI scale with CDC 2000, the UK 90 BMI charts and the international obesity taskforce BMI Cut-Offs

CBIS figure category	BMI categorization on the CBIS	CBIS figure represented using the CDC 2000† Percentiles	CBIS figure represented using the UK 90 BMI‡ percentiles	CBIS figure represented using the Int. obesity taskforce cut-off*
Boys				
1	14.0–14.6	3rd	2nd	–
2	14.7–15.5	10th	10th	–
3	15.6–16.5	25th	25th	Acceptable
4	16.6–20.0	50th	50th	Acceptable
5	20.1–25.1	>75th	91st	Overweight
6	25.2–28.4	>85th	>98th	Obese
7	28.5–29.0	>97th	>99.6th	Obese
Girls				
1	13.0–13.5	3rd	2nd	–
2	13.6–14.9	10th	9th	–
3	15.0–16.6	25th	25th	Acceptable
4	16.7–17.7	50th	50th	Acceptable
5	17.8–19.4	75th	75th	Acceptable
6	19.5–24.6	85th	>85th	Overweight
7	24.7–28.5	>90th	99.6th	Obese

†(Kuczmarski et al., 2002).
‡(Cole et al., 1995).
*Adapted from (Spurrier et al., 2006).

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(1), p. 123.

Appendix F – Health Belief Model

INDIVIDUAL PERCEPTIONS   MODIFYING FACTORS   LIKELIHOOD OF ACTION
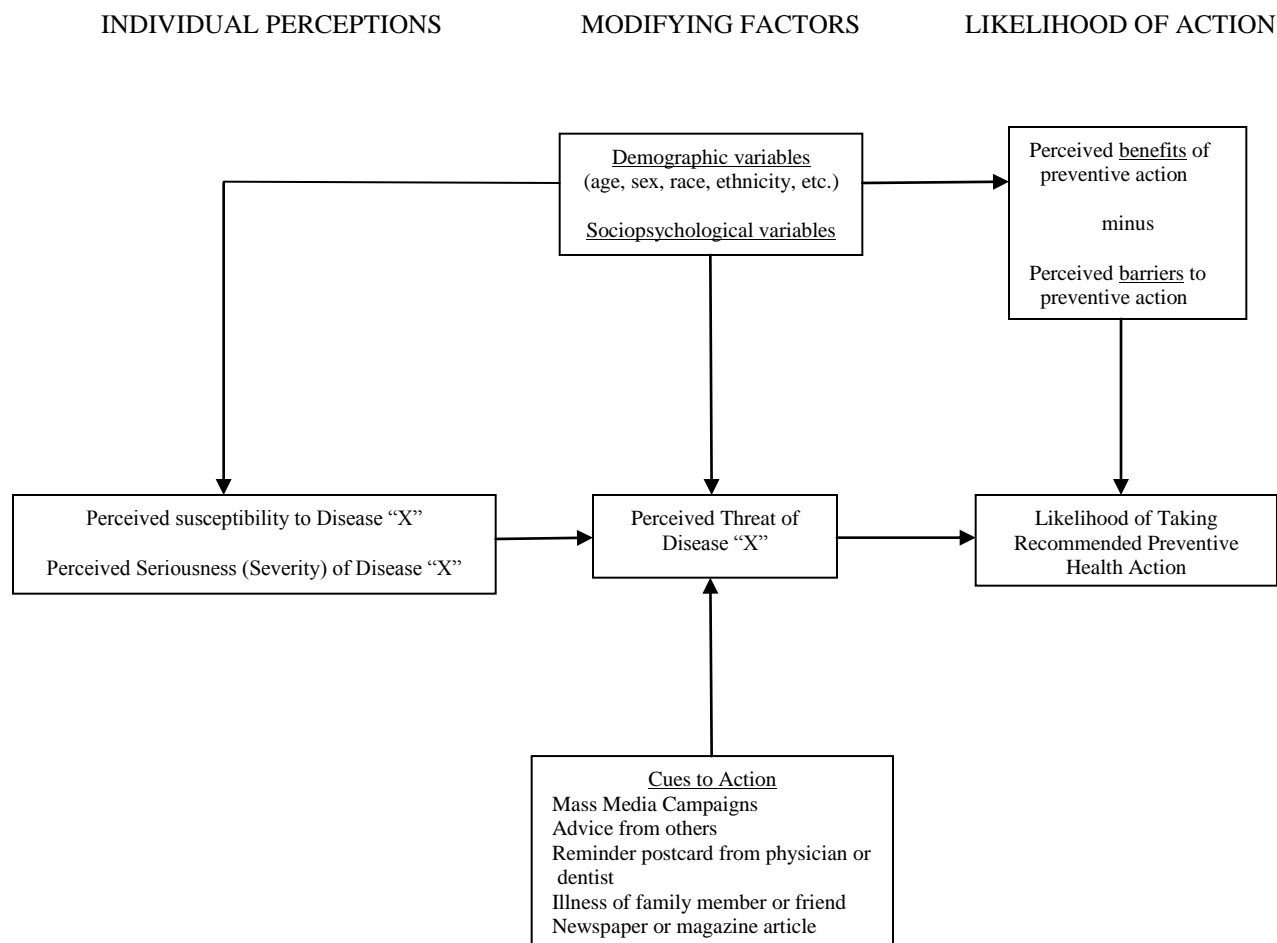
Figure 1. Basic Elements of the Health Belief Model (Reproduced with permission of *Medical Care*[51])

Janz, N. K., Becker, M. H. (1984). The Health Belief Model: A decade later. *Health Education Quarterly, 11*(1), p. 4.

Appendix G – Roden's Revised Health Belief Model for Young Families
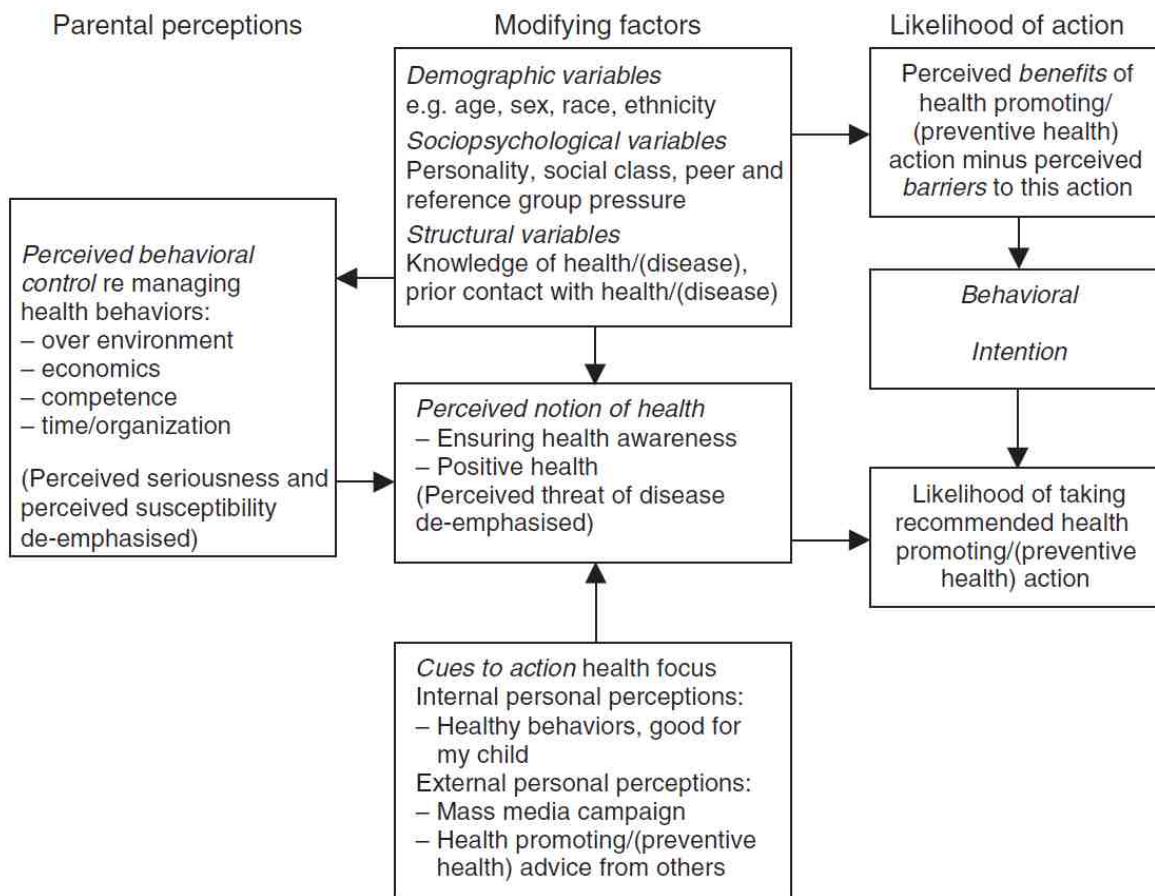
Figure 2. Revised Health Belief Model for young families

Roden, J. (2004). Revisiting the Health Belief Model: Nurses applying it to young families and their health promotion needs. *Nursing and Health Sciences, 6*(1), p. 5.

Appendix H – Child Information Form - English

Code Number _____

University of New Mexico Health Sciences Center
Child Information Form
Study: Children's Self-Perception of Weight

Please complete the information listed below.

Return this completed form and the signed consent form to your child's teacher.

Thank you!

Gender (check one):   Male ■   Female ■

Minor Child's Date of Birth: Month_____   Day_____Year_____
_____

My child's ethnicity is (check one):

American Indian or Alaska Native   ■

Black or African American   ■

Hispanic or Latino   ■

Asian   ■

White   ■

Native Hawaiian or Other Pacific Islander   ■

Other   ■

Appendix I – Child Information Form – Spanish

Universidad de Nuevo México Centro de Ciencias de la Salud
Forma de información sobre su niño
Estudio: Auto Percepción en los Niños con Respecto al Peso

Por favor complete la información listada abajo.
Regrese esta forma y la forma de consentimiento firmada al maestro/a de su niño
Gracias

Genero (marque uno):   Masculino ■   Femenino ■

Fecha del niño menor: Mes_____ Día_____ Año_____

Grupo étnico de mi niño (marque uno):

Indio Americano o Nativo de Alaska   ■

Negro o Afro Americano   ■

Hispano o Latino   ■

Asiático   ■

Blanco   ■

Nativo de Hawái u Otras islas del Pacifico   ■

Otro   ■

Appendix J – Flyer Explaining Research Project – English

A RESEARCH PROJECT ON CHILDREN'S SELF-PERCEPTION REGARDING WEIGHT!

Is your child in the 3rd, 4th or 5th grade and between the ages of 8 -11?

Are you interested in having your child participate in a research project on children's self-perception regarding weight?

Carolyn Jaramillo Montoya, Certified Pediatric Nurse Practitioner, is doing a study at 7 elementary schools in Belén. This study is a part of her dissertation at the College of Nursing, University of New Mexico.

The study will compare how children think they look with their actual weights. Information about the study and parent consent forms will be sent home with your child two weeks before doing the study.

Only children who have a signed parent consent form will be in the study. Children will also have to agree to be in the study. Parents can select to receive the results of their child's weight, height, and body mass index. An explanation of their meaning will be included. Children will receive a $10 gift certificate to Walmart for taking part in the study.

If you are interested in having your child be in this study please return the consent form to your child's teacher. If you would like more information regarding this study please call Carolyn Jaramillo Montoya at 505-272-8875.

Appendix K – Flyer Explaining Research Project – Spanish

Un Proyecto de estudio de la Auto- Percepción en los niños con del peso corporal

Su niño esta en el 3rd, 4th o 5th grado y entre las edades de 8 -11?

Esta usted interesado en que su niño participe en un estudio de la Auto- Percepción de los niños del peso corporal?

Carolyn Jaramillo Montoya, Enfermera Certificada en Pediatría, esta condiciendo un estudio en siete escuelas primarias de Belén. Este estudio es parte de una Disertación del Colegio de Enfermería de la Universidad de Nuevo México.

Este estudio va a comparar como los niños piensan que se ven en su peso actual. Información acerca del estudio y forma de consentimiento para los padres serán enviadas a su casa con su niño dos semanas antes del estudio.

Solamente los niños que tengan una forma de consentimiento firmada por los padres podrán participar en este estudio. El niño también tiene que estar desacuerdo en participar. Los padres pueden elegir recibir los resultados de su niño altura, peso e índice de masa corporal. Una explicación del significado será incluido. Los niños recibirán un Certificado de regalo de Wal-Mart de $10.00 dólares por participar en este estudio.

Si usted está interesado en que su niño participe en este estudio por favor envié de vuelta la forma de consentimiento al maestro de su niño. Si necesita más información acerca de este estudio llame a Carolyn Jaramillo Montoya al 505-272-8875.

Appendix L – Announcement for District Web Page

Is your child in the 3rd, 4th or 5th grade? Is your child between the ages of 8 -11?

Are you interested in having your child participate in a study on how children think about weight?

Carolyn Jaramillo Montoya, Certified Pediatric Nurse Practitioner, is a doctoral student at the College of Nursing, University of New Mexico. As part of her school work she will be conducting a study comparing how children think they look with their actual weights.

Seven elementary schools in Belén are participating in this study. Information about the study and parent consent forms will be sent home with your child two weeks in before the study.

Children **must** have a signed parent consent form to be in the study. Children will also have to agree to participate. Children will receive a $10 gift card to Walmart for taking part in the study.

Parents can select to receive the results of their child's weight, height, and body mass index along with what they mean.

If you are interested in having your child be in this study please return the consent form to your child's teacher. If you would like more information regarding this study please call Carolyn Jaramillo Montoya at 505-272-8875.

Appendix M – Newsletter Announcement

Children's Self-Perception Regarding Weight

Announcement for School Newsletter – Consolidated School District

Carolyn Jaramillo Montoya, Certified Pediatric Nurse Practitioner, is doing a study at 7 elementary schools in Belén. This study is a part of her dissertation at the College of Nursing, University of New Mexico. The study will compare how children think they look with their actual weights. Information about the study and parent consent forms will be sent home with your child two weeks before doing the study.

Only children who have a signed parent consent form will be in the study. Children will also have to agree to be in the study. Children will receive a $10 gift certificate to Walmart for taking part in the study. Parents can select to receive the results of their child's weight, height, and body mass index. An explanation of their meaning will be included. If you are interested in having your child be in this study please return the consent form to your child's teacher. If you would like more information regarding this study please call Carolyn Jaramillo Montoya at 505-272-8875.

Appendix N – Introduction Letter in English

University of New Mexico Health Sciences Center
Introduction Letter
Study: Children's Self-Perception of Weight

Dear Parent or Guardian,

You are being asked to allow your child to participate in a study that is being done by Carolyn Jaramillo Montoya MSN, Certified Pediatric Nurse Practitioner. Carolyn is a Doctoral Candidate at the College of Nursing, University of New Mexico. The Chair of her doctoral committee, Marie Lobo, PhD, RN, FAAN, is supervising this study.

This packet contains the following papers.

➢ Introduction letter
➢ A consent form explaining the study
➢ Child information form
➢ Child assent form

The consent form explains the study. The consent form also contains information related to your rights to have your child be in the study or not to be in the study. If, after reading the consent form, you have any questions you can contact me, Carolyn Jaramillo Montoya, RN, MSN, Certified Pediatric Nurse Practitioner (CPNP) and Doctoral Candidate at 505-272-8875 or Dr. Marie Lobo, Chair of my dissertation committee at 505-272-2637 during the weekday hours of 8am to 5pm.

If you have questions regarding your legal rights as a research participant, you may call the University of New Mexico Health Sciences Center Human Research Review Committee at 505-272-1129.

If you decide to have your child participate in this study, the following two forms need to be returned to your child's teacher.

➢ Consent form signed by the parent/guardian
➢ Child information form completed

Your child will not be part of this study if the signed consent form and the completed child information form are not returned.

I appreciate your taking your time to read this letter and consider having your child in this study.

Sincerely,

Carolyn Jaramillo Montoya RN, MSN, CPNP   Marie L. Lobo, RN, Ph.D., FAAN
DoctoralCandidate   Professor
Robert Wood Johnson Health Policy   College of Nursing
College of Nursing   University of New Mexico
University of New Mexico

Appendix O – Introduction Letter in Spanish

Universidad de Nuevo México Centro de Ciencias de la Salud
Letra de Introducción
Estudio: Auto Percepción en los Niños con Respecto al Peso

Estimado Padre/Guardián,

Estoy pidiendo que le permita a su niño participar en un estudio conducido por Carolyn Jaramillo Montoya MSN, Enfermera Certificada en Pediatría. Carolyn es candidata a un doctorado en el colegio de enfermería de la Universidad de Nuevo México. La jefa del Comité Doctoral, Marie Lobo, PHD, RN, FAAN, estará supervisando este estudio.

Este paquete contiene los siguientes papeles

  ➢ Letra de Introducción
  ➢ Forma de consentimiento explicando el estudio
  ➢ Forma de Información sobre su hijo/a
  ➢ Forma de asentimiento para su hijo/a

La forma de consentimiento explica el estudio. La forma de consentimiento también contiene información relacionada con sus derechos en dejar a su hijo/a ser parte o no ser parte en este estudio. Si, después de leer la forma de consentimiento, tiene preguntas usted me puede contactar Carolyn Jaramillo Montoya MSN, Enfermera Certificada en Pediatría y candidata a un doctoral 505-272-8875 o a la Doctora Marie Lobo, jefa del comité de mi disertación al 505-272-2637 durante las horas de semana 8am a 5pm.

Si tiene preguntas con respecto a sus derechos legales como participante de esta investigación, puede llamar a la Comité de Revisión de Investigación en Humanos del Centro de Ciencias de la Salud de la Universidad de Nuevo México al 505-272-1129.

Si decide en dejar a su hijo/a en participar en este estudio, las dos formas siguientes necesitan que ser entregadas al maestro/a de su hijo/a

  ➢ Forma de consentimiento firmado por padre/guardián
  ➢ Información sobre su hijo/a completada

Su hijo/a no será parte de este estudio si la forma de consentimiento y la información sobre su hijo/a no son entregadas.

Le agradezco por su tiempo en leer esta letra y por considerar en dejar a su hijo/a ser parte de este estudio.

Sinceramente,

Carolyn Jaramillo Montoya RN, MSN, CPNP   Marie L. Lobo, RN, PhD,FAAN
Doctoral Candidate   Professor
Robert Wood Johnson Health Policy   College of Nursing
College of Nursing   University of New Mexico
University of New Mexico

Appendix P – Parental Consent Form in English

University of New Mexico Health Sciences Center
Parental Consent for Child to Participate in Evaluation of Children's
Self-Perception of Weight

Dear Parent/Guardian,

You are being asked to allow your child to participate in a study that is being done by Carolyn Jaramillo Montoya MSN, Certified Pediatric Nurse Practitioner. Carolyn is a Doctoral Candidate at the College of Nursing, University of New Mexico. The Chair of her doctoral committee, Marie Lobo, PhD, RN, FAAN, is supervising this study.

Purpose and General Information

I am conducting a study of children's self-perception of weight. The purpose of this study is to compare how children think they look with their actual weights. You are being asked to help us because you are the parents of a child in the elementary schools in the Belén school system. I am asking you to allow your child, between 8-11 years-of-age, to participate in this study. There are approximately 1,000 students in this age range in grades 3, 4, and 5 in the Belén school system. My goal is to enroll as many of these 1,000 students who meet the conditions listed below.

Children **can** participate if:
- They are between the ages of 8-11 and are able to speak, read, and understand English.
- They are on a steroid inhaler (i.e. Flovent, Asmanex) for something like asthma.
- They are able to eat without help.

Children **cannot** participate if:
- They have a condition that affects their weight such as diabetes or heart disease.
- They are taking medications for cancer.
- They are taking a steroid medicine (i.e. Prednisone) by mouth.
- They are being treated for obesity.

Sponsors of this Study

I am receiving money to conduct this study from the Robert Wood Johnson Foundation Nursing and Health Policy Collaborative at the University of New Mexico. I am also receiving money from the Nurse Practitioner Healthcare Foundation through an award from the Astellas Promoting Heart Health Across the Age Span.

What will happen if I decide to participate?

Both you and your child need to agree for your child to participate in this study. If you agree and your child volunteers to participate the following things will happen. Your child will be asked to sign an assent form similar to the consent form you sign. A copy of the assent form is attached. The form he/she signs is much shorter and simpler than this form. Your child will only be given this form if you have signed a consent form for your child to participate. If your child agrees to participate he/she will be asked to look at pictures of 7 different figures of children and circle the one that he/she thinks looks most like him/her.

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The University of New Mexico Institutional Review Board (HRRC/MCIRB)

Appendix P – Parental Consent Form in English cont.

On a second sheet your child will be asked to look at the same figures and circle the figure he/she would most like to look like.

If you agree to have your child participate you will need to provide your child's date of birth, gender, and ethnicity on the consent form.

We will also be measuring your child's height and weight. We use that to determine your child's body mass index or BMI. Body mass index (BMI) is one way to know if a child's weight falls in one of four groups: underweight, healthy weight, overweight or obese.

Weight and height will be measured behind privacy screens one child at a time. Your child's weight, height and birthdate will be listed on a form by the child's code number. This information will be entered into a computer program. This program requires the date of birth in order to determine body mass index (BMI) for each child.

This survey will take about 10 minutes to complete. Weighing and measuring will take no more than 10 minutes.

What are the risks of being in this study?
Doing the paper and pencil survey and obtaining your child's height and weight will cause little or no risk to your child. The only potential risk is that some students may experience discomfort completing the survey or being weighed and measured. The survey and being weighed and measured is voluntary. If your child does not want to participate or is uncomfortable he/she can stop at any time and return to his/her normal activities.

What are benefits to being in this study?
Several studies have asked parents what they think about their child's weight. Not many studies actually ask children what they think about their weight status. This research may not have any direct benefit. This study may help us understand what children think about their weight. This will help health professionals help children.

You have the choice to receive your child's weight, height, and body mass index (BMI) measurements and an explanation of what they mean. If you want to receive these results with the explanation you can mark a box on the consent form. The results will be in a sealed envelope. This sealed envelope will be given to your child to take home to you. The results will contain the principal investigator's contact information if you want to discuss the results.

What other choices do I have if I do not want to be in this study?
You have the right not to let your child participate. Your child has the right to refuse participation. This survey does not affect your child's grades in any way. Stopping the survey or not wanting to be weighed and measured will not affect your child's grades or progress in school.

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Appendix P – Parental Consent Form in English cont.

How will my information be kept confidential?

A. Surveys

Your child will be assigned a code number which will appear on the survey. The surveys will not contain your child's name, ethnicity, or date of birth. There will be one master data sheet which will contain your child's name, date of birth, ethnicity and code number. The master data sheet and the surveys will be kept in a locked file cabinet in the principal investigator's office at the College of Nursing, University of New Mexico. The master data sheet and the surveys will be destroyed 7 years after the study is done.

B. Height, weight, birth date and body mass index (BMI)

The child's code number, height and weight and birthdate will be entered in a computer program to determine body mass index (BMI). Your child's name will not be entered. The computer containing this program with your child's information is password protected. This password is changed every 6 months. Only the principal investigator has access to this computer. The computer output containing the child's code number, height, weight, birthdate and body mass index will be destroyed 7 years after the study is done.

C. All reports will include group data only. No individual data will be disclosed.

HIPAA Permission for Use of Your Child's Protected Health Information (HIPAA)

As part of this study, we will be collecting health information about your child. This information is "protected" because it is identifiable or "linked" to your child.

Protected Health Information (PHI)

By signing this Consent Document, you are allowing the investigators and other authorized personnel to use your child's protected health information for the purposes of this study. This information will include your child's date-of-birth, height, weight, and body mass index (BMI).

Right to Withdraw Your Information

Your permission for the use of your child's health information for this study shall not expire unless you cancel this agreement. Your child's health information will be used as long as it is needed for this study. However, you may withdraw your permission at any time provided you notify the UNM investigators in writing. To do this, please send a letter notifying them of your withdrawal to:

Carolyn Montoya, MSN, CPNP, Phd(c)
College of Nursing
MSCO9 5350
1 University of New Mexico
Albuquerque, New Mexico, 87131

Please be aware that the research team will not be required to destroy or retrieve any of your child's health information that has already been used before your withdrawal is received.

Refusal to Sign

If you choose not sign this consent form and permission for the use of your child's PHI, you child will not be allowed to take part in this study.

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Appendix P – Parental Consent Form in English cont.

What are the costs of taking part in this study?
There are no costs for participating in this study.

Will I be paid for taking part in this study?
In return for his/her time your child will be given a $10 gift card to Walmart after completing the survey and the measurements. They will receive the $10 gift card even if they do not finish the survey or the measurements.

Contact Information
If you would like to find our more, please contact me, Carolyn Jaramillo Montoya, RN, MSN, Certified Pediatric Nurse Practitioner (CPNP) and Doctoral Candidate at 505-272-8875 or Dr. Marie Lobo, Chair of my dissertation committee at 505-272-2637 during the weekday hours of 8am to 5pm. If you are interested in having your child participate in this research, please sign the attached consent form. If you want to receive the results of your child's measurements and an explanation of what they mean check the appropriate box. Return the consent form to your child's teacher.

If you have questions regarding your legal rights as a research participant, you may call the University of New Mexico Health Sciences Center Human Research Review Committee at 505-272-1129.

Thank you in advance for your help with this research project.

Sincerely,

Carolyn Jaramillo Montoya RN, MSN, CPNP
Doctoral Candidate
Robert Wood Johnson Health Policy
College of Nursing
University of New Mexico

Marie L. Lobo, RN, PhD,FAAN
Professor
College of Nursing
University of New Mexico

Appendix P – Parental Consent Form in English cont.

University of New Mexico Health Sciences Center

Parental Consent for Child to Participate in Evaluation of Children's Self-Perception of Weight

Consent and Authorization

You are making a decision to have your child participate in this study. Your signature below indicates that you read the information provided. By signing this Consent Form, you are not waiving any of your child's legal rights as a research participant.

_____

Name of Child Participant

_____

Name of Parent/Child's Legal Guardian (Please print)

_____ / _____

Signature of Parent/Legal Guardian   Date

Check one

☐   I **would like** to receive the results of my child's measurements (weight, height, body mass index [BMI]) along with a brief explanation of their body mass index (BMI).

☐   I **DO NOT** want to receive the results of my child's measurements (weight, height, body   mass index [BMI]) along with a brief explanation of their body mass index (BMI).

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Appendix Q – Parental Consent Form in Spanish

Universidad de Nuevo México Centro de Ciencias de la Salud
Forma de consentimiento de los padres para participar en el estudio Auto Percepción en los Niños
con Respecto al Peso Corporal

Estimado Padre/Guardián,

Estoy pidiendo que le permita a su niño participar en un estudio conducido por Carolyn Jaramillo
Montoya MSN, Enfermera Certificada en Pediatría. Carolyn es candidata a un doctorado en el colegio de
enfermería de la Universidad de Nuevo México. La jefa del Comité Doctoral, Marie Lobo, PHD, RN, FAAN,
estará supervisando este estudio.

Propósito e Información General
Estoy conduciendo un estudio de como perciben los niños su peso corporal. El propósito de este estudio
es comparar como los niños piensan que se ven con su peso real. Le estoy pidiendo si participación por
que usted es el padre de un niño de la escuela primaria de Belén. Le estoy pidiendo que le permita
participar a su niño, entre 8 y 11 años de edad. Hay aproximadamente 1,000 estudiantes entre los grados
3,4, y 5 en el sistema de escuelas de Belén. Mi meta es enrolar la mayor cantidad posible de estos
estudiantes que reúnan las condiciones enumeradas abajo.

Niño **pueden** participar si:
- Tienen entre 8 y 11 años de edad y pueden hablar leer y entender Ingles.
- Están usando un inhalador con esteroides (i.e. Flovent, Asmanex) por algo como asma.
- Pueden comer sin ayuda.

Niños **no pueden** participar si:
- Tienen algún problema que afecte su peso como diabetes o enfermedades cardiacas.
- Están tomando medicaciones para el cáncer.
- Están tomando esteroides (i.e. Prednisone) por la boca.
- Están siendo tratados por obesidad.

Patrocinadores de este estudio
Estoy recibiendo dinero para conducer este estudio de la Robert Wood Johnson Foundation Nursing and
Health Policy Collaborative at the University of New Mexico. Estoy recibiendo dinero también de la Nurse
Practitioner Healthcare Foundation a través de Astellas Promoting Heart Health Across the Age Span.

¿Que pasara si decido participar?
Usted y su niño necesitan que estar de acuerdo en participar en este estudio. Si usted está de acuerdo y
su niño decida voluntariamente participar en este estudio va a pasar lo siguiente. Le pediremos a su niño
que firme la forma de asentimiento de la misma manera que usted firma la forma de consentimiento.
Una copa de la forma asentimiento es incluida. La forma en que él o ella firman es mucho más simple y
corta que esta forma. A su niño le daremos solamente esta forma si es que usted ha firmado el
consentimiento para que el pueda participar. Si su niño está de acuerdo en participar a él o ella le será
pedido que mire fotografías de siete figuras diferentes de niños y marque la fotografía en la que él o ella

Appendix Q – Parental Consent Form in Spanish cont.

piensa que se ve más como él o ella misma. En otra forma le pediremos que vuelva a ver las mismas fotografías y marque la figura a la que él o ella le gustaría parecer.

Si usted esta de acuerdo que su niño participe tendrá que darnos la fecha de nacimiento de su niño, genero, y grupo étnico en la forma de consentimiento.

Mediremos también la altura y peso de su niño. Usaremos esto para determinar el índice de masa corporal o BMI de su niño. El índice de masa corporal (BMI) es una forma de saber si el peso de su niño pertenece a uno de estos cuatro grupos: bajo peso, peso saludable, sobrepeso u obeso.

El peso y la altura serán medidas en privado un niño a la vez. El peso, altura y fecha de nacimiento de su niño será puesto en una forma con el número de código del niño. Esta información será puesta en una computadora. Este programa requiere la fecha de nacimiento para determinar el índice de masa corporal (BMI) para cada niño.

Completar esta forma va a tomar aproximadamente diez minutos. Pesar y tomar las medidas no va a tomar más de diez minutos.

¿Cuáles son los riesgos de participar en este estudio?
Completar la forma de papel y lápiz y obtener el peso y altura de su niño puede causar pequeño o no riesgo a su niño. El único riesgo potencial es que algunos estudiantes podrían experimentar mal estar completando la forma o siendo pesados o medidos. Completar la forma y ser pesado y medido es voluntario. Si su niño no quiere participar o no esta cómodo él o ella pueden parar en cualquier momento y retornar a sus actividades normales.

¿Cuáles son los beneficios de participar en este estudio?
Varios estudios le han preguntado a los padres que piensan del peso de sus niños. No muchos estudios actualmente le preguntan a los niños que piensan acerca de su propio peso. Este estudio puede no tener ningún beneficio directo. Este estudio puede ayudarnos a entender que es lo que los niños piensan acerca de su peso. Esto le ayudara a los profesionales de la salud y a los niños.

Usted tiene la posibilidad de recibir la altura, peso e índice de masa corporal (BMI) de su niño y una explicación de que significa. Si usted quiere recibir estos resultados con una explicación puede marcar la caja en esta forma de consentimiento. Los resultados le serán entregados en un sobre cerrado. Este sobre le será entregado a su niño para que lo lleve a su casa. Los resultados van a contener la dirección del Investigador Principal en caso que quiera discutir los resultados.

¿Que otras oportunidades tengo si no quiero participar en este estudio?
Usted tiene el derecho de no dejar participar a su niño. Su niño tiene el derecho de negarse a participar. Esta encuesta no afecta los grados de su niño de ninguna manera. Parando la encuesta o no queriendo participar en el peso y medida no afectara los grados de su niño ni su progreso en la escuela.

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Appendix Q – Parental Consent Form in Spanish cont.

¿Cómo va a ser guardada mi información confidencial?

A. Encuestas

A su Niño se le asignara un número codificado que aparecerá en la encuesta. Las encuestas no tienen el nombre de su niño, grupo étnico o fecha de nacimiento. Habrá una lista principal que contiene el nombre de su niño fecha de nacimiento, grupo étnico y número codificado. Esta lista principal y las encuestas serán guardadas en un gabinete con llave en la oficina del Investigador Principal en el Colegio de Enfermería de la Universidad de Nuevo México. Y las encuestas serán destruidas siete anos después de la finalización de este estudio.

B. Altura, peso, fecha de nacimiento e índice de masa Corporal (BMI)

El número codificado del niño altura, peso, y fecha de nacimiento será entrado en el programa de una computadora para determinar el índice de masa corporal (BMI). El nombre de su niño no será entrado. La computadora conteniendo este programa con la información de su niño es protegida por una contraseña. Esta contraseña es cambiada cada seis meses. Solamente el Investigador Principal tiene acceso a esta computadora. Todos los datos en la computadora conteniendo el número de código del niño altura, peso, fecha de nacimiento e índice de masa corporal será destruido siete años después de la finalización de este estudio.

C. Todos los reportes incluirán solamente datos del grupo. No se incluirán datos individuales.

Permisión para el uso de su Información Protegida de Salud (HIPAA en Ingles) sobre su niño.

Como parte de este estudio, obtendremos información de salud sobre su niño. Esta información es "protegida" porque es identificada o relacionada sobre su niño.

Información de Salud Protegida (PHI en Ingles)

Al firmar esta forma de consentimiento, usted esta autorizando a los investigadores y otro personal autorizado a usar su información protegida de salud para este estudio. Esta información incluir: día de nacimiento, altura y peso, masa corporal o BMI de su niño.

Derecho a retirar su información

Su permisión para su nino uso y divulgación de su información protegida de salud en este estudio no se terminara, a no ser que usted la cancele. La información protegida de salud de su niño será usada mientras sea necesaria en este estudio. Usted podrá retirar su información de participar en cualquier momento notificando al investigador por escrito. Para hacer esto por favor envíe una carta a:

Carolyn Montoya, MSN, CPNP, Phd(c)
College of Nursing
MSCO9 5350
1 University of New Mexico
Albuquerque, New Mexico, 87131

Por favor dese cuenta que no le pediremos al investigador que destruya ninguna información de salud sobre su niño que haya sido usada o compartida antes que su forma para Retirarse de un Estudio o carta fuera recibida.

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Appendix Q – Parental Consent Form in Spanish cont.

Si no quisiera firmar.

Si usted prefiere no firmar esta forma de consentimiento y permisión para el uso y divulgación de su Información Protegida de Salud (PHI en Ingles) de su niño, no se le permitirá participar su niño en el estudio.

¿Cuáles son los costos de participar en este estudio?

No habrá costos por participar en este estudio.

¿Me pagaran por participar en este estudio?

Por su tiempo y el tiempo de su niño le daremos una tarjeta de crédito de Wal-Mart de $10.00 dorales después de completar la encuesta y las medidas. Recibirá una tarjeta de crédito con $10.00 aun que no termine la encuesta o las medidas.

Información para contactarnos

Si desea saber más acerca de este estudio, por favor contácteme, Carolyn Jaramillo Montoya, RN, MSN, Certified Pediatric Nurse Practioner (CPNP) y Candidato Doctoral al 505-272-8875 o al doctor Marie L. Lobo Jefa del Comité de disertación al 505-272-2637 durante días de semana de 8 a 5 de la tarde. Si usted esta interesado en que su niño participe en este estudio, por favor firme la forma de consentimiento. Si usted quiere recibir los resultados de las medidas de su niño y una explicación de lo que significan marque la caja apropiada. Retorne la forma de consentimiento al maestro de su niño.

Si tiene preguntas acerca de sus derechos como participante de este estudio puede llamar al Comité de Revisión de Investigación en Humanos del Centro de Ciencias de la Salud de la Universidad de Nuevo México al 505-272-1129.

Gracias por adelantado por su ayuda en este estudio.

Sinceramente,

Carolyn Jaramillo Montoya RN, MSN, CPNP
Doctoral Candidate
Robert Wood Johnson Health Policy
College of Nursing
University of New Mexico

Marie L. Lobo, RN, PhD, FAAN
Professor
College of Nursing
University of New Mexico

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Appendix Q – Parental Consent Form in Spanish cont.

Universidad de Nuevo México Centro de Ciencias de la Salud
Forma de consentimiento de los padres para participar en el estudio Auto Percepción en los Niños
con Respecto al Peso Corporal

Consentimiento y Autorización

Usted está haciendo la decisión en dejar a su hijo/a participar en este estudio. Su firma abajo indica que usted ha leído la información aprobada firmando esta forma de consentimiento, no esta rechazando ningún derecho legal como participante de este estudio

_____

Nombre del niño participando

_____

Nombre del Padre/ o Guardián (por favor emprima)

_____   /_____

Firma del Padre/ o Guardián   Fecha

Marque uno

☐   **Me gustaria** recibir los resultados de las medias de mi niño (Peso, Altura, Indice de masa corproal [BMI]) junto con una breve explicacion de lo que es el indice de masa corporal (BMI).

☐   **NO Me gustaria** recibir los resultados de las medias de mi niño (Peso, Altura, Indice demasa corproal   [BMI]) junto con una breve explicacion de lo que es el indice de masa corporal (BMI)

Appendix R – Child Assent From in English

UNIVERSITY OF New Mexico HEALTH SCIENCES CENTER
ASSENT TO PARTICIPATE IN RESEARCH (Ages 8-11)

Children's Self-Perception of Weight

You are being asked to join a study about children and their weight. We want to know what you think about how you look. You will be asked to look at pictures of children and pick the one that you think looks most like you. You will be asked to look at a second set of pictures of children and asked to pick the one that you would most like to look like. We will measure your height and weight. This will be done in private. Your name will not be used.

It is up to you whether you help us. There are no right or wrong answers. You will not be identified. The two pages of pictures will take less than 10 minutes to finish. When you are finished please return the pages to one of the adults who gave them to you. We will then measure your weight and your height in private. This will not take longer than 10 minutes. After you have completed the paper and your height and weight is measured you will receive a $10 gift card to Walmart. You will get the $10 gift card even if decide to stop before finishing.

Your parents have given permission for you to participate in this study. You do not have to participate. If you do decide to be in the study, you can change your mind at any time. It does not matter to your teachers if you help us or if you change your mind about being in this study. Your teachers won't care if you change your mind or if you don't want to join this study. You will not be given a grade for doing this study.

Signing this form means you have decided to join this study.

Print Your Name: _____

Sign Your Name: _____   Date: _____

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Appendix S – Child Assent Form in Spanish

Universidad de Nuevo México Centro de Ciencias de la Salud
Forma de asentimiento para participar en una investigación (Edades 8-11)
Auto Percepción en los Niños con Respecto al Peso Corporal

Te estamos solicitando que partícipes en un estudio acerca de los niños y su peso. Queremos saber que piensas acerca de cómo te ves. Te pediremos que observes fotos de niños y escojas una que más se parezca a ti. Te pediremos que observes un segundo grupo de fotos y elijas una a la que te gustaría parecer. Mediremos tu altura y peso. Esto será echo en privado. No utilizaremos tu nombre.

Depende de si quieres ayudarnos. No hay preguntas correctas o incorrectas. No serás identificado. Utilizar los dos paquetes de fotos te tomara menos de diez minutos. Cuando termines por favor devuelve las paginas a uno de los adultos que te las dio, nosotros entonces mediremos tu peso y altura en privado. Esto no tomara más de diez minutos. Después de completar el papel y tu altura y peso es medida recibirás una tarjeta de regalo de Wal-Mart por $10.00 dólares. Recibirás la tarjeta de regalo de $10.00 dólares aun si decides no finalizar el estudio.

Tus padres te han dado permiso para participar en este estudio. No tienes que participar si no quieres. Si decides participar en el estudio, puedes cambiar de parecer en cualquier momento. A tus maestros no les va a interesar si tú nos ayudas o si cambias de parecer en participar de este estudio. No te será dado ningún grado por participar en este estudio.

Firmando esta forma significa que has decidido participar en el estudio.

Escribe tu nombre: _____

Firma tu nombre: _____ Fecha: _____

Appendix T – CBIS[©] Boys Survey

Children's Body Image Scale[©]
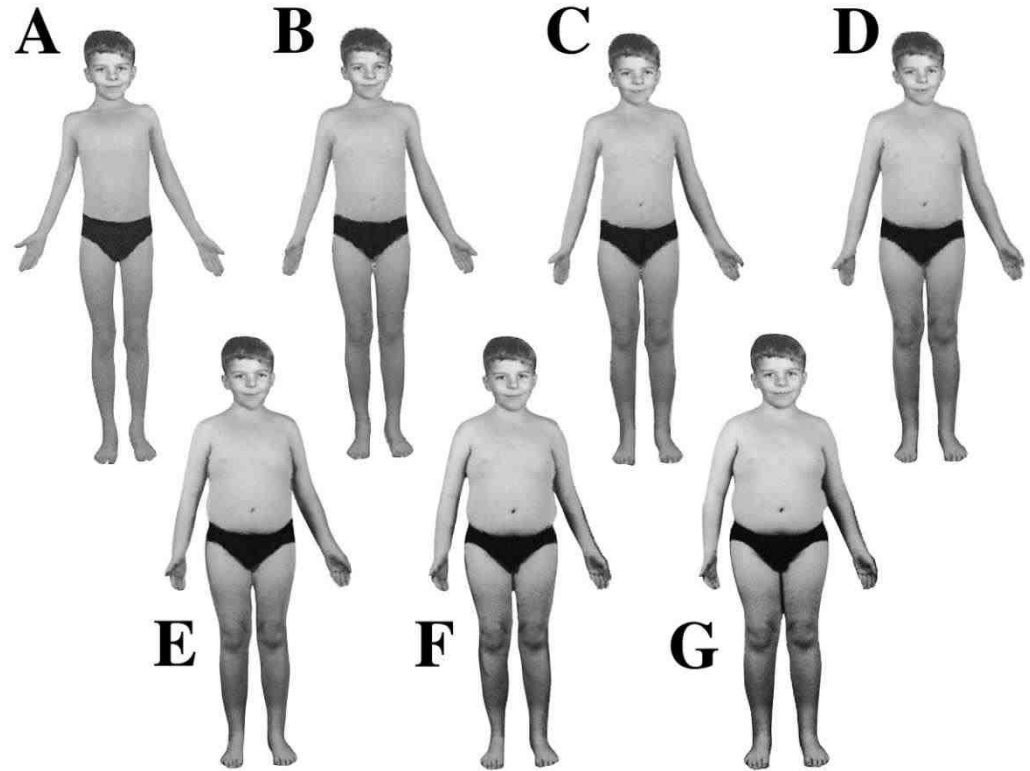
Date_____CODE NUMBER_____

THANK YOU FOR HELPING IN OUR STUDY

Circle the body figure that looks most like you.

Appendix T – CBIS© Boys Survey cont.

Children's Body Image Scale©
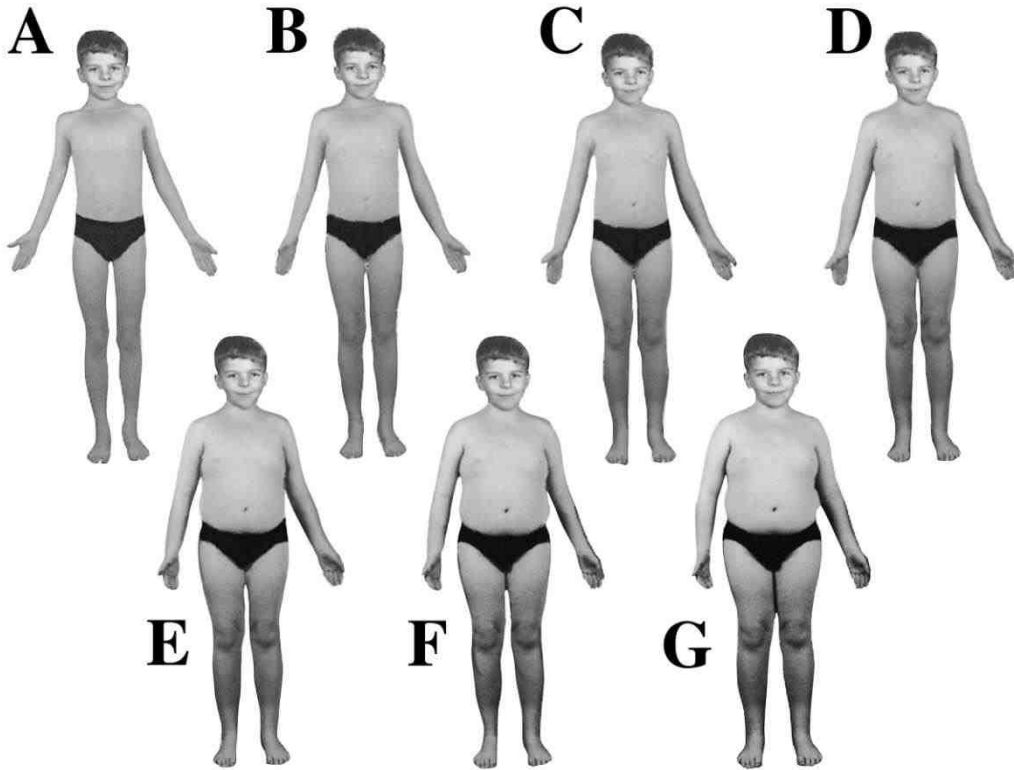
Date_____CODE NUMBER_____

Date of Birth_____

Height_____

Weight_____

BMI_____

%BMI_____

NOTES:

Circle the body figure that you would most like to have.

Appendix U – CBIS© Girls Survey

Children's Body Image Scale©

Date_____CODE NUMBER_____

THANK YOU FOR HELPING IN OUR STUDY!
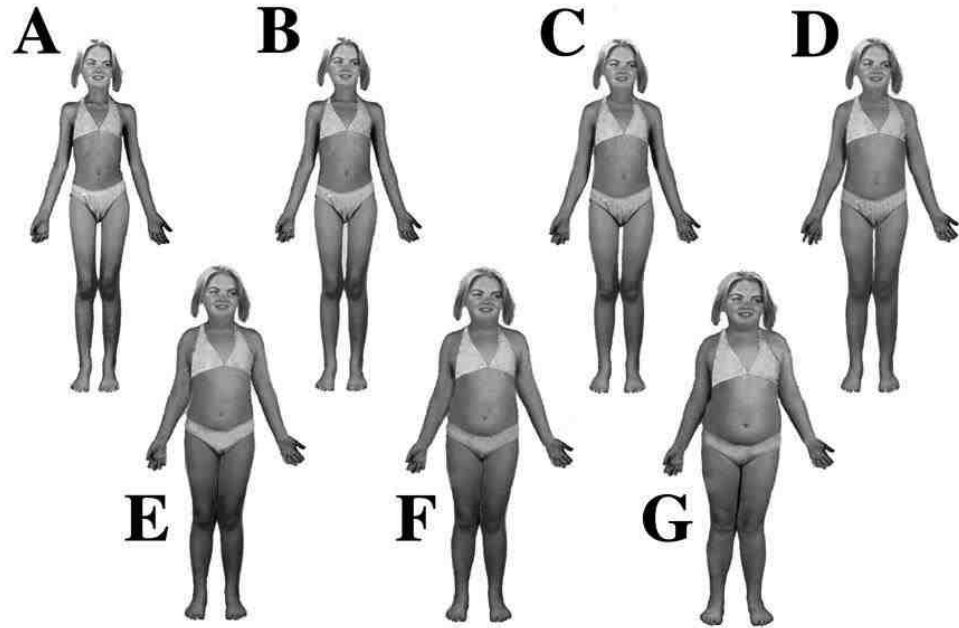
Circle the body figure that looks most like you.

Appendix U – CBIS© Girls Survey cont.

Children's Body Image Scale©
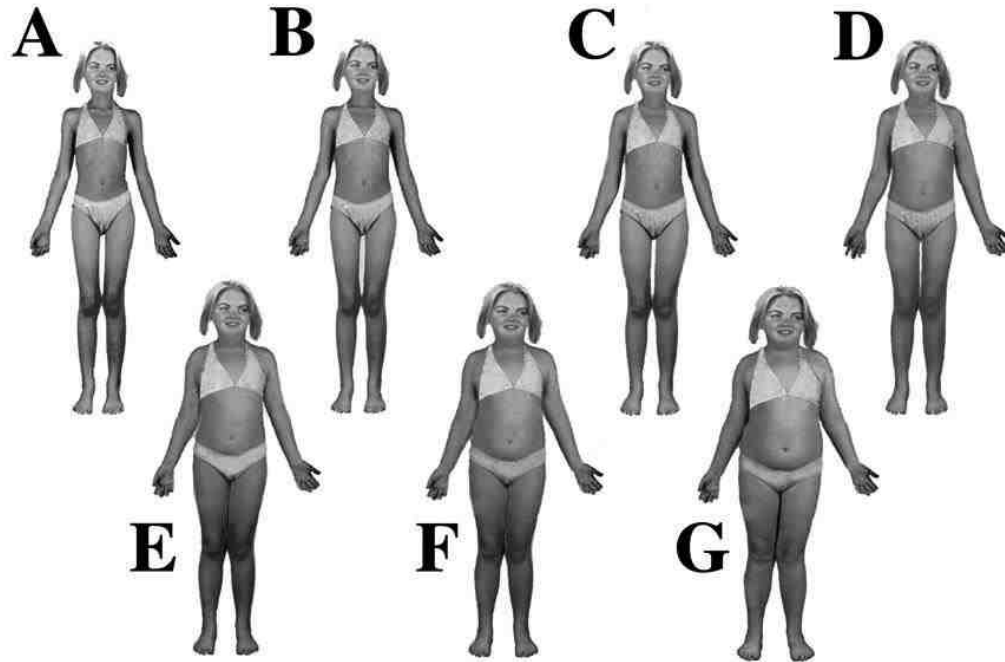
Date_____CODE NUMBER_____

Date of Birth_____

Height_____

Weight_____

BMI_____

%BMI_____

NOTES:

Circle the body figure that you would most like to have.

Appendix V – Parent Results Letter in English

University of New Mexico Health Sciences Center
Evaluation of Children's
Self-Perception of Weight

Results of your Child's Measurements

Dear Parent:

Thank you for allowing your child to participate in this study. I have included a brief explanation of body mass index (BMI). The weight groups used with body mass index are also included. Your child's measurements and weight group are included on the back of this page. If you have further questions regarding these results you can call me, Carolyn Jaramillo Montoya, RN, MSN, Certified Pediatric Nurse Practitioner, Doctoral Candidate, at 505-272-8875 from 8-5pm during the week.

Child's Name_____ Age_____(years + months)
            Gender_____

What is body mass index (BMI)?
Body mass index is calculated using a child's height and weight. The number is then placed on a body mass percentile chart based on age and gender. The BMI chart is like a growth chart. Body mass index does not measure body fat directly. It has been associated with the amount of body fat. Body mass index is a **screening** tool for problems with weight. Body mass index **does not** diagnose weight problems.

The table below shows the four group weights that are used with body mass percentiles.

Weight Groups	Percentile Range
Underweight	Less than the 5th percentile
Healthy weight	5th percentile to less than the 85th percentile
Overweight	85th to less than the 95th percentile
Obese	Equal to or greater than the 95th percentile

Appendix V – Parent Results Letter in English cont.

Child's Name_____ Age_____(years + months)
              Gender_____

Category	Measurement	Chart Percentile
Weight		
Height		
Body Mass Index (BMI)		

Your child's body mass index percentile places your child in the _____
_____weight group.

What should you do with these results?

1. We know that being overweight or obese can lead to diabetes, high blood pressure or other health problems. Being underweight may also present with health problems. Remember that this result is only a **screening tool** and **does not diagnosis** a health care problem. It is really best to look at children's growth measurements over a period of time. Share these results with your health care provider. If you do not have a health care provider contact your school nurse who can recommend a local health care clinic.

2. Encourage healthy habits for your entire family. Some families find it helpful to follow the **5-2-1-0** plan:

   5 servings of fruit and vegetables per day
   2 no more than **2** hours of screen time per day, including TV and computer time
   1 hour of physical activity per day
   0 sweet beverages like juice, soda, sports drinks per day; encourage water and low-fat milk

Remember if you have further questions regarding these results you can call me at 505-272-8875 from 8-5pm during the week. Again thank you for letting your child participate in this research study.

Sincerely,

Carolyn Jaramillo Montoya, RN MSN, Certified Pediatric Nurse Practitioner
RWJ Health Policy Fellow and Doctoral Candidate
College of Nursing, University of New Mexico

Appendix W – Parent Results Letter in Spanish

Universidad de Nuevo México Centro de Ciencias de la Salud
Auto Percepción en los Niños con Respecto al Peso Corporal
Resultados de las medidas de su niño

Estimados Padres:

Gracias por permitirle a su niño participar en este estudio. Eh incluido una breve explicación del Índice de Masa Corporal (Body Mass Index-BMI). Los grupos de peso usados con el índice de masa corporal están también incluidos. Las medidas de su niño y grupo de peso están incluidas en el reverso de esta página. Si tiene preguntas acerca de estos resultados puede llamar a Carolyn Jaramillo Montoya, RN, MSN, Enfermera Pediátrica Certificada y candidata Doctoral al 505-272-8875 de las 8 a las 5 de la tarde durante la semana.

Nombre del niño_____ Edad_____(Anos + meses)
                          Genero_____

¿Qué es el Índice de Masa Corporal (BMI)?
El índice de masa corporal es calculado utilizando el peso y altura del niño. El número es puesto luego en una grafica basado en la edad y el género. La grafica de índice de masa corporal (BMI) no mide la grasa corporal directamente. Ha sido asociada con el monto de grasa corporal. El índice de masa corporal es una herramienta de proyección para los problemas de peso corporal. El índice de masa corporal no diagnostica problemas de peso.

La tabla siguiente muestra los cuatro grupos de peso que son usados con los porcentajes de masa corporal.

Grupos de Peso	Rangos de Porcentaje
Bajo peso	Menos del 5 por ciento.
Peso Saludable	5 por ciento a menos de 85 por ciento.
Sobrepeso	85 a menos de 95 por ciento.
Obeso	Igual o mayor que el 95 por ciento.

Appendix W – Parent Results Letter in Spanish cont.

Nombre del niño_____ Edad_____ (Anos + meses)
              Genero_____

Categoria	Medidas	Porcentaje grafica
Peso		
Altura		
Índice de Masa Corporal (BMI)		

El índice de masa corporal de su niño lo ubica en el _____
grupo de peso.

¿Qué debe usted hacer con estos resultados?

1. Sabemos que tener sobrepeso o ser obesos nos puede llevar a tener diabetes, presión arterial alta u otros problemas de salud. Tener sobrepeso se puede presentar con problemas de salud. Recuerde que este resultado es solo una herramienta de proyección y diagnostica un problema de salud. Es realmente mejor mirar a las medidas de crecimiento de su niño a través de un periodo de tiempo. Comparta estos resultados con su medico. Si no tiene un medico hable con la enfermera de la escuela que puede recomendarle una clínica local.

2. Aconseje hábitos saludables para toda su familia. Algunas familias encuentran provechoso seguir el plan **5-2-1-0**:

    5 porciones de frutas y vegetables por dia.
    2 no mas de **2** horas de pantalla por dia incluido television y tiempo en la computadora.
    1 hora de actividad fisica por dia.
    0 bebidas dulces como jugo, soda, bevidas deportivas; aconseje tomar agua y leche desgrasada.

Requerde que si tiene pregunstas hacerca de estos resultados me puede llamar al 505-272-8875 de las 8-5pm de la tarde durante los fines de semana. Gracias de nuevo por dejar participar a su nino en este estudio.

Sinceramente,

Carolyn Jaramillo Montoya RN MSN, Certified Pediatric Nurse Practitioner
RWJ Health Policy Fellow and Doctoral Candidate
College of Nursing, University of New Mexico

Appendix X – Study Findings for School Superintendent

Children's Self-Perception Regarding Weight

Summary & Recommendations

Prepared for School Superintendent

May 8, 2013

Study Summary

The aims of this study were: 1. to determine differences in children's self-perceptions of weight based on age, gender, actual body mass index (BMI) category, grade level, and ethnicity compared with their clinically measured BMI; and 2. to determine the association of gender, age, grade level, ethnicity, and actual BMI category with their perception of ideal BMI category. A total of 424 children participated in this study. The table below provides selected characteristics of the participants.

Characteristic	Sample N (%)
Total	424 (42%)[1]
Gender	
Male	206 (49)
Female	218 (51)
Grade	
3rd	120 (28)
4th	152 (36)
5th	152 (36)
Ethnicity	
White	80 (19)
Hispanic	299 (70)
Other/mulitracial	45 (11)
Weight Category - Based on BMI	
Underweight	12 (2.8)
Healthy weight	235 (55.4)
Overweight	80 (18.9)
Obese	97 (22.9)

[1]At the time of this study the total number of students in grades 3-5 was 1,014.

Study Results

The prevalence rate for obesity in children between the ages of 2-19 in the United States is 17% (Ogden, et al., 2012). The combined rate for overweight and obesity is 32%. In this sample of 424 children the prevalence of obesity is 23% and the combined rate for overweight and obesity is 42%.

Appendix X – Study Findings for School Superintendent, continued

All children who participated in this study received a $10 gift card to Wall Mart. A results letter including the child's height, weight, and BMI, with an explanation of the findings and a brief health message, was sent to all parents who indicated on the consent form that they wished to receive this information. Contact information for the principal investigator (PI) was provided with the explanation that parents could contact the PI if they had any questions or concerns. One parent contacted the PI and the concerns were addressed.

Only 9.0% of overweight or obese children selected figures representing their clinically based measured BMI category. This finding was statistically significant. There was no difference based on age, gender, or ethnicity.

Although not statistically significant, a third of the participants (32%) selected an underweight figure as ideal.

Conclusions
Regardless of gender, age, grade level, and ethnicity, children between the ages of 8-11, who are either overweight or obese, do not accurately perceive their weight status. Although not statistically significant, it is concerning that 1/3 of this sample expressed a preference for the underweight figure.

Recommendations
1. This convenience sample of 7 of the elementary schools (home school not included) demonstrated prevalence rates higher than the national averages for both obesity and combined overweight and obesity. It may be worthwhile to determine the actual rates of overweight and obesity for the elementary school children. This data would be helpful in terms of determining, what if any prevention/intervention programs may be necessary.

2. Considering the fact that those children who are either overweight or obese do not recognize themselves as obese it may be more helpful to institute prevention/intervention programs that focus on healthy eating and exercise for the entire community of children rather than targeting this specific group of children.

3. The focus of any programs should stress health and healthy habits rather than weight considering the fact that a 1/3 of this sample selected an underweight figure as ideal.

We would like to thank the superintendent, principals, teachers, and nurses who allowed us to conduct this study and participated in the data collection. Donna Alfonso, Health Services Coordinator, and Yvonne Duran, Health Services Secretary, were especially helpful. Most of all we would like to thank all of the children and parents who agreed to participate in the study.

Appendix X – Study Findings for School Superintendent, continued

Carolyn Jaramillo Montoya RN, MSN, CPNP FAAN
Doctoral Candidate
Robert Wood Johnson Health Policy
College of Nursing
University of New Mexico

Marie L. Lobo, RN, Ph.D.,
Professor
College of Nursing
University of New Mexico

References

Ogden, C. L., Carroll, M. D., Kit, B. K, & Flegal, K. M. (2012). Prevalence of obesity and trends in body mass index among U.S. children and adolescents, 199-2010. *Journal of the American Medical Association.* Advance online publication. doi:10.1001/jama.2012.40

Appendix Y – Study Findings for Each School, A through G

Children's Self-Perception Regarding Weight

Summary & Recommendations

Prepared for Elementary School "A"

May 8, 2013

Study Summary

The aims of this study were: 1. to determine differences in children's self-perceptions of weight based on age, gender, actual body mass index (BMI) category, grade level, and ethnicity compared with their clinically measured BMI; and 2. to determine the association of gender, age, grade level, ethnicity, and actual BMI category with their perception of ideal BMI category. A total of 424 children participated in this study. The table below provides selected characteristics of the participants for the overall sample and for **"A"** Elementary.

Characteristic	Total Sample N (%)	"A" Sample N (%)
Total	424 (42%)[1]	75 (18)[2]
Gender		
Male	206 (49)	42 (56)
Female	218 (51)	33 (44)
Grade		
3rd	120 (28)	0 (0)
4th	152 (36)	39 (52)
5th	152 (36)	36 (48)
Ethnicity		
White	80 (19)	16 (21)
Hispanic	299 (70)	51 (68)
Other/mulitracial	45 (11)	8 (11)
Weight Category - Based on BMI		
Underweight	12 (2.8)	5 (7)
Healthy weight	235 (55.4)	41 (55)
Overweight	80 (18.9)	14 (19)
Obese	97 (22.9)	15 (20)

[1]At the time of this study the total number of students in grades 3-5 was 1,014.

[2]The percent represents 18% of the total sample of 424.

Study Results

The prevalence rate for obesity in children between the ages of 2-19 in the United States is 17% (Ogden, et al., 2012). The combined rate for overweight and obesity is 32%. In this

sample of 424 children the prevalence of obesity is 23% and the combined rate for overweight and obesity is 42%.

For **"A" Elementary** the prevalence of obesity **in this sample is 20%** and the combined rate for overweight and obesity is **39%**.

All children who participated in this study received a $10 gift card to Wall Mart. A results letter including the child's height, weight, and BMI, with an explanation of the findings and a brief health message, was sent to all parents who indicated on the consent form that they wished to receive this information. Contact information for the principal investigator (PI) was provided with the explanation that parents could contact the PI if they had any questions or concerns. One parent contacted the PI with concerns and the concerns were addressed.

Only 9.0% of overweight or obese children selected figures representing their clinically based measured BMI category. This finding was statistically significant. There was no difference based on age, gender, or ethnicity.

Although not statistically significant, a third of the participants (32%) selected an underweight figure as ideal.

Conclusions

Regardless of gender, age, grade level, and ethnicity, children between the ages of 8-11, who are either overweight or obese, do not accurately perceive their weight status. Although not statistically significant, it is concerning that 1/3 of this sample expressed a preference for the underweight figure.

Recommendations

1. This convenience sample of 7 of the elementary schools (home school not included) demonstrated prevalence rates higher than the national averages for both obesity and combined overweight and obesity. It may be worthwhile to determine the actual rates of overweight and obesity for the elementary school children. This data would be helpful in terms of determining, what if any prevention/intervention programs may be necessary.

2. Considering the fact that those children who are either overweight or obese do not recognize themselves as obese it may be more helpful to institute prevention/intervention programs that focus on healthy eating and exercise for the entire community of children rather than targeting this specific group of children.

3. The focus of any programs should stress health and healthy habits rather than weight considering the fact that a 1/3 of this sample selected an underweight figure as ideal.

We would like to thank the superintendent, principals, teachers, and nurses who allowed us to conduct this study and participated in the data collection. Donna Alfonso, Health Services Coordinator, and Yvonne Duran, Health Services Secretary, were especially helpful. Most of

all we would like to thank all of the children and parents who agreed to participate in the study.

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Ogden, C. L., Carroll, M. D., Kit, B. K, & Flegal, K. M. (2012). Prevalence of obesity and trends in body mass index among U.S. children and adolescents, 199-2010. *Journal of the American Medical Association.* Advance online publication. doi:10.1001/jama.2012.40

Children's Self-Perception Regarding Weight

Summary & Recommendations

Prepared for Elementary School "B"

May 8, 2013

Study Summary

The aims of this study were: 1. to determine differences in children's self-perceptions of weight based on age, gender, actual body mass index (BMI) category, grade level, and ethnicity compared with their clinically measured BMI; and 2. to determine the association of gender, age, grade level, ethnicity, and actual BMI category with their perception of ideal BMI category. A total of 424 children participated in this study. The table below provides selected characteristics of the participants for the overall sample and for "B" Elementary.

Characteristic	Sample N (%)	"B" Sample N (%)
Total	424 (42%)[1]	33 (7.8)[2]
Gender		
Male	206 (49)	12 (36)
Female	218 (51)	21 (64)
Grade		
3rd	120 (28)	6 (18.2)

4th	152 (36)	14 (42.4)
5th	152 (36)	13 (39.4)
Ethnicity		
White	80 (19)	6 (18)
Hispanic	299 (70)	25 (76)
Other/mulitracial	45 (11)	2 (6)
Weight Category - Based on BMI		
Underweight	12 (2.8)	0 (0)
Healthy weight	235 (55.4)	23 (69.7)
Overweight	80 (18.9)	5 (15.2)
Obese	97 (22.9)	5 (15.2)

[1]At the time of this study the total number of students in grades 3-5 was 1,014.
[2]The percent represents 7.8% of the total sample of 424.

Study Results
The prevalence rate for obesity in children between the ages of 2-19 in the United States is 17% (Ogden, et al., 2012). The combined rate for overweight and obesity is 32%. In this sample of 424 children the prevalence of obesity is 23% and the combined rate for overweight and obesity is 42%.
For **"B" Elementary** the prevalence of obesity **in this sample is 15%** and the combined rate for overweight and obesity is **30%**.

All children who participated in this study received a $10 gift card to Wall Mart. A results letter including the child's height, weight, and BMI, with an explanation of the findings and a brief health message, was sent to all parents who indicated on the consent form that they wished to receive this information. Contact information for the principal investigator (PI) was provided with the explanation that parents could contact the PI if they had any questions or concerns. One parent contacted the PI with concerns and the concerns were addressed.

Only 9.0% of overweight or obese children selected figures representing their clinically based measured BMI category. This finding was statistically significant. There was no difference based on age, gender, or ethnicity.

Although not statistically significant, a third of the participants (32%) selected an underweight figure as ideal.

Conclusions
Regardless of gender, age, grade level, and ethnicity, children between the ages of 8-11, who are either overweight or obese, do not accurately perceive their weight status. Although not statistically significant, it is concerning that 1/3 of this sample expressed a preference for the underweight figure.

Recommendations
1. This convenience sample of 7 of the elementary schools (home school not included) demonstrated prevalence rates higher than the national averages for both obesity and combined overweight and obesity. It may be worthwhile to determine the actual rates of overweight and obesity for the elementary school children. This data would be helpful in terms of determining, what if any prevention/intervention programs may be necessary.

2. Considering the fact that those children who are either overweight or obese do not recognize themselves as obese it may be more helpful to institute prevention/intervention programs that focus on healthy eating and exercise for the entire community of children rather than targeting this specific group of children.

3. The focus of any programs should stress health and healthy habits rather than weight considering the fact that a 1/3 of this sample selected an underweight figure as ideal.

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References

Ogden, C. L., Carroll, M. D., Kit, B. K, & Flegal, K. M. (2012). Prevalence of obesity and trends in body mass index among U.S. children and adolescents, 199-2010. *Journal of the American Medical Association.* Advance online publication. doi:10.1001/jama.2012.40

Children's Self-Perception Regarding Weight

Summary & Recommendations

Prepared for Elementary School "C"

May 8, 2013

<u>**Study Summary**</u>
The aims of this study were: 1. to determine differences in children's self-perceptions of weight based on age, gender, actual body mass index (BMI) category, grade level, and ethnicity compared with their clinically measured BMI; and 2. to determine the association of gender, age, grade level, ethnicity, and actual BMI category with their perception of ideal BMI category. A total of 424 children participated in this study. The table below provides selected characteristics of the participants for the overall sample and for "C" Elementary.

Characteristic	Sample N (%)	"C" Sample N (%)
Total	424 (42%)	62 (15)[1]
Gender		
Male	206 (49)	34 (55)
Female	218 (51)	28 (45)
Grade		
3rd	120 (28)	18 (29)
4th	152 (36)	19 (31)
5th	152 (36)	25 (40)
Ethnicity		
White	80 (19)	3 (4.8)
Hispanic	299 (70)	54 (87.1)
Other/mulitracial	45 (11)	5 (8.1)
Weight Category - Based on BMI		
Underweight	12 (2.8)	0 (0)
Healthy weight	235 (55.4)	26 (41.9)
Overweight	80 (18.9)	19 (30.6)
Obese	97 (22.9)	17 (27.4)

[1]At the time of this study the total number of students in grades 3-5 was 1,014.
[2]The percent represents 15% of the total sample of 424.

<u>**Study Results**</u>
The prevalence rate for obesity in children between the ages of 2-19 in the United States is 17% (Ogden, et al., 2012). The combined rate for overweight and obesity is 32%. In this sample of 424 children the prevalence of obesity is 23% and the combined rate for overweight and obesity is 42%.
For **"C" Elementary** the prevalence of obesity **in this sample is 27%** and the combined rate for overweight and obesity is **58%**.

All children who participated in this study received a $10 gift card to Wall Mart. A results letter including the child's height, weight, and BMI, with an explanation of the findings and a brief health message, was sent to all parents who indicated on the consent form that they wished to receive this information. Contact information for the principal investigator (PI) was provided with the explanation that parents could contact the PI if they had any questions or concerns. One parent contacted the PI with concerns and the concerns were addressed.

Only 9.0% of overweight or obese children selected figures representing their clinically based measured BMI category. This finding was statistically significant. There was no difference based on age, gender, or ethnicity.

Although not statistically significant, a third of the participants (32%) selected an underweight figure as ideal.

Conclusions

Regardless of gender, age, grade level, and ethnicity, children between the ages of 8-11, who are either overweight or obese, do not accurately perceive their weight status. Although not statistically significant, it is concerning that 1/3 of this sample expressed a preference for the underweight figure.

Recommendations

1. This convenience sample of 7 of the elementary schools (home school not included) demonstrated prevalence rates higher than the national averages for both obesity and combined overweight and obesity. It may be worthwhile to determine the actual rates of overweight and obesity for the elementary school children. This data would be helpful in terms of determining, what if any prevention/intervention programs may be necessary.

2. Considering the fact that those children who are either overweight or obese do not recognize themselves as obese it may be more helpful to institute prevention/intervention programs that focus on healthy eating and exercise for the entire community of children rather than targeting this specific group of children.

3. The focus of any programs should stress health and healthy habits rather than weight considering the fact that a 1/3 of this sample selected an underweight figure as ideal.

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Children's Self-Perception Regarding Weight

Summary & Recommendations

Prepared for Elementary School "D"

May 8, 2013

Study Summary

The aims of this study were: 1. to determine differences in children's self-perceptions of weight based on age, gender, actual body mass index (BMI) category, grade level, and ethnicity compared with their clinically measured BMI; and 2. to determine the association of gender, age, grade level, ethnicity, and actual BMI category with their perception of ideal BMI category. A total of 424 children participated in this study. The table below provides selected characteristics of the participants for the overall sample and for **"D"** Elementary.

Characteristic	Sample N (%)	"D" Sample N (%)
Total	424 (42%)[1]	43 (10)[2]
Gender		
Male	206 (49)	22 (51)
Female	218 (51)	21 (49)
Grade		
3rd	120 (28)	43 (100)
4th	152 (36)	0 (0)
5th	152 (36)	0 (0)
Ethnicity		
White	80 (19)	12 (27.9)
Hispanic	299 (70)	25 (58.1)
Other/mulitracial	45 (11)	6 (14.0)
Weight Category - Based on		

BMI		
Underweight	12 (2.8)	1 (2.3)
Healthy weight	235 (55.4)	21 (48.8)
Overweight	80 (18.9)	8 (18.6)
Obese	97 (22.9)	13 (30.2)

[1]At the time of this study the total number of students in grades 3-5 was 1,014.
[2]The percent represents 10% of the total sample of 424.

Study Results

The prevalence rate for obesity in children between the ages of 2-19 in the United States is 17% (Ogden, et al., 2012). The combined rate for overweight and obesity is 32%. In this sample of 424 children the prevalence of obesity is 23% and the combined rate for overweight and obesity is 42%.

For **"D" Elementary** the prevalence of obesity **in this sample is 30%** and the combined rate for overweight and obesity is **49%**.

All children who participated in this study received a $10 gift card to Wall Mart. A results letter including the child's height, weight, and BMI, with an explanation of the findings and a brief health message, was sent to all parents who indicated on the consent form that they wished to receive this information. Contact information for the principal investigator (PI) was provided with the explanation that parents could contact the PI if they had any questions or concerns. One parent contacted the PI with concerns and the concerns were addressed.

Only 9.0% of overweight or obese children selected figures representing their clinically based measured BMI category. This finding was statistically significant. There was no difference based on age, gender, or ethnicity.

Although not statistically significant, a third of the participants (32%) selected an underweight figure as ideal.

Conclusions

Regardless of gender, age, grade level, and ethnicity, children between the ages of 8-11, who are either overweight or obese, do not accurately perceive their weight status. Although not statistically significant, it is concerning that 1/3 of this sample expressed a preference for the underweight figure.

Recommendations

1. This convenience sample of 7 of the elementary schools (home school not included) demonstrated prevalence rates higher than the national averages for both obesity and combined overweight and obesity. It may be worthwhile to determine the actual rates of overweight and obesity for the elementary school children. This data would be helpful in terms of determining, what if any prevention/intervention programs may be necessary.

2. Considering the fact that those children who are either overweight or obese do not recognize themselves as obese it may be more helpful to institute prevention/intervention programs that focus on healthy eating and exercise for the entire community of children rather than targeting this specific group of children.

3. The focus of any programs should stress health and healthy habits rather than weight considering the fact that a 1/3 of this sample selected an underweight figure as ideal.

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Children's Self-Perception Regarding Weight

Summary & Recommendations

Prepared for "E" Elementary

May 8, 2013

Study Summary
The aims of this study were: 1. to determine differences in children's self-perceptions of weight based on age, gender, actual body mass index (BMI) category, grade level, and ethnicity compared with their clinically measured BMI; and 2. to determine the association of gender, age, grade level, ethnicity, and actual BMI category with their perception of ideal

BMI category. A total of 424 children participated in this study. The table below provides selected characteristics of the participants for the overall sample and for **"E"** Elementary.

Characteristic	Sample N (%)	"E" Sample N (%)
Total	424 (42%)[1]	82 (19)[2]
Gender		
Male	206 (49)	43 (52)
Female	218 (51)	39 (48)
Grade		
3rd	120 (28)	20 (24.4)
4th	152 (36)	29 (35.4)
5th	152 (36)	33 (40.2)
Ethnicity		
White	80 (19)	16 (19.5)
Hispanic	299 (70)	57 (69.5)
Other/mulitracial	45 (11)	9 (11.0)
Weight Category - Based on BMI		
Underweight	12 (2.8)	4 (4.9)
Healthy weight	235 (55.4)	46 (56.1)
Overweight	80 (18.9)	15 (18.3)
Obese	97 (22.9)	17 (20.7)

[1]At the time of this study the total number of students in grades 3-5 was 1,014.
[2]The percent represents 19% of the total sample of 424.

Study Results

The prevalence rate for obesity in children between the ages of 2-19 in the United States is 17% (Ogden, et al., 2012). The combined rate for overweight and obesity is 32%. In this sample of 424 children the prevalence of obesity is 23% and the combined rate for overweight and obesity is 42%.

For **"E" Elementary** the prevalence of obesity **in this sample is 21%** and the combined rate for overweight and obesity is **39%**.

All children who participated in this study received a $10 gift card to Wall Mart. A results letter including the child's height, weight, and BMI, with an explanation of the findings and a brief health message, was sent to all parents who indicated on the consent form that they wished to receive this information. Contact information for the principal investigator (PI) was provided with the explanation that parents could contact the PI if they had any questions or concerns. One parent contacted the PI with concerns and the concerns were addressed.

Only 9.0% of overweight or obese children selected figures representing their clinically based measured BMI category. This finding was statistically significant. There was no difference based on age, gender, or ethnicity.

Although not statistically significant, a third of the participants (32%) selected an underweight figure as ideal.

Conclusions

Regardless of gender, age, grade level, and ethnicity, children between the ages of 8-11, who are either overweight or obese, do not accurately perceive their weight status. Although not statistically significant, it is concerning that 1/3 of this sample expressed a preference for the underweight figure.

Recommendations

1. This convenience sample of 7 of the elementary schools (home school not included) demonstrated prevalence rates higher than the national averages for both obesity and combined overweight and obesity. It may be worthwhile to determine the actual rates of overweight and obesity for the elementary school children. This data would be helpful in terms of determining, what if any prevention/intervention programs may be necessary.

2. Considering the fact that those children who are either overweight or obese do not recognize themselves as obese it may be more helpful to institute prevention/intervention programs that focus on healthy eating and exercise for the entire community of children rather than targeting this specific group of children.

3. The focus of any programs should stress health and healthy habits rather than weight considering the fact that a 1/3 of this sample selected an underweight figure as ideal.

We would like to thank the superintendent, principals, teachers, and nurses who allowed us to conduct this study and participated in the data collection. Donna Alfonso, Health Services Coordinator, and Yvonne Duran, Health Services Secretary, were especially helpful. Most of all we would like to thank all of the children and parents who agreed to participate in the study.

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Children's Self-Perception Regarding Weight

Summary & Recommendations

Prepared for "F" Elementary School

May 8, 2013

<u>Study Summary</u>
The aims of this study were: 1. to determine differences in children's self-perceptions of weight based on age, gender, actual body mass index (BMI) category, grade level, and ethnicity compared with their clinically measured BMI; and 2. to determine the association of gender, age, grade level, ethnicity, and actual BMI category with their perception of ideal BMI category. A total of 424 children participated in this study. The table below provides selected characteristics of the participants for the overall sample and for "F" Elementary.

Characteristic	Sample N (%)	"F" Sample N (%)
Total	424 (42%)[1]	94 (22)[2]
Gender		
Male	206 (49)	41 (44)
Female	218 (51)	53 (56)
Grade		
3rd	120 (28)	25 (26.6)
4th	152 (36)	34 (36.2)
5th	152 (36)	35 (37.2)
Ethnicity		
White	80 (19)	24 (25.5)
Hispanic	299 (70)	57 (60.6)
Other/mulitracial	45 (11)	13 (13.8)
Weight Category - Based on BMI		
Underweight	12 (2.8)	2 (2.1)
Healthy weight	235 (55.4)	55 (58.5)
Overweight	80 (18.9)	17 (18.1)
Obese	97 (22.9)	20 (21.3)

[1]At the time of this study the total number of students in grades 3-5 was 1,014.
[2]The percent represents 22% of the total sample of 424.

<u>Study Results</u>
The prevalence rate for obesity in children between the ages of 2-19 in the United States is 17% (Ogden, et al., 2012). The combined rate for overweight and obesity is 32%. In this sample of 424 children the prevalence of obesity is 23% and the combined rate for overweight and obesity is 42%.
For **"F" Elementary** the prevalence of obesity **in this sample is 21%** and the combined rate for overweight and obesity is **39%**.

All children who participated in this study received a $10 gift card to Wall Mart. A results letter including the child's height, weight, and BMI, with an explanation of the findings and a brief health message, was sent to all parents who indicated on the consent form that they wished to receive this information. Contact information for the principal investigator (PI) was provided with the explanation that parents could contact the PI if they had any questions or concerns. One parent contacted the PI with concerns and the concerns were addressed.

Only 9.0% of overweight or obese children selected figures representing their clinically based measured BMI category. This finding was statistically significant. There was no difference based on age, gender, or ethnicity.

Although not statistically significant, a third of the participants (32%) selected an underweight figure as ideal.

Conclusions
Regardless of gender, age, grade level, and ethnicity, children between the ages of 8-11, who are either overweight or obese, do not accurately perceive their weight status. Although not statistically significant, it is concerning that 1/3 of this sample expressed a preference for the underweight figure.

Recommendations
1. This convenience sample of 7 of the elementary schools (home school not included) demonstrated prevalence rates higher than the national averages for both obesity and combined overweight and obesity. It may be worthwhile to determine the actual rates of overweight and obesity for the elementary school children. This data would be helpful in terms of determining, what if any prevention/intervention programs may be necessary.

2. Considering the fact that those children who are either overweight or obese do not recognize themselves as obese it may be more helpful to institute prevention/intervention programs that focus on healthy eating and exercise for the entire community of children rather than targeting this specific group of children.

3. The focus of any programs should stress health and healthy habits rather than weight considering the fact that a 1/3 of this sample selected an underweight figure as ideal.

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the American Medical Association.* Advance online publication.
doi:10.1001/jama.2012.40

Children's Self-Perception Regarding Weight

Summary & Recommendations

Prepared for "G" Elementary School

May 8, 2013

Study Summary
The aims of this study were: 1. to determine differences in children's self-perceptions of
weight based on age, gender, actual body mass index (BMI) category, grade level, and
ethnicity compared with their clinically measured BMI; and 2. to determine the association of
gender, age, grade level, ethnicity, and actual BMI category with their perception of ideal
BMI category. A total of 424 children participated in this study. The table below provides
selected characteristics of the participants for the overall sample and for **"G"** Elementary.

Characteristic	Sample N (%)	"G" Sample
Total	424 (42%)[1]	35 (8)[2]
Gender		
Male	206 (49)	12 (34)
Female	218 (51)	23 (66)
Grade		
3rd	120 (28)	8 (22.9)
4th	152 (36)	17 (48.6)
5th	152 (36)	10 (28.6)
Ethnicity		
White	80 (19)	3 (8.6)
Hispanic	299 (70)	30 (85.7)
Other/mulitracial	45 (11)	2 (5.7)

Weight Category - Based on BMI		
Underweight	12 (2.8)	0 (0)
Healthy weight	235 (55.4)	23 (65.7)
Overweight	80 (18.9)	2 (5.7)
Obese	97 (22.9)	10 (28.6)

[1]At the time of this study the total number of students in grades 3-5 was 1,014.

[2]The percent represents 8% of the total sample of 424.

Study Results

The prevalence rate for obesity in children between the ages of 2-19 in the United States is 17% (Ogden, et al., 2012). The combined rate for overweight and obesity is 32%. In this sample of 424 children the prevalence of obesity is 23% and the combined rate for overweight and obesity is 42%.

For **"G"** the prevalence of obesity **in this sample is 28%** and the combined rate for overweight and obesity is **34%**.

All children who participated in this study received a $10 gift card to Wall Mart. A results letter including the child's height, weight, and BMI, with an explanation of the findings and a brief health message, was sent to all parents who indicated on the consent form that they wished to receive this information. Contact information for the principal investigator (PI) was provided with the explanation that parents could contact the PI if they had any questions or concerns. One parent contacted the PI with concerns and the concerns were addressed.

Only 9.0% of overweight or obese children selected figures representing their clinically based measured BMI category. This finding was statistically significant. There was no difference based on age, gender, or ethnicity.

Although not statistically significant, a third of the participants (32%) selected an underweight figure as ideal.

Conclusions

Regardless of gender, age, grade level, and ethnicity, children between the ages of 8-11, who are either overweight or obese, do not accurately perceive their weight status. Although not statistically significant, it is concerning that 1/3 of this sample expressed a preference for the underweight figure.

Recommendations

1. This convenience sample of 7 of the elementary schools (home school not included) demonstrated prevalence rates higher than the national averages for both obesity and combined overweight and obesity. It may be worthwhile to determine the actual rates of overweight and obesity for the elementary school children. This data would be helpful in terms of determining, what if any prevention/intervention programs may be necessary.

2. Considering the fact that those children who are either overweight or obese do not recognize themselves as obese it may be more helpful to institute prevention/intervention programs that focus on healthy eating and exercise for the entire community of children rather than targeting this specific group of children.

3. The focus of any programs should stress health and healthy habits rather than weight considering the fact that a 1/3 of this sample selected an underweight figure as ideal.

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References

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Appendix Z – Human Participant Research Application

UNM HEALTH SCIENCES CENTER
Office of Research

HUMAN PARTICIPANT RESEARCH APPLICATION

Select oversight committee:
☐ Main Campus (IRB)
☒ Health Sciences Center (HRRC)

Type of review requested:
☐ FULL BOARD   Attachment 6 (Data Safety Monitoring Plan) required
☒ EXPEDITED   Attachment 7 (Expedited Review) required

PROJECT TITLE:
Children's Self-Perception Regarding Weight

I.   RESEARCH PERSONNEL

Principal Investigator *The PI may not be a resident, research fellow, or a medical student (Principal Investigator Policy)*
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If other, please specify: _____   Pager/Cell: 459-1954

Faculty Advisor *Main Campus studies ONLY*
Name: _____   Title: _____
Dept: _____   Email: _____
University Status: Select one of the following: Phone: _____
If other, please specify: _____   Pager/Cell: _____

Study Contact (if different from PI) *Be sure to include on Attachment 1*
Name: _____   Title: _____
Dept: _____   Email: _____
University Status: Select one of the following: Phone: _____
If other, please specify: _____   Pager/Cell: _____

NOTE:
➤ *Curriculum Vitae (CV) are required for the Principal Investigator and the Faculty Advisor*
    ○ CVs should be submitted to the HRPO annually (or if there is a significant change)
    ○ CVs will be kept on file within the HRPO for subsequent submissions
☒ New CV attached
☐ CV on file (Date initially submitted to HRPO: _____)

➤ *Please list all additional investigators/key personnel on Attachment 1*

II.   CERTIFICATIONS

As Principal Investigator, I certify the following:

☒ I have completed the CITI or HRP training (or an equivalent) research ethics training.

☒ I will personally conduct or supervise this research in accordance with state law, Good Clinical Practices and regulations presented in the Code of Federal Regulations (CFR) Title 21 Parts 50, 56, 312 and 812 / Title 45 Part 46 and Title 45 Parts 160-164 (the HIPAA Privacy Rule).

☒ I agree to conduct the research in accordance with the three basic ethical principles of the Belmont report (Respect for Persons, Beneficence, and Justice)

☒ I agree to seek and obtain prior written approval from UNM HRPO for any changes/amendments to this research including, any changes in procedures, study risks, co-investigators, etc.

☒ I will maintain records of this research according to federal and state regulations and guidelines, including keeping a copy of this application for the investigator's records. If this application is approved, I agree to maintain copies of all HRPO correspondence for at least 3 years after the completion of the study; or, if it is VA research according to NMVAHCS retention schedule; or longer if required by study sponsor.

☒ I agree to promptly report any adverse events or unanticipated problems involving risks to participants or others in the course of this study in accordance with the UNM HRPO policy.

☒ I understand that this research, once approved, is subject to continuing review and approval by UNM HRPO (applies unless the HRPO provides written determination that research is exempt).
I agree to maintain active study approval; I will not conduct any research activities if there is a lapse in approval.
In order to maintain active approval, I agree to submit to the UNM HRPO complete requests for continuation at least forty-five (45) days prior to the study expiration date.
Once the study is complete, I agree to submit a complete request for closure to the HRPO promptly and at least forty-five (45) days prior to the study expiration date.

I certify that the statements herein are true, complete, and accurate to the best of my knowledge, and accept the obligation to comply with all applicable federal regulations and state laws, institutional policies and procedures, and the requirements and determinations of the UNM Human Research Protections Office (HRPO) with respect to this research.

_____   7/2/2012
PRINCIPAL INVESTIGATOR (signature)   **DATE**

_____   _____
RESPONSIBLE FACULTY MEMBER (signature)   **DATE**
*Main Campus Only

III.   **DEPARTMENTAL SCIENTIFIC REVIEW**

☐   VA Studies: R&D department review attached (Go to Section IV)
☐   Mind Research Network (MRN): MRN department review attached (Go to Section IV)

The HRPO expects that a scientific review be conducted at the department level by either a Chair or designee with appropriate expertise in the given study area. The review must verify that the following criteria are met:

☒   The rationale for the study is clearly stated and the rationale is scientifically sound.

☒   The specific aims and objectives of this study are clearly stated and measurable.

☒   The standards for conducting this research are consistent with any guidelines of relevant professional associations and scholarly disciplines.

☒   The research uses procedures that are scientifically sound and appropriate to the purpose of the study with the least amount of risk.

☒   The study design is adequate to achieve the specific objectives of this study and the proposed participant population is appropriate.

☒   The data to be collected are necessary to the meet the objectives of the study.

☒   Adequate literature review has been done to support and justify this study.

☒   Statistical considerations, including sample size and justification, estimated accrual and duration, and statistical analysis are clearly described and are adequate to meet the study objectives.

☒   The principal investigator & any other investigator involved in this research have sufficient resources/facilities to carry out the research.

☒   The principal investigator & any other investigator involved in this research are qualified by training and experience to personally conduct and/or supervise the research described in the protocol.

☒   The principal investigator & any other investigator involved in this research have completed all institutional credentialing requirements, if any, to conduct the research.

If the study does NOT meet any of these requirements listed above, please provide an explanation: _____

Reviewer Determination:
☒ APPROVED
☐ DISAPPROVED

COMMENTS: _____

I certify that the statements herein are true, complete, and accurate to the best of my knowledge, and accept the obligation to assure compliance with all applicable federal regulations and state laws, institutional policies and procedures, and the requirements and determinations of the UNM Human Research Protections Office (HRPO) with respect to this research.

By signing, I hereby Approve this project, based on my review.

Melinda Tinkle   *Chair, Research*   *CON*
DEPARTMENT CHAIR or Designee   **TITLE** *PhD Studies*   **Department Name**
Print/Type Name

Melinda Tinkle   *7/2/12*

DEPARTMENT CHAIR or Designee, signature   **DATE**

IV.   FUNDING

A. Do you have funding for this study?   ☒ Yes   ☐ No

If YES, please answer the following questions:

1. Does the study involve any financial or contractual arrangements with a commercial, nonprofit, or federal entity (sponsor)?   ☐ Yes   ☒ No

2. Is this a Mind Research Network or another affiliate (i.e. have a signed IRB authorization agreement) of the University?   ☐ Yes   ☒ No

3. Is this study funded by a Federal Grant?   ☐ Yes   ☒ No
If YES, please attach Grant Application for review.

If YES to ANY of 1-3, complete the Sponsorship Information and Fees Form

V.   SITE INFORMATION

List **ALL** sites where research will take please:

☐ UNMHSC
☐ UNM Main Campus
☐ Clinical & Translational Science Center (CTSC)   Attachment 11 (CTSC Request for Consult) required
☒ Community/Field Research   Attachment 13 (Community/Field Research) required
☐ International Research   Attachment 13 (Community/Field Research) required
☐ NM Cancer Care Alliance (NMCCA)   Protocol Review & Monitoring Committee review required
☐ Cancer Care Consortium   Protocol Review & Monitoring Committee review required
☐ Mind Research Network (MRN)   MRN department review documentation required
☐ Veterans Affairs Medical Center (VAMC)   VA R&D Committee review documentation required
☒ Other (Please list): Belén New Mexico Elementary Public Schools

A. Will other non-UNM/VAMC entities or employees be involved in research (i.e. IHS, APS, LRRI, Presbyterian, other universities, etc.)?   ☒ Yes   ☐ No
If YES, please list the other IRBs or other entities involved: No IRB in Belén Schools. Letters of support from the Belen School Superintendent and elementary school principals are included. The seven elementary schools included are: Central Elementary, Dennis Chavez Elementary, Gil Sanchez Elementary, Henry T. Jaramillo Community School, La Merced Elementary, La Promesa Elementary, and Rio Grande Elementary.
NOTE: Letters of support or other IRB approvals may be required

B. Is this a multi-center study? (i.e. Different PIs at different institutions are conducting the same study)   ☐ Yes   ☒ No

1. If YES, will UNM/UNMHSC function as the lead center?   ☐ Yes   ☐ No
If YES, please attach a copy of the Management Plan describing the communication with participating sites, modifications to the study, safety information, unexpected problems, results and the administrative aspects of the study.

C. Is this research project intended to fulfill a requirement of any student curriculum?   ☒ Yes   ☐ No

IF YES, please provide appropriate documentation (i.e. Dissertation Committee approval, Masters Project Committee approval or Masters Thesis advisor approval for review) and specify what is the anticipated time frame that the student will be involved:
Dissertation proposal approved by Dissertation Committee February 28, 2012. Expected time frame student involved: Summer 2012; Fall 2012; Spring 2013

VI. DESCRIPTION OF STUDY

A. Provide a brief statement describing the research project. This section should include the purpose, study goals and methods of the study being assessed. (Limit to one paragraph or 250 words)

* Complete protocol/research plan (i.e. Sponsor, Cooperative, and Investigator-initiated) should be submitted for review

*For investigator-initiated research see Protocol Guidelines for required elements

Purpose of the Study

The purpose of this study is to describe children's self-perception regarding weight (ages 8-11).

Specific aims and hypotheses

1.   To determine if there are differences based on age, gender, actual BMI category, and ethnicity for the accuracy of children's selection of BMI category (underweight, healthy weight, overweight, obese) using figures from the Children's Body Image Scale (CBIS©) versus their clinically measured BMI for children between the ages of 8 and 11 years.

Ho There will be no differences between the accuracy of the children's selection of BMI category based on gender, age, ethnicity and actual BMI category for children between the ages of 8 and 11 years.

2.   To determine the associations of gender, age, ethnicity, and actual BMI category (underweight, healthy weight, overweight, obese) with ideal BMI category using the Children's Body Image Scale (CBIS©) for children between the ages of 8 and 11.

Ho There will be no associations between children's gender, age, ethnicity, and actual BMI category (underweight, healthy weight, overweight,obese) and ideal body BMI category for children between the ages of 8 and 11 years.

Methods

A cross-sectional convenience sample of children between the ages of 8 and 11 years from seven elementary shcools in a non-metroplitan rural community if the souther portion of New Mexico will be included for this cross-sectional, descriptive, non-experimental study.

B. **Study Design/Model:**

☐ Biomedical model   Attachment 12 (Biomedical Research) required

☒ Social/Behavioral model   Attachment 13 (Community/Field Research) required

☐ Chart/Record review only

C. **Data Analysis:**

Indicate who will be responsible for performing the statistical/data analysis.

☐ Sponsor

☒ Investigator: Carolyn Montoya

☐ Statistician: _____

NOTE: If the person conducting the data analysis has access to **identifiable** or **coded** data, they must be listed as an investigator on Attachment 1.

VII. HUMAN PARTICIPANTS

A. **Enrollment Number**

1. Total expected enrollment (e.g. participants, number of specimens, and/or charts). [Projected dropouts should be included]: The sample size for this study will be set at a maximum of 1,000 participants. Since the study involves data collection at one point in time no dropouts are projected.

Amendment will be required to enroll beyond this expected enrollment provided above.

B. Age range of participants to be enrolled: 8-11 years

C. **Gender:**

Female ☒

Male ☒

D. **Which of the following Vulnerable Populations are *included* in this study? (check all that apply):**

Children (age less than 18 years)   ☒ Yes   ☐ No   If YES, Attachment 2 (Minors) required

Pregnant Women/Fetuses   ☐ Yes   ☐ No

Prisoners   ☐ Yes   ☐ No   If YES, Attachment 10 (Prisoners) required

Individuals with Impaired Decision Capacity   ☐ Yes   ☐ No   If YES, Attachment 14 (Decisional Capacity)

required

IF YES to any population in section D, complete the following:

1. **Please provide rationale for including each population checked:**
   This is a study of children's perceptions regarding weight therefore the appropriate participants for this study are children ages 8-11 years.

2. **Describe steps taken to avoid causing potential participants to be or feel coerced into participating:**
   Parents must provide written consent for their children to participate. Assent will be obtained from the child. Any child who has parental consent but choses not to assent will not be included in the study Children will be told they have the right not to participate even if the parent has signed a consent form. The children will not be given a grade for participating and their progress in school is not affected if they do not participate.

3. **List the safeguards that are in place to protect the rights and welfare of participants:**
   The child can stop participation at any time. The PI is an experienced Pediatric Nurse Practitioner with over 30 years of experience working with children. She is able to recognize when a child is experiencing discomfort or distress. Any child experiencing distress or discomfor will be re-directd to his/her normal classroom activities.

4. **If no additional safeguards are needed to protect participants in this study, provide justification here:**
   _____

E. **Are any of the following populations being _targeted_ for recruitment?**

People on Probation or alternative sentencing	☐ Yes	☒ No
Students of the PI or study staff	☐ Yes	☒ No
Students	☒ Yes	☐ No
UNM Employees	☐ Yes	☒ No
Veterans	☐ Yes	☒ No
Native Americans	☐ Yes	☒ No
Hispanics	☐ Yes	☒ No
African-Americans	☐ Yes	☒ No
Non-English Speakers	☐ Yes	☒ No	Specify Language: _____
Other: _____	☐ Yes	☒ No

F. **Inclusion Criteria:**
   Describe what characteristics participants must have to be _included_ in the study **AND** state how the criteria are determined:
   Children between the ages of 8 and 11 years of age who are able to speak, read, and understand English (self-identified). The ages of 8-11 were selected based on a review of the literature. The Children's Body Image Scale survey tool has validity and realiability for use in this age group. Parents must be able to read and understand either English or Spanish as consent forms will be written in both English and Spanish.

G. **Exclusion Criteria:**
   Describe what characteristics participants must have to be _excluded_ from the study **AND** state how the criteria are determined:
   Children who have a medical condition that affects their weight or ability to eat independently; or are being treated with chronic steroids, chemotherapy, or immune suppressants. Children who are currently receiving medical treatment for obesity will also be excluded. These exclusion criteria were determined based on the review of the literature.

VIII. **PROCEDURES**

A. Expected duration of entire study (including data analysis, etc.): 2 years
   *For retrospective studies, please provide review dates

B. Duration of participant's involvement in the study: ☐ N/A
   20 minutes

C. Will participants be given study material(s) to complete?   ☒ Yes   ☐ No   ☐ N/A
   If YES, check all that apply:
   *Provide a copy of all items for review
   ☒ Questionnaires/Surveys

☐ Informational/Educational Materials

☐ Diaries

☒ Other: **Parents will be given the option to receive
their child's height, weight and body mass index (BMI)
results along with an explanation of BMI.**

IX. RISKS/BENEFITS

A. Identify the anticipated risks (by procedure, if applicable) in order of likelihood and magnitude (very common, common, uncommon, rare but serious).

The risk in this study would be that some children may feel uncomfortable being asked to identify a figure that looks like them or a figure that represents their ideal self. Additionally, some children may feel uncomfortable being weighed and measured. This risk may be common in children between the ages of 8 and 11 years of age. Minor risk of potential breech of privacy and/or confidentiality.

B. Describe the plan to protect against or minimize risk:

Parental consent forms will be used to assign a number to the child's name. One master list will contain the children's names and their code numbers. A second master list will contain each child's code number, date of birth, height, weight, ethnicity, gender and age. Both of these lists will be kept in a locked file cabinet in the PI's office at the College of Nursing, UNM. These two master lists will be kept a maximum of 7 years and will then be destroyed. The child's code number will be placed at the top of the Children's Body Image Scale instrument: no names or birthdates will be on the actual surveys. Screens will be utilized to obtain each child's height and weight measurements in private, one child at a time. The Children's BMI Tool for Schools (Centers for Disease Control), an Excel Spreadsheet, will be utilized to calculate BMI and BMI percentile. No names will be entered into this Excel spreadsheet. Each child's identification code along with their corresponding gender, date of birth, date of measurement, and height and weight will be entered. This Excel spreadsheet will be kept on the PI's College of Nursing password protected work computer. All participants will be told that they can stop at any time. Additionally, they will be told that they will not receive a grade for this activity and that participating in this activity does not affect their school work in any way. If they chose to stop the activity there are no consequences from their teachers or the school. The PI is a Pediatric Nurse Practitioner with over 30 years of health care experience with children and therefore very experienced at recognizing distress in children. Children who show signs of distress (i.e. crying; unwillingness to be weighed and measured) will be allowed to stop and return to their normal school activities.

C. Describe the expected benefits, including possible direct benefits and societal benefits:

This study may not result in any direct benfits; however, parents will be given the opporunity to receive the results of their child's measurements along with an explanation of the results. This study will help to gain an understanding of how children perceive their own body images in relation to weight. This information may prove useful when designing overweight/obestiy interventions for children.

D. Describe why the risks to participants are reasonable in relation to the anticipated benefits to participants and/or society, and in relation to the importance of the knowledge that may reasonably be expected to result:

Weighing and measuring is a common occurrence for children when being seen for health care visits. Some elementary schools weigh and measure children on an annual basis. The risks of the children experiencing discomfort are minimal while the results of this study may help planning successful overweight/obesity intervention programs for children.

X. RECRUITMENT PLAN & METHOD

A. Which of the following methods will be used to identify potential participants:

☒ **Study investigators will recruit their own participants directly (in-person)**

Describe: Recruitment will be primarily done by distributing packets in each of the three grades (3rd, 4th, 5th) for all 7 elementary schools. The packets will contain a description of the study, the parental consent, the child assent forms and a return envelop. The teachers will be instructed to distribute the packets 2 weeks prior to the actual data collection. A second packet containing a reminder letter as well as duplicate consent and assent forms will be sent 1 week prior to the actual data collection. The 2012 fall term start date for this school district is August 8th. Requests (via e-mail) have been sent to the 7 principals to allow the PI to participate in on-site registration and any family welcome back events in order to directly recruit participants. The request

included the possibility of having a table where information regarding the study could be discussed and consent would be obtained. Flyers printed in both English and Spanish (copies included in this application) will be available for distribution. A request was also made to be able to speak to the families regarding the study if presentations are a part of any of these events. For those schools that have a newsletter, permission will be obtained from the principals to include an announcement (included in this application) starting in August, 2012 regarding this study.This school district has a general web site and each school has their own individual web page. Permission will be asked to include an announcement (included in this application) on the school district general web site as well as each of the 7 participating elementary schools individual web pages.

☐ **Study investigators will send an HRPO-approved letter to colleagues** for referrals of eligible participants
Please provide copy of letter for review.
Describe: _____

☐ **Study investigators will provide colleagues with a "Dear Patient" letter** to receive referrals from non-study colleagues to recruit eligible participants.
Please provide copy of letter for review
Describe: _____

☐ **Study investigators will recruit participants from the VAMC**
VA R&D Committee review & documentation required prior to HRPO review
If this is VA research, will non-veterans be enrolled?   ☐ Yes   ☐ No
if YES, please provide justification: _____

☐ **Study investigators will use an approved HRPO recruitment database**
Please provide HRPO#: _____

☐ **Study investigators will utilize the Clinical & Transitional Science Center Patient Recruitment Service**
*Approval for use of this service is contingent upon study feasibility & evaluation by the CTSC Research Participant Advocate.
Attachment 11 is required

☒ **Study investigators will recruit potential participants who are unknown to them** (e.g. snowball sampling, use of social networks, direct approach in public situations, random digit dialing, etc.)
Describe: Recruitment will be primarily done by distributing packets in each of the three grades (3rd, 4th, 5th) for all 7 elementary schools. The packets will contain a description of the study, the parental consent and the child assent forms . The teachers will be instructed to distribute the packets 2 weeks prior to the actual data collection. A second packet containing a reminder letter as well as duplicate consent and assent forms will be sent 1 week prior to the actual data collection.

☐ **Study investigators will request for Waiver of Informed Consent/HIPAA Authorization for recruitment purposes**
Attachment 8 is required
This waiver is an exception to the policy and may be requested in circumstances such as:
☐ Chart/Record review only (minimal risk in which participants will not be contacted)
☐ Review of medical records (containing PHI) is needed to identify prospective participants
☐ Large-scale epidemiology studies and/or population-based studies

☒ **Advertisements** (Please attach draft copies for review)
Describe where the material will be posted or distributed: Flyers will be distributed at any registration or welcome back events at the elementary school.
*Upon approval, the HRPO# will be included on all advertisements and should be indicated on all printed material(s).
Check all that apply:
☒ Flyers
☐ Brochures
☐ Radio

☐ Television
☐ Newspaper
☐ Email list serve
☐ UNMHCS studies calendar http://hsc.unm.edu/calendar/studies.cfm
☐ Internet
☐ Other: _____

☒ **Other** – Describe: For the schools who have a newsletter, permission will be obtained from the principals to include an announcement (included in this application) starting in August, 2012 regarding this study. This school district has a general web site and each school has their own individual web page. Permission will be asked to include an announcement (included in this application) on the school district general web site as well as each of the 7 participating elementary schools individual web pages.

B. Describe the setting in which the recruitment will take place and who will make initial contact with participants: A letter describing the study and the consent form (in a manila envelope) will be sent home from school with the children in grades 3 though 5 in the Belen elementary school system. The packets will be given to the children to take home 2 weeks prior to the actual study. The consent form instructs the parents to return the signed consent form to the child's teacher if they chose to have their child participate. A second packet with a reminder letter will be sent home with the students 1 week prior to the actual study.

XI. COMPENSATION/REIMBURSMENT

A. Will participants be compensated for their time for participating in this study?　　☒ Yes　　☐ No

If YES, complete the following:

1. Describe the form of compensation and schedule: The children will receive a $10 gift card to Walmart. The gift card, in a sealed envelop with the child's name on the outside, will be distributed immediately after the child has completed the sureys and has been weighed and measured. If a child does complete a portion of the study (i.e. either the survey or the measurements) he/she will still receive the $10 gift card.
2. Total amount of compensation: $10
3. Explain why the proposed compensation is reasonable & appropriate for participant's time: A $10 gift card is reasonable for children between the ages of 8-11. It is appropriate for the amount of time spent in the research activity (less than 30 minutes).
4. Explain why compensation does not constitute undue pressure, influence, or coercion to participate: A $10 gift card is not an excessive amount of money for children ages 8-11 and therefore does not constitute undue pressure, influence, or coercion to participate.

B. Will other materials be given to participants (e.g. mugs, pens, calendar, t-shirt, promotional items, etc.)?　　☐ Yes　　☒ No
If YES, describe items: _____

C. Will participants (or third party payers) incur any financial obligations from participation in the study?　　☐ Yes　　☒ No
If YES, Attachment 12 (Cost/Payments Section) required

XII. INFORMED CONSENT

A. **Is a full written HRPO Informed Consent document required?**　　☒ Yes　　☐ No
(i.e. includes all the required consent form sections)
If YES, please submit consent document(s) for approval
VA Research: The master list is required for all studies with a signed consent

If NO, which of the following will be submitted:
☐ **Altered/abbreviated informed consent document(s)** attached (i.e. does not include all required elements and/or participant signature is not requested)

Attachment 8 required

☐ **Waiver of informed consent is being requested** (i.e. consent form/document will not be given to participants)

Attachment 8 required

Note: Waiver for informed consent is not allowed for FDA-regulated research.

☐ **PI is seeking FDA enforcement discretion for Informed Consent** (specific IVD device studies only)

Attachment 8 required

CONSENT PROCESS ☐ **N/A (Waiver of Informed Consent is requested)** Go to Section XIII

B. **Who will provide consent or permission? (Check all that apply)**

Participant ☐

Parent ☒

Legally Authorized Representative (LAR) ☐ *Use of LAR must be approved by the HRRC/IRB prior to being implemented

Other: _____ ☐

C. Will consent be obtained prior to any research procedures being done? ☒ Yes ☐ No
If NO, justify: _____

D. Will the PI or member of the study team be solely responsible for obtaining consent? ☒ Yes ☐ No
1. Specify who will obtain consent: The PI will obtain consent from parents who attend a registration or welcome back event at the elementary schools.
2. Describe steps taken to minimize the possibility of coercion or undue influence: The parents will be told that not allowing their child to participate in this study will not affect their child's grades or progress in school. They will also be told that allowing their child to be in the study will not affect his/her grades or progess in school.

E. Will all persons obtaining consent be trained? ☒ Yes ☐ No
Explain: _____

F. Will consent be obtained in a private setting? ☐ Yes ☒ No
Describe setting: If the school has a registration or welcome back event the PI CarolynMontoya or her designee will have a table where he/she will be available to discuss the study and obtain parental consent. The table will be in a public place; however, consent will be obtained by speaking to parents individually. It is expected that the majority of the consent forms will be sent home with the children. Parents will then have 2 weeks to consider the study in a private setting, their home, before returning the consent.

G. Will potential participants be given time to read the consent, ask questions and then have time to consider whether or not to be involved in the study before giving consent? ☒ Yes ☐ No
Describe: If the school has a registration or welcome back event parents will be given the consent form and allowed to read the consent form, consider the study, and ask questions. The letter describing the study along with the consent and assent forms will be sent home 2 weeks prior to the study. This time frame will allow parents to consider the study. If they have questions, contact numbers with available times are provided on the letter for both the PI and the Chair of the dissertation committee.

H. Will comprehension and autonomy be assessed by asking questions about the study and assessing participants' response? ☒ Yes ☐ No
If NO, justify: _____

OTHER CONSENT CONSIDERATIONS

I. Are non-English speaking participants likely to be consented?   ☒ Yes   ☐ No
    If YES, please complete the following
    1. Will a short consent form be used?   ☐ Yes   ☒ No
        If YES, describe the process for obtaining informed consent using the short form:
        _____

    2. Will copy of the approved consent form be translated into the appropriate language   ☒ Yes   ☐ No
        by a certified translator?
        If NO, please complete the following:
        a. Will an interpreter be available for the consent interview?   ☐ Yes   ☐ No
            If NO, justify: _____

        b. Will a witness or LAR be present for the consent process?   ☐ Yes   ☐ No
            If YES, describe purpose anc who will serve as a witness: _____

        c. Will the approved consent be used as the summary for the interpreter and   ☐ Yes   ☐ No
            witness to use?
            If NO, an English version of the summary/script must be submitted for review and
            approval.

J. Will participants who are blind, illiterate, or have serious reading limitations be consented   ☐ Yes   ☒ No
    in this study?
    If YES, complete the following:
    1. Will the entire consent form be read to the participant?   ☐ Yes   ☐ No
    2. Will a witness be present for the consent process?   ☐ Yes   ☐ No
        If YES, describe who will serve as a witness: _____

XIII. HIPAA AUTHORIZATION

A. Does this project involve the use or disclosure of individually identifiable **Protected**   ☒ Yes   ☐ No
    Health Information (PHI)?

    If NO, select the following:
    ☐ PHI is not being collected
    ☐ HIPAA is not applicable (i.e. International Research)

    If YES, one of the following must occur:
    ☐ HIPAA Authorization Addendum is attached
    ☒ HIPAA Authorization language is included in the informed consent document
    ☐ Waiver of HIPAA Authorization is being requested (Attachment 8 required)

XIV. PRIVACY & CONFIDENTIALITY

PRIVACY: *Privacy refers to persons and their interest in controlling the access of others to themselves*

A. Describe how participant privacy will be protected (i.e. how will you ensure the appropriate administrative and
    physical safeguards are in place to protect participant privacy).
    The description provided should NOT include information about study data.
    Depending on school prefence children will either be weighed and measured in their classroom, in the hallway
    outside the classroom, or in the cafteria/gym. The children will be weighed and measured one at a time using privacy
    screens.The children will be asked to take off their shoes to be weighed and measured. They will remove any coats or
    jackets and keep their clothes on.

B. Will the PI/research team interact with participants at study visits to collect information?   ☒ Yes   ☐ No
    If YES, check all that apply:
    ☐ The participant will choose the setting of the interaction.
    ☒ The investigator will choose the private setting in which to interact with participants.
        Describe: Depending on school prefemce the surveys will be administered in the classroom or in the

cafeteria/gym. Also depending on school preference the measurements (height/weight) will be done in the classroom, in the hallway or in the cafeteria/gym using privacy screens. Children will be weighed and measured one at a time.

☐ Due to the nature of the study, the research cannot take place in a private setting. These participants will be informed in advance of participation that privacy cannot be guaranteed (e.g. focus groups)
Describe: _____

C. Could association with the research be considered stigmatizing or damaging to the participants' financial standing, employability, or reputation (e.g. STD/HIV clinic, substance abuse rehabilitation center)?   ☐ Yes   ☒ No
If YES, explain what additional safeguards are in place to protect privacy:
_____

CONFIDENTIALITY: *Confidentiality ensures that information (data) is accessible only to those who are authorized*

D. Describe how participant confidentiality (data) will be protected (i.e. how will you ensure the appropriate administrative and physical safeguards are in place to protect participant data):
The master data sheet containing the child's name and code number as well as the master data sheet containing the, code number, gender, ethnicity, and date-of-birth, height and weight will be kept in a locked file cabinet in the PI's office at the College of Nursing, University of New Mexico. The Children's BMI Tool for Schools (CDC, 2011c) Excel spreadsheet with the data containing the participants gender, date-of-birth, date of measurement, and height and weight will be kept on a password protected computer (the PIs work computer from the College of Nursing, University of New Mexico). The password on this computer is changed every 6 months.

E. Will direct identifiers be collected and maintained for use in this study?   ☒ Yes   ☐ No
If NO, skip to Section XV

If YES, complete the following:
1. Check if any of the following direct identifying information will be collected:
   ☒ Name/Initials   ☐ Address   ☐ Phone/Fax Number
   ☐ Email address   ☐ Social Security #   ☐ Medical Record #
   ☐ Full-face photos/videos ☐ Audio/Voice recordings
   ☒ Other: Date of birth

2. Explain why this information is necessary for the conduct of the research:
The name is necessary in order to assign a code number. The date of birth is necessary in order to calculate growth and BMI percentiles.

3. Will participant information be linked to direct identifiers through a study code (i.e. number, pseudonyms, etc)?   ☒ Yes   ☐ No

If YES, complete the following:
a. Explain why this information is necessary: The child's actual date-of-birth is necessaray in order to calculate BMI and BMI percentile on the CDC Excel Spreadsheet. The program used for data analysis (SPSS) will contain age by years and months, not birthdate.

b. Describe where the link will be kept: One master data sheet will contain the child's name and code number. A second master data sheet containing the child's date of birth, height, and weight, gender and ethnicity will be kept in a locked file cabinet in the PI's office at the College of Nursing, University of New Mexico.

c. Explain how long the link will be kept: The master data sheet containing the child's name and code number as well as the second master data sheet containing the child's date of birth, height, and weight, gender and ethnicity will be destroyed once data analysis is complete.

    d. Will the link be stored in a secure location and separately from the main study database?
If NO, justify: _____   ☒ Yes   ☐ No

    e. If this is VA research: Will a master list be maintained?
If NO, explain: _____   ☐ Yes   ☐ No

4. Will personal identifying information be removed from all study information?
If NO, explain: The date of birth will need to stay on the Children's BMI Tool for schools, an Excel spreadsheet, in order to calculate BMI.   ☐ Yes   ☒ No

5. Will personal identifying information be available to anyone other than research personnel (i.e. sponsor, other entities, etc)?
If YES, explain to who will have access and justify: _____   ☐ Yes   ☒ No

6. Will any of the study data about an individual, group, or institution be considered sensitive?
If YES, complete the following:
    a. Provide rationale for collecting this data: _____   ☐ Yes   ☒ No
    b. Will participants have the right to refuse to have this sensitive data collected?   ☐ Yes   ☐ No

XV. DATA MANAGEMENT & SECURITY PLAN

ELECTRONIC DATA

A. Will data be stored in **electronic** format?   ☒ Yes   ☐ No

B. Describe the system/application(s) (e.g. Access, electronic CRF) used for the collection, storage and management of data: The Children's BMI Tool for Schools, an Excel spreadsheet will be utilized to calcualte BMI and BMI percentile. This Excel spreadsheet will kept on the PI's password protected College of Nursing, UNM, work computer.

C. Specify where the primary data set will be located (check all that apply):
☒ Secure Server
☒ Local Hard Drive
☐ Participant data transmitted directly to the sponsor
☐ Other: _____

    1. Describe the location, purpose, and security: The data will be kept on Carolyn Montoya's computer which is owned by the College of Nursing, University of New Mexico. The computer is password protected and the password is changed every 6 months.The data will be stored on the College of Nursing "H" drive which is password protected.
    2. Describe how the data will be protected (i.e. encryption, restricted access, etc.) and who will have access: Only the PI and her dissertation chair will have access to the data. The computer and the "H" drive are password protected.

D. Will identifiable data be stored on a mobile device (i.e. flash drives, laptop, smartphone, PDA, tablet, etc.)?   ☐ Yes   ☒ No

If YES, complete the following:
1. Describe the device(s) and who wi l have access to them: _____
2. Will the data on the mobile device be encrypted?   ☐ Yes   ☐ No
   If YES, describe: _____
   If NO, justify: _____

E. Will additional copies of the identifiable data be created? ☐ Yes ☒ No
If YES, describe location, purpose and security: _____

F. Will data be collected, transmitted, and/or stored via the internet? ☐ Yes ☒ No

If YES, specify the measures that will be taken to ensure security of data transmitted over the internet, check all that apply:
☐ A mechanism such as Survey Monkey, Zoomerang, Opinio or an email anonymizing service will be used to strip off the IP addresses for data submitted via email
☐ The data will be encrypted
☐ A firewall will be used to protect the research computer from unauthorized access
☐ Controlled access privileges will be used on the hardware storing the data
☐ Other – Describe: _____

AUDIO RECORDINGS, VIDEO, DIGITAL IMAGES & PHOTOGRAPHS
(Note: If this is VA research, Form 10-3202 Consent for use of picture or voice must be obtained for patients)

G. Will data be collected via **audio/digital recordings**? ☐ Yes ☒ No

If YES, complete the following:
1. Will identifiable information be removed during the transcription process? ☐ Yes ☐ No
If NO, justify: _____

2. Can participants request portions of the recording be deleted? ☐ Yes ☐ No
If NO, explain: _____

3. Will data from or about non-consenting participants be eliminated? ☐ Yes ☐ No
If NO, justify: _____

4. Is there a plan for the secure destruction or reuse of recordings? ☐ Yes ☐ No
If YES, describe: _____
If NO, justify: _____

H. Will data be collected on **video recordings**? ☐ Yes ☒ No

If YES, complete the following:
1. Will the release for video/digital imaging be included in the consent form? ☐ Yes ☐ No
If NO, justify: _____

2. Will identifiable images of consenting individuals be disguised? (i.e. faces, tattoos, birthmarks, etc.) ☐ Yes ☐ No
If YES, describe how: _____
If NO, justify: _____

3. Will images of non-consenting individuals be collected? (i.e. faces, tattoos, birthmarks, etc.) ☐ Yes ☐ No
If YES, justify and explain how their privacy and confidentiality will be protected:
_____

4. Is there a plan for the secure destruction or reuse of video/digital images? ☐ Yes ☐ No
If YES, describe: _____

I. Will data be collected via **photographs**? ☐ Yes ☒ No
If YES, please answer the following:
1. Will a release for photography be included in the consent form? ☐ Yes ☐ No
If NO, justify: _____

2. Will identifiable images of consenting individuals be disguised? (i.e. faces, tattoos, birthmarks, etc.)
   If YES, describe how: _____
   If NO, justify: _____

   ☐ Yes   ☐ No

3. Will images of non-consenting individuals be collected? (i.e. faces, tattoos, birthmarks, etc.)
   If YES, justify and explain how their privacy and confidentiality will be protected:
   _____

   ☐ Yes   ☐ No

4. Is there a plan for the secure destruction or reuse of photographs?
   If YES, describe: _____

   ☐ Yes   ☐ No

DATA STORED IN PAPER FORMAT

J. Will data be collected in **paper format**? *This includes consent and HIPAA forms*

   ☒ Yes   ☐ No

If YES, complete the following:

1. List what documents will be stored in paper: The master data sheet containing the child's name, code number as well as a second master data sheet containing the gender, ethnicity, and date-of-birth and height and weight. Parental consent forms; child assent forms, Child Body Image Scale.

2. Will paper documents be stored in a locked, secured cabinet accessible only to the PI and research personnel?
   If YES, describe location: PI's office, College of Nursing, UNM.
   If NO, justify and describe location: _____

   ☒ Yes   ☐ No

3. Will only research staff have access to paper documents?
   If NO, describe who will have access: _____

   ☒ Yes   ☐ No

DATA MANAGEMENT

K. Is there a plan to destroy records?
   If NO, please justify: _____

   ☒ Yes   ☐ No

If YES, which of the following criteria will be used:

☐ **HIPAA regulations:** 7 years after HRPO acknowledgement of study closure

☐ **NIH regulations:** > 3 years from the date the Final Financial Status Report is submitted

☐ **FDA regulations involving drugs:** 2 years following the date a marketing application is approved (or per sponsor requirements which may be longer)

☐ **FDA regulations involving devices:** 2 years following approval for marketing (or per sponsor requirements which may be longer)

☐ **VA regulations:** research records will be kept in accordance with VHA's Records Control Schedule (currently indefinitely)

☒ **Other** - Describe: The master data sheet containing the child's name and code number as well as the second master data sheet containing child's date of birth, height, and weight, gender and ethnicity will be destroyed once data analysis is complete.

XVI. LIST OF APPENDICES

Please list ALL study documents, supplements, data collection forms, and/or instruments that will be used in your study.
(If approved, this list will be included on official HRPO correspondence)
If list is longer than the space provided, include continue list on a separate document.

Version number(s)
or dates(s)

1.	Children's Body Image Scale (CBIS©)	2002-V1
2.	Parental Consent (English & Spanish)	2012-V1
3.	Child Assent (English only)	2012-V1
4.	Parent Reminder Letter (English & Spanish)	2012-V1
5.	Parent Results Letter (English & Spanish)	2012-V1
6.	Study Flyer (English & Spanish)	2012-V1
7.	Study announcement – School newsletter (English & Spanish)	2012-V1
8.	Study announcement – School district web site	2012-V1
9.	Flesch-Kincaid Reading Levels	2012-V1
10.	Letters of Support	2012-V1

HARD COPY SUBMISSIONS WILL NO LONGER BE ACCEPTED

Submit ALL documents electronically to HRPO@salud.unm.edu

Pages that require signatures should be scanned prior to sending

The following documents are required for EVERY submission:

☐ **Initial Review Application (with applicable attachments) (PDF)**
    ☐ Certifications page must be signed (p. 2)
    ☐ Department Review page must be signed (p. 3)

☐ **Protocol/Research Plan (PDF)**
    Grant Applications (or excerpts from the grant) will NOT be accepted as a protocol or research plan
    ☐ Investigator Protocol
    ☐ Sponsor Protocol
    ☐ Cooperative Group Protocol

☐ **Curriculum Vitae (CV) (PDF)**
    Required for Principal Investigator & Faculty Advisor* (Main Campus)

☐ **Conflict of Interest forms (PDF)**
    Required for ALL investigators & key personnel listed on the study

    If you have any questions regarding potential conflict of interests, please contac: A. Marie Barron at 505-272-6433

☐ **Investigator Brochure** (if applicable) **(PDF)**

☐ **Sponsorship Form** (if applicable) **(PDF)**

☐ **Consent form(s)**
    ☐ MS Word
    ☐ N/A

☐ **Assent form(s)**
    ☐ MS Word
    ☐ N/A

☐ **HIPAA Authorization Addendum**
    ☐ MS Word
    ☐ N/A

☐ **NIH Grant** (if applicable) **(PDF)**

☐ **Other applicable items (PDF)**
    (e.g. participant materials, recruitment materials, data collection tools, , questionnaires, etc)

See our Master Submission Checklist for more information

Appendix AA – Human Research Protections Office, Study Protocol

University of New Mexico Health Sciences Center
Human Research Protections Office
Study Protocol

I.   Research Project Title

        Children's Self-Perception Regarding Weight

II.   Investigator's Name, Degree Title, and Department

        Carolyn Jaramillo Montoya, MSN, CPNP, Doctoral Candidate, College of
        Nursing, University of New Mexico; Lecturer III College of Nursing, University
        of New Mexico.

        Dissertation Chair: Marie Lobo, PhD, RN, FAAN, Professor, College of Nursing,
        University of New Mexico.

III.   Aims and Hypotheses
        1. To determine if there are differences based on age, gender, actual BMI
            category (underweight, healthy weight, overweight, obese), and ethnicity for
            the accuracy of children's selection of BMI category (underweight, healthy
            weight, overweight, obese) using figures from the Children's Body Image
            Scale (CBIS©) versus their clinically measured BMI for children between
            the ages of 8 and 11 years.
            H_o There will be no differences between the accuracy of the children's
            selection of BMI category based on gender, age, ethnicity and actual BMI
            category for children between the ages of 8 and 11 years.
        2. To determine the associations of gender, age, ethnicity, and actual BMI
            category (underweight, healthy weight, overweight, obese) with ideal BMI
            category (underweight, healthy weight, overweight, obese) using the
            Children's Body Image Scale (CBIS©) for children between the ages of 8 and
            11.
            H_o There will be no associations between children's gender, age, ethnicity,
            and actual BMI category (underweight, healthy weight, overweight, obese)
            and ideal body BMI category for children between the ages of 8 and 11 years.

IV.   Background
        Existing Knowledge
        Using data drawn from the 2009-2010 National Health and Nutrition Examination
Survey (NHANES), Ogden, Carroll, Kit, and Flegal (2012) reported that 16.9% of children in
the United States between the ages of 2 and 19 years are obese. This rate has tripled since
1980. The prevalence rate for overweight and obese children aged 2 through 19 years is

31.8% (Ogden et al., 2012). Furthermore, the rates for obesity in both adults and children are predicted to increase over the next several decades. Based on an epidemiologic study, Wang, Beydoun, Liang, Caballero, and Kumanyika (2008) projected that by the year 2030, approximately 51.1% of all American adults will be obese. For children and adolescents, the authors estimated that the prevalence of obesity will increase to approximately 30%. Minority populations will continue to be disproportionately affected. According to these projections, 41% of Mexican-American young boys and Black adolescent girls will be obese, a full 10 percentage points above the general population.

Obesity has serious consequences. Complications of obesity include coronary heart disease (CHD); type 2 diabetes mellitus (T2DM); endometrial, breast, and colon cancers; hypertension; dyslipidemia; stroke; liver and gallbladder disease; sleep apnea; osteoarthritis; and gynecologic problems, such as abnormal menses and infertility (Centers for Disease Control [CDC], 2011a). Effective treatment and prevention strategies need to be implemented to reverse the trends of obesity in the United States (US).

Irwin and Johnson (2005) note that the majority of research related to health issues of young children is derived from parental or health care professional's perceptions of young children. The authors believe that there is value in talking with children, stating that, "If children had greater access to public voice through vehicles such as research, they would be able to contribute to the social structures that concern them" (Irwin & Johnson, 2005, p. 821).

Several studies have examined children and adolescent perceptions regarding weight and general health issues (Abbot, Lee , Stubbs, & Davis, 2010; Adams, et al., 2000; Collins, 1991; Murtagh, Dixey & Rudolf, 2006; Skemp-Arlt, & Mikat, 2007; Snethen & Broome, 2007; Thompson, Corwin, & Sargent, 1997; Turby & Paxton, 2002; Williamson & Delin, 2000). Three studies included only Caucasian and African American children (Adams, et al., 2000; Collins, 1991; Thompson, et al. , 1997); one study did not report ethnicity (Skemp-Arlt, & Mikat, 2007); and several studies were conducted in countries outside of the US (Abbot, et al., 2010; Gualdi-Russo, et al., 2007; Maximova, et al., 2008; Saxton, Hill, Chadwick & Wardle, 2009; Truby & Paxton, 2002; Williamson & Delin, 2000). Two studies examined weight perceptions among Hispanic children (Figueroa, Ip, Gesell, & Barkin, 2008; Snethen, Hewitt, & Petering, 2007).

A number of studies confirm that, in varying degrees, overweight children do not perceive themselves as overweight and children, in general, select an ideal figure thinner than their current figure (Collins, 1991; Gualdi-Russo, et al., 2007; Saxton, et al., 2009; Skemp,-Arlt & Mikat 2007; Snethen & Broome, 2007; Thompson, et al., 1997; Truby & Paxton, 2002). Two of the studies, both conducted in countries outside of the US, found that majority of overweight/obese teens accurately reported themselves as 'too fat' (Abbot, et al., 2010; Maximova et al., 2008). Overweight children in the qualitative study by Murtagh, et al., (2006) identified the need to be normal and being overweight did not allow them to blend in with their peers. Adams et al. (2000) and Thompson, et al. (1997) both had sample sizes that included a significant number of Black children (46.9% and 48.2% respectively). Black children in the study by Thompson, et al. selected significantly heavier ideal sizes than White children while in the study by Adams et al., White females identified themselves as more overweight than Black females. Only two studies were identified which focused on the perceptions of overweight Hispanic children (Figueroa, et al., 2008; Snethen, et al., 2007). Snethen conducted small focus groups with of Hispanic children and parents regarding their

perspectives about childhood overweight. The primary finding from the children's focus groups was a sense that overweight children were not active. While Figueroa found that overweight children did not accurately identify their own body size, there were methodological problems with the study.

The original pictorial instrument used to assess weight perceptions in children was developed by Collins in 1991. These 7 figures were based on previous adult figures developed by Stunkard, Sorenson, and Schulsinger (1983). The figure scale developed by Collins does not correlate directly with BMI; therefore, no correlations between BMI and selection of actual body type could not be determined. Collins did note that 42% of the females and 30% of the males selected an ideal figure thinner than their current figure.

The Collins (1991) pictorial instrument has been utilized by other researchers to study children's perceptions related to weight. Thompson, Corwin and Sargent (1997) utilized the Collins pictorial figures in their random sample of 817 children from nine South Carolina elementary schools. While this study did find differences related to body size satisfaction based on race, gender and SES, data related to height, weight and BMI were not collected; therefore, the weight category of the participants (underweight, healthy weight, overweight or obese) is unknown and comparisons between ideal body size and actual BMI were not included.

More recent studies which have used the Collins (1991) figures to examine children's self-perception regarding weight have been conducted outside of the US. Gualdi-Russo, et al. (2007) utilized the Collins Body Silhouette Chart with 866 (417 females and 449 males) school children (ages 8 and 9) years in northern Italy to investigate their perception of body image. The children were weighed and measured, BMI was calculated and children were classified as normal weight, overweight or obese. A total of 35.8% of the girls and 37.2% of the boys in this study were overweight. Although 41.6% of the girls and 39.4% of the boys expressed a desire to be thinner a greater degree of dissatisfaction with their weight occurred in the children who were overweight or obese (76.4% of the overweight/obese girls and 63.4% of the overweight boys). Among the overweight/obese children 5.7% of the males and 8.8% of the females wrongly perceived themselves as thinner than their actual weight. The authors note that these findings play a critical role in the development of programs aimed at preventing and treating the problem of childhood overweight and obesity.

Maximova, et al. (2008) also examined weight status perception in their study of 3,665 Canadian children ages 9, 13, and 16 using the Collins figures (1991). Height and weight measurements were obtained and BMI was calculated. Only 1.6% of the children and teens perceived themselves as being overweight even though 24% of the children were overweight or obese ($p < 0.0001$).

It should be noted that the Collins (1991) figure scale is over 20 years old. A more recent pictorial scale used to measure body image in children which could be correlated with known BMI percentile ranges for gender and age was developed by Truby and Paxton (2002). Their tool, the Children's Body Image Scale (CBIS[©]) (see Appendix A and B) differs from the Collins tool in that the scale uses photographs of children of known BMI percentile ranges for gender and for the ages of 7 through 12 (using 1979 National Center for Health Statistics [NCHC] percentiles). Children between the ages of 7 through 12 years from the Royal Children's Hospital were asked to participate in the original development of the instrument. The children were weighed and measured and their BMI was calculated. One

boy and one girl, each age 10 years, who had a BMI that fit one of the seven NCHC percentiles (3rd, 10th, 25th, 50th, 75th, 90th and 97th), was photographed. The 14 photographs (7 boys; 7 girls) were then scanned into a computer and a generic male or female head was substituted on to the bodies (see Appendix A and B). As the CBIS[©] is the chosen tool for this study it will be discussed in detail. The reliability and validity of this tool will be discussed in the section, Experimental Design and Methods (V-5).

      The CBIS[©] (Truby and Paxton, 2002) was utilized with 312 children from grades two through six (ages 7-12) from four primary schools in Australia. While the authors do not provide exact numbers related to ethnic groups they note that the majority of the children were Caucasian and that 12% were primarily of Chinese and Vietnamese descent. A total of 163 girls (mean age 9.0 years) and 149 boys (mean age 9.2) participated in the study. The mean BMI percentile for the girls was 6l.7 and for the boys 63.6. According to the CDC definitions (see operational definitions) these mean BMI percentiles represent a healthy weight. The children were asked to identify the body figure most like their own (perceived figure) and they were asked to identify the figure they would most like to look like (ideal figure). The authors note that the boys in the youngest age group (< 8 years) were not able to match their own body size with the body figure of a similar BMI and therefore do not consider this tool reliable for boys below the age of eight years. Their analysis revealed that girls significantly underestimated their actual size to a greater extent than boys ($F(1,304) = 17.29$, $p < .001$). It is interesting to note that while girls significantly underestimated their actual size when compared to boys ($p < 0.001$) the actual percentage of overweight or obese children in this study was very small. Only 19.2% of the girls and 2.6% of the boys were in the overweight or obese categories. For girls 48% chose a thinner ideal body figure; 42% chose the same size and 10% chose a larger figure than their perceived figure (across age groups). For boys 36% showed a preference for a smaller body figure than their own; 44% selected the same size figure and 20% chose a larger figure than their perceived figure. The authors also note the concern that 55% of the girls and 45% of the boys selected a BMI figure below the 10th percentile as ideal. These findings are somewhat startling considering that so few of the boys or girls in this study were actually overweight or obese.

      The CBIS[©] was used by Saxton, Hill, Chadwick and Wardle (2009) to study associations between weight status and body size perception in a cross-sectional survey of 399 children aged 7 to 9 years (205 boys and 194 girls) in the United Kingdom. The children's height and weight was measured and BMI was calculated. Overall most of the children (45%) underestimated their body size and children with a higher BMI had a significantly greater underestimation ($p < 0.001$) with obese girls being less accurate than obese boys. The authors collected ethnicity data for Black/mixed Black, Asian/mixed, Asian or other but then re-coded the data to White/non-White. While 52% of the participants were non-white no findings were presented based on ethnicity. It should be noted that the authors of this study altered the CBIS[©] tool by obscuring the facial features of the seven figures on the scale (both boys and girls). No explanation is given for this change in the scale; however, Gardner and Brown (2010) in their review of figural drawing scales note that some scales have greater reliability and validity with absent facial features. This study, like other studies previously discussed, confirms that many children underestimate their body size.

      In a follow-up of their original work Truby and Paxton (2008) also examined the CBIS[©] in comparison to the CDC 2000 growth charts, the United Kingdom 90 BMI charts,

and the international obesity taskforce BMI Cut-Offs (see Appendix C). In their original work on the development of the CBIS[©] Truby and Paxton (2002) utilized the1979 National Center for Health Statistics [NCHC] percentiles to determine the BMI ranges for the 7 male and female figures in the CBIS[©]. In their more recent article Truby and Paxton (2008) discuss the alteration of the BMI categories for use with the 2000 CDC growth charts. The authors conclude that while the CBIS[©] is representative of the current population they caution the categories for boys and girls cannot be directly compared as they represent different BMI ranges.

Rationale for Performing this Research

Several studies confirm that, in varying degrees, overweight children do not perceive themselves as overweight and children, in general, select an ideal figure thinner than their current figure (Collins, 1991; Gualdi-Russo, et al., 2007; Saxton, et al., 2009; Skemp,-Arlt & Mikat 2007; Snethen & Broome, 2007; Thompson, et al., 1997; Truby & Paxton, 2002). Two studies, both conducted in countries outside of the US, found that majority of overweight/obese teens accurately reported themselves as 'too fat' (Abbot, et al., 2010; Maximova et al., 2008). Overweight children in the qualitative study by Murtagh, et al., (2006) identified the need to be normal and being overweight did not allow them to blend in with their peers. Adams et al. (2000) and Thompson, et al. (1997) both had sample sizes that included a significant number of Black children (46.9% and 48.2% respectively). Black children in the study by Thompson, et al. selected significantly heavier ideal sizes than White children while in the study by Adams et al., White females identified themselves as more overweight than Black females. Only two studies were identified which focused on the perceptions of overweight Hispanic children (Figueroa, et al., 2008; Snethen, et al., 2007). Snethen conducted small focus groups with of Hispanic children and parents regarding their perspectives about childhood overweight. The primary finding from the children's focus groups was a sense that overweight children were not active. While Figueroa found that overweight children did not accurately identify their own body size, there were methodological problems with the study.

The majority of the studies reviewed identified accurate weight perception by children as an essential part of developing prevention and intervention strategies for overweight and obese children. More research in this area is needed as several of the cited studies are 10 years or older (Adams, et al., 2000; Collins, 1991; Thompson, et al.; Truby & Paxton, 2002; Williamson, & Delin, 2000). Many of the studies were conducted outside of the US (Abbot, et al., 2010; Gualdi-Russo, et al., 2007; Maximova, et al., 2008; Truby & Paxton, 2002; Truby & Paxton, 2008; Saxton, et al., 2009; Williamson & Delin, 2000) and may not be generalizable to children in this country. Only two of the studies discussed (Figueroa, 2008; Snethen, 2007) were designed to understand weight perception in Hispanic children. The study by Snethen provided limited insight in to children's perceptions regarding weight while the study by Figueroa lacked methodological detail. Although guidelines exist regarding obesity prevention and treatment in children (Barlow, 2007; National Association of Pediatric Nurse Practitioners [NAPNAP], 2006) no one strategy has been proven to be most effective. Would pediatric obesity intervention programs and policies for children be more successful if they were in part based on knowledge regarding children's perceptions regarding overweight and obesity? The American Academy of Pediatrics (AAP) in their 2010 policy statement on Health Equity and Children's Rights

specifically notes that children should participate and be involved, "… in decision making regarding issues that affect them" (p. 845). Further research regarding children's perceptions regarding weight is necessary as the first step toward planning effective prevention and treatment strategies.

V.   Experimental Design and Methods
1. Experimental design

This study is a cross-sectional descriptive, non-experimental design.

Children will complete a survey instrument (see #4 Instruments) and they will be weighed and measured. Body mass index (BMI) will be determined based on height, weight. Body mass index percentile will be determined using sex-and age-specific reference values (CDC, 2011b).

2. Definition of terms

Race and ethnicity. The standard categories for a combined format of race and ethnicity as defined by the U.S. Office of Management and Budget ([OMB], 1997) are as follows: American Indian or Alaska Native; Asian; Black or African American; Hispanic or Latino; Native Hawaiian or Other Pacific Islander; White. These six categories as well as a space for "other" will be included in the consent form.

Hispanic or Latino is defined by the OMB (1997) as: A person of Cuban, Mexican, Puerto Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.

Underrrepresented. According to the National Institutes of Health (2011), "The following racial and ethnic groups have been shown to be underrepresented in biomedical research: African Americans, Hispanic Americans, Native Americans/Alaska Natives who maintain tribal affiliation or community attachment, Hawaiian Natives and natives of the U.S. Pacific Islands".

Gender. Male or female (included on the consent form).

Age. Age will be calculated using years and months (included on the consent form).

Height. Height will be measured in inches using a Seca™ portable stadiometer (model 217).

Weight. Weight will be measured in pounds using a Seca™ portable floor digital scale (model 869).

Body Mass Index (BMI) and BMI Percentiles. Body Mass Index (BMI) – Weight in kilograms divided by the square of height in meters (CDC, 2011b). To account for the variability of children's weight with sex and age BMI is compared with sex- and age-specific reference values (Ogden & Flegal, 2010). The 2000 CDC charts function as the reference values for the calculation of BMI percentiles.

BMI Categories.

Underweight – Less than 5th percentile on CDC BMI-for-age and gender growth charts (CDC, 2011b).

Healthy weight – Fifth (5th) percentile to less than 85th percentile on CDC BMI-for-age and gender growth charts (CDC, 2011b).

Overweight – Eighty-fifth (85th) percentile to less than the 95th percentile on CDC BMI-for-age and gender growth charts (CDC, 2011b).

Obese – Equal to or greater than the 95th percentile on CDC BMI-for-age and gender growth charts (CDC, 2011b).

Assignment of Figures to BMI Categories.
The range of BMI categories developed by Truby and Paxton (2002) for the Children's Body Image Scale (CBIS©) were based on the 1979 US National Center for Health Statistics percentiles. In a follow-up article Truby and Paxton (2008) compared the CBIS© BMI scale with international standards for body mass index (see Appendix C). They compared the CBIS© figure category and BMI categorization with the CDC 2000 percentile charts, the United Kingdom 90 BMI percentiles and the international obesity taskforce cut-off categories for acceptable weight, overweight and obese. The original BMI representations and percentiles for the CBIS© figures based on the 1979 CDC percentile charts as compared to the 2000 CDC percentile charts are shown below in Table 1 with the changes highlighted in bold. Note that for the males the 2000 BMI ranges are, for some categories, larger and the BMI percentiles have changed. For figures E (#5), F(#6) and G(#7) the percentiles have been changed from the 75th to >75th percentile, 90th to >85th percentile, and 97th to >97th percentile respectively. The BMI ranges for the females have remained the same. For the female BMI percentiles figure F(#6) and G(#7) have been changed from the 90th to the 85th percentile and from the 97th to >90th percentile respectively.

Table 1 − Comparison of Figure Labels/CBIS$^{©}$ BMI Representations
For 1979 and 2000 CDC BMI Percentiles

Figure Label	1979 Male BMI Range & Percentile	2000 Male BMI Range & Percentile	1979 Female BMI Range & Percentile	2000 Female BMI Range & Percentile
A(#1)	14.0-14.6 3rd	14.0-14.6 3rd	13.0-13.5 3rd	13.0-13.5 3rd
B(#2)	14.7-15.5 10th	14.7-15.5 10th	13.6-14.9 10th	13.6-14.9 10th
C(#3)	15.6-16.5 25th	15.6-16.5 25th	15.0-16.6 25th	15.0-16.6 25th
D(#4)	**16.6-18.5 50th**	**16.6-20.0 50th**	16.7-17.7 50th	16.7-17.7 50th
E(#5)	**18.6-24.9 75th**	**20.1-25.1 >75th**	17.8-19.4 75th	17.8-19.4 75th
F(#6)	**25.0-28.4 90th**	**25.2-28.4 >85th**	**19.5-24.6 90th**	**19.5-24.6 85th**
G(#7)	**28.5-29.0 97th**	**28.5-29.0 >97th**	**24.7-28.5 97th**	**24.7-28.5 >90th**

Males.
Underweight (<5%): Figure A(#1)
Healthy Weight (>5% to <85%): Figures B(#2), C(#3), D(#4)
Overweight (85% to <95%): Figure E(#5)*, F(#6)
Obese (>95%): Figure G(#7)

*Figure E(#5) is listed at >75th percentile for the 2000 BMI percentile. The decision was made to include this figure in the overweight category as the BMI category of 20.1 is above the 85% for males who are 8, 9 and 10 years of age, considered overweight by CDC definitions. For age 11, a BMI category of 20.1 is at the 85% also considered overweight by CDC definitions. Additionally, Truby and Paxton (2008) relate Figure E(#5) to the 91st percentile of the United Kingdom 90 BMI percentiles as well as to the overweight category by the International Obesity Taskforce (see Appendix C). The upper range for figure E(#5), 25.1 meets the CDC definition of obesity (>95%) for males in the age group of children included in this study (8-11 years); however, since the two male figures E(#5) and F(#6) are so similar in appearance the decision was made not further fractionate the figure categories.

Females.
Underweight (<5%): Figure A(#1)
Healthy Weight (>5% to <85%): Figures B(#2), C(#3), D(#4), E(#5)
Overweight (85% to <95%): Figure F(#6)**
Obese (>95%): Figure G(#7)
** Like the male Figure E(#5), the female Figure F(#6) contains a large BMI range (19.5-24.6). Tuby and Paxton (2008) place this BMI category as comparable to the 85% (see Appendix C); however, the upper range BMI category of 24.6 represents a percentile >95% for the ages of females 8-11 years of age and therefore is defined as obese by the CDC standards. In this case the decision was made not to fractionate the BMI category for the female Figure F(#6) as there seemed to be a distinct difference between Figure F(#6) representing the definition of overweight, and Figure G(#7) representing the definition of obese.
Ideal BMI: defined as the CBIS© BMI figure selected by the children when asked to select a figure that looks like what they would like to look like.
Accurate Perceivers and Misperceivers. Rahman and Berenson (2010) in their study of self-perception of weight in young reproductive-aged women categorized the participants into four categories using their BMI and self-perception of weight:

- overweight misperceivers (overweight women who described themselves as underweight or normal weight)
- overweight actual perceivers (overweight women who described themselves as overweight)
- normal-weight misperceivers (normal weight women who described themselves as overweight)
- normal-weight actual perceivers (normal-weight women who described themselves as normal weight or under-weight). (p. 1275)

This model was modified to divide the participants in this study into two categories.

- Accurate perceivers: children who select a CBIS© BMI figure that matches their true BMI category (underweight, healthy weight, overweight, obese).
- Inaccurate perceivers: children who select a CBIS© BMI figure that does not match their true BMI category (underweight, healthy weight, overweight, obese).

3. Collection of data

Setting. The community of interest is located in Valencia County, New Mexico. The population for this county is 76,569. The majority of the population (58.3%) identify themselves as Hispanic or Latino and 36.2% identify themselves as White persons not Hispanic (US Census Bureau, 2011a).

The population of the town where this study will be conducted is 7,269 and the racial make-up is as follows: 65.3% persons of Hispanic or Latino origin; 30.7% white persons not Hispanic; 1.4% Black persons; 2.6% American Indian and Alaska Native persons; 0.4% Asian persons; and 0.1% Native Hawaiian and Other Pacific Islander. A total of 4.8% of the population includes persons reporting two or more races (US Census Bureau, 2011b). The age group of interest for this study, children between the ages of eight and eleven, is represented as follows: children between the ages of 5 to 9 years, 6.4%; and those between 10 to 14 years, 6.5% (US Census Bureau, 2011c).

The school district participating in this study covers 1,081 square miles (NM State Department of Education, 2002) and the total enrollment in the district is 4,659 students (NM State Department of Education, 2010a). In this school district there are 8 elementary schools with a total population of 2,621 students (T. S. Chavira, personal communication, September 7, 2011). Of those 2,621 students 41% (1,080) are in grades three through five and represent the age group of interest (8-11 years of age) for this study. The ethnicity of the students in grades three through five is as follows: 74% Hispanic; 22.8 % White persons not Hispanic; 1.7% Native American; .83% African American; .28% Asian; and .28% unclassified (T.S. Chavira, personal communication, September 7, 2011).

According to the New Mexico State Department of Education (2010b) only one elementary school has less than 50% of their students qualifying for free or reduced lunch and that school is a family school (mix of home schooling with some days spent in a classroom) with an enrollment of only 83 students. Of the remaining seven elementary schools, two have between 73% and 77% of the students qualifying for free or reduced lunch; four have between 81% and 88% qualifying; and one has 90% qualifying.

Meetings were conducted with the superintendent of the school, the health services coordinator and the eight elementary school principals to discuss the study and obtain consent. Verbal consent was obtained from the superintendent, the health services coordinator and the eight principals. Written letters of support have been obtained from the superintendent and seven of the eight principals (included in this application). Although the principal of the family school indicated support for the study he did not reply to several messages regarding a letter of support; therefore, the family school will be excluded from this study.

Data Collection. Teachers of 3rd, 4th and 5th grade students will be asked to decide what portion of the school day could be used to conduct this study. Preferably the cafeteria or gym (often the cafeteria and gym are interchangeable in elementary schools) will be the location for data collection. If it is not possible to use the cafeteria/gym the surveys will be done in the classroom. Heights and weights (if the gym/cafeteria is not available) can be done in the classroom, hallway or in the nurse's office (if one exists) one child at a time, behind privacy screens, regardless of the location. It is anticipated that the time involved obtaining child assent, administering the Child Body Image Scale (CBIS©) survey, and obtaining the height and weight of the children would not exceed 20 minutes (depending on the number of

children participating). All data will be collected by the PI or her assistants. If assistants are enlisted to help with the data collection an amendment will be added to the IRB application.

4. Data Management and Analysis

The 7 participating schools will be randomly assigned a letter label from A-G (not in alphabetical order). Once the consent forms have been received a code number will be assigned to the child's name. These code numbers will be specific to the particular school. For example Central Elementary will be given the letter label of "A". All participants from the "A" school will have code numbers that begin with 1001 (see Appendix D) for code sheet containing letter labels and assigned number sequence for each school). One master data sheet will contain the child's name and code number. A second master data sheet will contain the child's code number, gender, ethnicity, date-of-birth and height and weight. The two master data sheets will be kept in a locked file cabinet in the office of the PI at the College of Nursing (CON), University of New Mexico (UNM). The master data sheet containing the child's name and code number as well as the second master data sheet containing child's date of birth, height, and weight, gender and ethnicity will be destroyed once data analysis is complete.

Only the code number will appear on the Child Body Image Scale (CBIS©) surveys (one for current perception, one for ideal perception). The CBIS© will be on photocopied on legal size paper and then folder into a pamphlet with figures for current perception on the front page, figures for ideal perception on the second page and spaces for height, weight , BMI, BMI percentile and on the third page (see Appendix A & B for the CBIS©; CBIS© appendix for a copy of the tri-fold; and #5 below for a details regarding the instrument). Date-of-birth is necessary in order to calculate body mass index (BMI) and gender is necessary to determine BMI percentile. This information will be transferred to the electronic Children's BMI Tool for Schools (CDC, 2011c), an Excel spreadsheet. This program will be utilized to calculate BMI and BMI percentile. No names will be entered into this Excel spreadsheet. Each child's identification code along with their corresponding gender, date-of-birth, date of measurement, and height and weight will be entered. The program with this data will be kept on the PI's CON, UNM work computer (password protected). The master data sheet containing the child's code number, date-of-birth, gender, height and weight will be kept in a locked file cabinet at the PI's office at the CON, UNM and be destroyed after data analysis has been completed.

Data analysis will be performed using The Statistical Package for the Social Sciences (SPSS) version 20 (SPSS Inc., Chicago, Il.). The following data will be entered using the participant's code number: Child Body Image Scale (CBIS©) survey results, age, gender, ethnicity, weight, height, BMI and BMI percentile. Participant names and date-of-birth will not be entered into SPSS. The descriptive statistics will include the mean, standard deviation (SD), range of scores, skewness and kurtosis in order to describe the characteristics of the sample. Bivariate analysis include t-test to compare the mean age of accurate perceivers to the mean age of inaccurate perceivers; a chi-square test to examine the relationship of gender, ethnicity, and actual BMI category between accurate perceivers and inaccurate perceivers as well as to examine the relationship of gender, ethnicity, and actual BMI category and ideal BMI category; and an ANOVA to examine the relationship of age and ideal BMI categories. Multivariate analysis will include logistic regression to examine the

impact of gender, age, ethnicity, and actual BMI category on the accuracy of weight perception and ordinal logistic regression (for a polychotomous dependent variable) to examine the relationship of gender, ethnicity, on the selection of BMI categories.

If any personnel are enlisted to assist with data entry and data analysis an amendment will be added to the IRB application.

All reports will include group data only. No individual data will be disclosed.

5. Instruments

The CBIS© (see Appendix A & B) is the instrument selected to test the two hypotheses. Permission was gained to utilize the CBIS© for this study from Dr. H. Truby who developed the CBIS© (personal communication, August 24, 2011). Dr. Truby noted that the CBIS© has not been used in children six years of age or younger and that in children as young as seven (boys in particular) the accuracy of body size perception is questionable. Dr. Truby granted permission to use this scale with the condition that it not be altered in any way and that use of the CBIS© be referenced in reports and publications that may arise from this research project.

Reliability. The reliability of the CBIS© over time (3 week period) was tested by administering the tool to 281 children in grades three through six (ages 7 to 11) in the United Kingdom (Truby & Paxton, 2008). Of the total participants, 141 were girls (mean age 8.9 years) and 142 were boys (mean age 8.9 years). The mean BMI (not percentile) for the total sample was 17.9. Mean scores using paired t tests were not significantly different between times one and two (3 week period). The correlations between times one and two were significant for both girls and boys across all categories (perceived BMI; ideal BMI; perceived-ideal discrepancy score; and actual-perceived discrepancy score) at $p < .001$. The r values were quite strong ranging from .67 to .87

Validity. Of the original 312 children who participated in the development of the CBIS© a subset of 153 students participated in assessments of three additional body image and eating behavior tools (Turby & Paxton, 2002). On the Body Esteem Scale (BES) four items were aimed at assessing weight dissatisfaction. Field (2005) notes that a Cronbach alpha coefficient above 0.7 indicates internal consistency. The Cronbach's alpha for this sample was .84. A BES-weight subscale consisting of three items resulted in a Cronbach's alpha of .61. Although this is below the recommended level of 0.7 Field notes that it is not uncommon to have a Cronbach alpha of less than 0.7 for questionnaires with less than 10 items. The 10-item Dutch Eating Behaviour Questionnaire-Restraint Scale (DEBQ-R) was administered to assess dieting and weight control. Although the Cronbach's alpha for this scale was 0.89 the authors caution that there is some question about the ability of children under 12 years-of-age to fully comprehend the items on the scale. Correlations were then examined between the BES scores, DEBQ-R scores and the perceived-ideal discrepancy scores (as a measure of body dissatisfaction). When the groups were combined for all ages (<8 through 12) there were significant correlations between perceived-ideal discrepancy and BES for both girls ($p < .001$) and boys ($p < .05$); however for boys younger than 8 years, boys between 8 years and < 10 years, and girls between 10-12 years the correlations were not significant. Scores for perceived-ideal discrepancy and DEBQ-R were only significant for all of the girls ($p<.05$) and for one sub-set of girls, those between the ages of 10-12 ($p < .05$).

The strongest correlations were between the perceived-ideal discrepancy score and two questions which were asked of all participants (not the subset described above):

'Do you think your body is (1) much too thin, (2) too thin, (3) just right , (4) a little too fat or (5) much too fat?' and 'Would you like your body to be (1) much thinner, (2) a little thinner, (3) stay the same (4) a bit fatter or (5) much fatter?' (Truby & Paxton, 2002, p. 192).

The correlations for both questions and the perceived-ideal discrepancy scores were highly significant for all girls and all boys (p < .001). The correlations for both of these questions and the perceived-ideal discrepancy scores were also significant across age groups with the exception of the perceived-ideal discrepancy and the first question (think too thin/fat) for girls < 8 years.

Limitations. In terms of limitations the authors correctly note that the CBIS© has been tested almost exclusively in Caucasian populations. Additionally, the figures used are based on pictures of Caucasian children. Gardner and Brown (2010) in their review of figural drawing scales argue that figures containing facial features or clothing (such as those utilized in the CBIS©) rather than a plain silhouette may actually distract participants from focusing on the size and shape of the drawing. Utilizing the CBIS© in this study where it is anticipated that the majority of participants will be Hispanic will provide some initial data regarding the use of this tool in other populations.

VI.   Human Subjects

1. Sample

Inclusion criteria. Children between the ages of 8 and 11years of age who are able to speak, read, and understand English (self-identified). Parents must be able to read and understand either English or Spanish. Consent forms will be written in both English and Spanish.

Exclusion criteria. Children who have a medical condition that affects their weight or ability to eat independently; or is being treated with chronic steroids, chemotherapy, or immune suppressants. Children who are currently receiving medical treatment for obesity will also be excluded.

Special Considerations regarding children. In addition to parental consent, child assent (form included in this application) will be obtained from all participants. Per the parental consent and child assent forms a child can decline to participate at any time. The PI for this study is a Pediatric Nurse Practitioner with over 30 years of experience in caring for children. She is able to recognize when a child is experiencing discomfort or distress. Any child experiencing distress or discomfort will be re-directed to his/her normal classroom activities. The UNMHSC Office of Research Attachment 2, Research Involving Children, has also been completed and is included in this application.

2. Sample size

There are approximately 1,080 students in grades three through five representing the age group of interest (8-11 years of age) for this study (T. S. Chavira, personal

communication, September 7, 2011). The sample size for this study will be set at a maximum of 1,000 participants.

Power analysis and sample size estimation were conducted using G-Power 3.1 (Institut Für Experimentelle Psychologie, 2009). Total sample sizes needed for the proposed statistical analyses are listed below.

AIM 1

t-test. Effect size is conservatively estimated for a medium effect, d=0.5, with an alpha of 0.05 and a power of 0.8 and an allocation ratio of 1. For the t-tes t the continuous variable of age needs to be treated as the DV with the IV being inaccurate vs. accurate.
Total sample size = 128 with 64 per group (2 groups)

Chi-square test. For the chi-square test (2x3 table*): Effect size is conservatively estimated for a medium effect, w=0.3, with an alpha of 0.05, and a power of 0.8 with 2 degrees of freedom. Total sample size: 108

*Most probably the number of participants whose actual BMI is in the underweight category will be very small and the number of participants selecting an underweight figure is also expected to be small. For purposes of analysis the underweight category will be excluded in this analysis unless there are a significant number of participants in the underweight category and a significant number of participants who select a figure in the underweight category.

AIM 2

Chi-square. For the chi-square test (4x3 table**):   Effect size is conservatively estimated for a medium effect,w= 0.3, with an alpha of 0.05, and a power of 0.8 with 6 degrees of freedom.Total sample size 152

**For the 4x3 table all four categories are included for the ideal BMI category (underweight, healthy weight, overweight, obese). Only the three categories of overweight are included for actual BMI (healthy weight, overweight, obese) as again it is expected that few participants will actually be in the underweight category and therefore those in this category will be excluded from the analysis. Ethnicity will consist of 3 categories: Hispanic, non- Hispanic White, and other with Hispanic being the reference category.

ANOVA. For the ANOVA: Effect size is conservatively estimated for a medium effect, f= 0.25, with an alpha of 0.05; and a power of 0.8 with 4 groups. For the ANOVA, the continuous variable of age needs to be treated as the DV and the ideal BMI categories need to be treated as the independent variables.
Total sample size: 180

Regression statistics. In terms of a power analysis for the planned regression statistics (logistic and ordinal logistic) Nunnally and Bernstein (1994) as cited in Munro (2005) recommend at least 10 participants per predictor, ". . .in order to even hope for a stable prediction equation" (p. 201) for multiple regression. In her discussion of issues related to power Munro notes the lack of information regarding power analysis and logistic regression. It may be reasonable to assume that the minimum number of 10 participants per predictor would proposed by Nunnally and Bernstein would also apply to logistic regression.

3. Recruitment

Packets. Recruitment will be primarily done by distributing packets in each of the three grades (3rd, 4th, 5th) for all 7 elementary schools. The packets will contain a description of the study, the parental consent and the child assent forms . The teachers will be instructed to distribute the packets 2 weeks prior to the actual data collection. A second packet containing a reminder letter as well as duplicate consent and assent forms will be sent 1 week prior to the actual data collection .

Parent School Meetings. The 2012 fall term start date for this school district is August 8th. Requests (via e-mail) have been sent to the 7 principals to allow the PI to participate in on-site registration and any family welcome back events in order to directly recruit participants. The request included the possibility of having a table where information regarding the study could be discussed and consent would be obtained. Flyers printed in both English and Spanish (copies included in this application) will be available for distribution. A request was also made to be able to speak to the families regarding the study if presentations are a part of any of these events.

School Newsletter. For those schools who have a newsletter, permission will be obtained from the principals to include an announcement (included in this application) starting in August, 2012 regarding this study.

School Web Sites. This school district has a general web site and each school has their own individual web page. Permission will be asked to include an announcement (included in this application) on the school district general web site as well as each of the 7 participating elementary schools individual web pages.

4. Consent procedures

Parental consents will be included in all packets distributed to the children in grades 3rd, 4th, and 5th in the 7 elementary schools. A copy of the child assent form will be included in the packet. The study information sheet and the consent form include instructions to return the signed consent form to the child's teacher. Only children whose parents have signed the consent form will be given assent forms to read. They will be asked if they have questions. The students will also be given the following information verbally.

- They have the right not to participate even if their parent has signed a consent form.
- Their names will not be on survey forms or on the paper with their height and weight measurements.
- They can stop participation at any time.
- They will be weighed and measured one child at a time behind privacy screens.
- If they feel uncomfortable they can return to their normal school activities.
- They will not be given a grade for participating.
- Their teachers do not care if they participate and their progress in school will not be affected.

5. Potential risks

Doing the paper and pencil survey and obtaining the child's height and weight will cause little or no risk to the children participating. Paper and pencil tasks are routine in the

elementary school years. Many schools conduct annual height and weight assessments. By age eight the majority of children have been weighed and measured as part of health care visits. The only potential risk is that some students may experience discomfort completing the survey or being weighed and measured. As previously discussed the PI is an experienced Pediatric Nurse Practitioner able to recognize signs of child discomfort or distress. Any child experiencing discomfort or distress will be re-directed to their normal school activities.

For those parents who elect to receive their child's weight, height, and BMI results there is a risk that the child will lose the sealed envelope with the results.

6. Confidentiality

The master data sheet containing the child's name and code number, and the second data sheet containing the child's code number, date-of-birth, gender, ethnicity and height and weight will be kept in a locked file cabinet in the PI's office at the College of Nursing, University of New Mexico. The master data sheet containing the child's name and code number as well as the second master data sheet containing the child's date of birth, height, and weight, gender and ethnicity will be destroyed once data analysis is complete. The Children's BMI Tool for Schools (CDC, 2011c) Excel spreadsheet with the data containing the participants gender, date-of-birth, date of measurement, and height and weight will be kept on a password protected computer and secure server (the PIs work computer from the College of Nursing, University of New Mexico). The password on this computer is changed every 6 months.

7. Expected benefits

Many studies have been conducted regarding parental perception of children's weight. Less is known about children's self-perception about weight. Although this research may not result in any direct benefit the study may help researchers develop successful strategies for child obesity prevention and treatment programs.

Additionally, parents have the option to receive the results of their child's weight, height, and body mass index (BMI) measurements and an explanation of what they mean. These explanations will be distributed in both English and Spanish (copies included). This information may increase parental knowledge regarding their child's weight status. The PI will be available (by phone) to answer any questions the parents may have regarding the results. If parents have any concerns regarding their child's health they will be referred to their primary care provider. If they do not have a primary care provider they will be advised to contact the school nurse for a referral to a local community health clinic.

Appendix AA – Human Research Protections Office, Study Protocol References

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Appendix AA – Human Research Protections Office, Study Protocol

Appendix A Male – The Children's Body Image Scale©
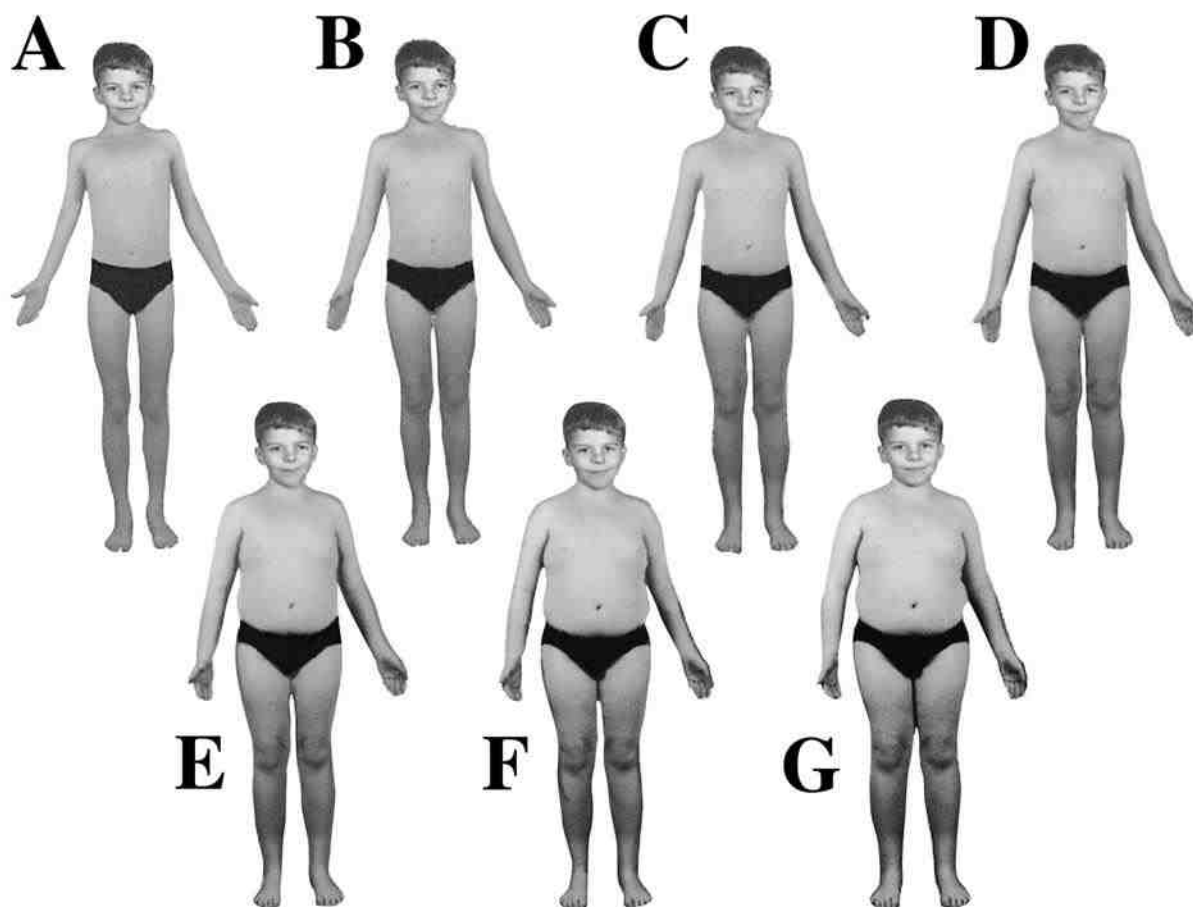
Permission to reprint the Children's Body Image Scale obtained from Helen Truby (H. Truby, personal communication, August 24, 2011).

Appendix AA – Human Research Protections Office, Study Protocol

Appendix B Female – The Children's Body Image Scale©
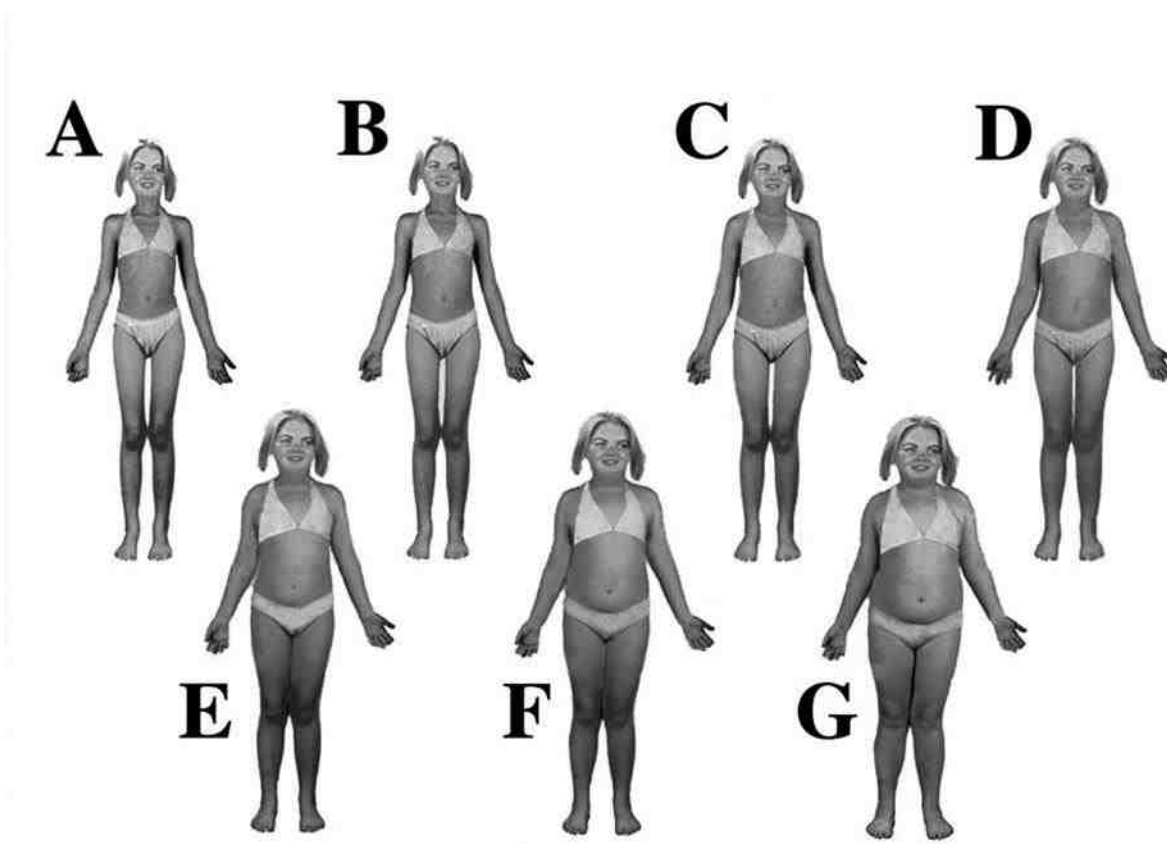
Permission to reprint the Children's Body Image Scale obtained from Helen Truby (H. Truby, personal communication, August 24, 2011).

Appendix AA – Human Research Protections Office, Study Protocol

Appendix C – Comparison of the CBIS BMI scale with CDC 2000, the UK 90 BMI

charts and the international obesity taskforce BMI Cut-Offs

Table 2. Comparison of the CBIS BMI scale with CDC 2000, the UK 90 BMI charts and the international obesity taskforce BMI Cut-Offs

CBIS figure category	BMI categorization on the CBIS	CBIS figure represented using the CDC 2000† Percentiles	CBIS figure represented using the UK 90 BMI‡ percentiles	CBIS figure represented using the Int. obesity taskforce cut-off*
Boys				
1	14.0–14.6	3rd	2nd	–
2	14.7–15.5	10th	10th	–
3	15.6–16.5	25th	25th	Acceptable
4	16.6–20.0	50th	50th	Acceptable
5	20.1–25.1	>75th	91st	Overweight
6	25.2–28.4	>85th	>98th	Obese
7	28.5–29.0	>97th	>99.6th	Obese
Girls				
1	13.0–13.5	3rd	2nd	–
2	13.6–14.9	10th	9th	–
3	15.0–16.6	25th	25th	Acceptable
4	16.7–17.7	50th	50th	Acceptable
5	17.8–19.4	75th	75th	Acceptable
6	19.5–24.6	85th	>85th	Overweight
7	24.7–28.5	>90th	99.6th	Obese

†(Kuczmarski et al., 2002).
‡(Cole et al., 1995).
*Adapted from (Spurrier et al., 2006).

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Appendix AA – Human Research Protections Office, Study Protocol

Appendix D – Children's Self-Perception Regarding Weight – Code Sheet for Schools

Letter Label	Assigned Number Sequence
A	1001
B	2001
C	3001
D	4001
E	5001
F	6001
G	7001

Appendix BB – Human Research Review Committee Approval of Research

THE UNIVERSITY OF NEW MEXICO
HEALTH SCIENCES CENTER

Human Research Review Committee
MSC 08 4560 BMSB Room B71
1 University of New Mexico~Albuquerque, NM 87131-0001
(505) 272-1129 Facsimile (505) 272-0803
http://hsc.unm.edu/som/research/hrrc/

05-Jul-2012

Montoya, Carolyn S,
College of Nursing

SUBJECT: HRRC Approval of Research - Modification
Project Title: Children's Self-Perception Regarding Weight
HRRC#: 12-264
Type of Review: Expedited Review
Approval Date: 03-Jul-2012
Expiration Date: 25-Jun-2013

Dear Dr. Montoya:

The Human Research Review Committee (HRRC) has **approved*** the above mentioned research protocol action based on review of the following:

1. Application submitted 7/2/2012;
2. Application Attachments 1, 2, 7, 13 submitted 5/31/2012;
3. Protocol v7/2/2012;
4. English Recruitment (Announcement Webpage) submitted 5/31/2012;
5. English and Spanish Recruitment (Announcement Newsletter) submitted 5/31/2012;
6. English and Spanish Recruitment (Flyer) submitted 5/31/2012;
7. English and Spanish Recruitment (Introduction Letter) submitted 6/26/2012;
8. English and Spanish Recruitment (Reminder Parent Consent) submitted 5/31/2012;
9. UNMHSC Combined Consent/HIPAA v6/26/2012;
10. Spanish UNMHSC Combined Consent/HIPAA v6/26/2012;
11. UNMHSC Assent v5/31/2012;
12. Study Assessments (CBIS_Boys, CBIS_Girls) submitted 5/31/2012;
13. English and Spanish Data Collection Forms submitted 6/26/2012;
14. English and Spanish Final Parent Results submitted 5/31/2012.

Consent Decision:
Consent and HIPAA included in same document~Requires a signed consent form

VA Studies Only:

If a consent is required, we have attached a date stamped consent that must be used for consenting participants during the above noted approval period.

If HIPAA Authorization is required, the HIPAA Authorization version noted above should be signed in conjunction with the consent form.

This study is approved to enroll only the number of subjects listed in the application, current protocol and consent form(s). If the PI wants to enroll additional subjects, it is the responsibility of the PI to submit an Amendment Request to the HRRC before the approved number of enrolled subjects is exceeded. If increased enrollment is requested the application, protocol and/or consent form(s) must also be amended to include the new target.

When consent is required, it is the responsibility of the Principal Investigator (PI) to ensure that ethical and legal informed consent has been obtained from all research participants.

Sincerely,

Mark Holdsworth, PharmD
Executive Chair
Human Research Review Committee

* Under the provisions of this institution's Federal Wide Assurance (FWA00003255), the HRRC has determined that this proposal provides adequate safeguards for protecting the rights and welfare of the subjects involved in the study and is in compliance with HHS Regulations (45 CFR 46), FDA Regulations (21 CFR 50, 56).