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The Relationship Between Maternal Child Feeding Practices and Child's BMI and Child's Dietary Restraint in Mexican-American Families of Grand Rapids, MI.

Larissa E. Fluegel
Grand Valley State University

The Relationship Between Maternal Child Feeding Practices and Child's BMI and Child's Dietary Restraint in Mexican-American Families of Grand Rapids, MI.

Larissa E. Fluegel, M.D.

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Dedication

I dedicate this thesis to my children Emilia and Gabriel who are the reason for almost everything I do; and to my friends Dave and Robyn Dystra for they have supported, encouraged and pushed me enough to persevere in accomplishing my goals.

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First, I wish to thank God, Lord and Creator for His provision and means to start and carry through this work and everything I do. Second, I would like to thank GVSU's Office for Graduate Studies and the PEO for providing the funds necessary for this study. Third, to my research advisor, Deborah Lown, Ph.D., I am indebted for her guidance, encouragement and patience. I am also thankful for the Department of Statistics for the generosity of their time and knowledge in helping with the statistical analyses. Finally, I thank my research committee for their contribution and opportune insight.

Abstract

Background. Research in Caucasian girls has shown a relationship between mother's restrictive feeding practices and girls' eating in absence of hunger and greater body mass index (BMI). Hispanic children disproportionately suffer from obesity, yet there are limited studies on this relationship.

Purpose. This study sought to examine the relationship between maternal feeding practices (MFP) and child BMI (BMI_{ch}); and to explore the effect of demographics and culture on the latter. The hypothesis that BMI_{ch} is positively correlated with dietary restriction and monitoring and negatively correlated with pressure to eat was tested.

Subjects. First or second-generation Mexican-American women and their children 5-15 years old (one child:mother pair per family; n=35) were recruited from churches in Grand Rapids, MI.

Methods & Materials. Questionnaires were administered to mothers for demographic, acculturation (BAS) and child-feeding (CFQ) information. BMI (kg/m^2) were calculated for mothers and children from measured height and weight.

Analyses. Fisher's exact test was used to explore difference in proportions in categorical variables of gender, SES, BAS and maternal and child BMI. BMI_{ch} distributions. Pearson correlation analysis was used to explore BAS, BMI_{ch} and MFP associations. Multiple variable regression was used to determine the strength of association between MFP, and BMI_{ch} adjusting for maternal BMI (BMI_M).

Results. Gender differences in children regarding social class, maternal acculturation level and BMI percentiles were not statistically significant. Associations of acculturation with BMI_{ch} were not explored due to the cultural homogeneity of the sample. There was a small positive

association of BMI_{ch}–z scores with maternal restriction (r=0.14, p=0.4) and a weak negative association with monitoring (r=-0.12, p=0.48). Pressure to eat was not explored due to unreliability of the scale in this sample. These relationships were not affected by BMI_M in the regression model and were not statistically significant.

Conclusion. In this small sample of Hispanic mother-child pairs, MFP were not significantly associated with BMI_{ch}. These findings suggest interventions in MFP might not impact on the childhood obesity in Hispanics.

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Abbreviations

Abbreviation	Meaning
BMI	Body mass index
BMI_M	Mother body mass index
BMI_{ch}	Child body mass index
BMI_{ch}-z	Child body mass index z-scores
a.k.a	Also known as
SES	Socioeconomic status
BAS	Bi-dimensional acculturation scale
His	Hispanic
Non-His	Non-Hispanic
CFQ	Child Feeding Questionnaire
Q,QQ	Question, questions
TFEQ-R21	Three-Factor Eating Questionnaire Revised with 21 items

Introduction

Obesity has become a serious problem in the United States and constitutes both an economic and a health burden. The annual financial burden of obesity is estimated to be about $147 billion (almost 10% of all medical expenses), and continues to increase as the prevalence of obesity rises (Finkelstein, Trogdom, Cohen, Dutz, 2009). Medically, obesity is known to be positively correlated to over forty adverse health conditions (Patterson, Frank, Kristal & White, 2004; Doll, Petersen, Stewart-Brown, 2000; World Heath Organization, 2000), most of which are either serious or pose a risk for more serious and potentially life-threatening conditions (coronary artery disease, stroke, cancer, hypertension, asthma, knee and hip replacement, osteoarthritis, chronic insomnia, depression, etc.) (Patterson, Frank, Kristal & White, 2004). Also, overweight adults experience higher rate of employee absenteeism than non-overweight adults (Bungum, Satterwhite, Jackson, & Morrow 2003).

Childhood obesity represents an equally serious problem because overweight children are likely to become overweight adults (Serdula, Ivery, Coates, Freedman, Williamson, & Byers, 1993). Overweight children themselves experience adverse health conditions of overweight: accelerated atherosclerosis, hypertension, sleep apnea, insulin resistance, early puberty, back pain, poor self-image, social isolation, etc. to name a few (Serdula, Ivery, Coates, Freedman, Williamson, & Byers, 1993; Freedman, Kettel L., Serdula, Dietz, Srinivasan, & Berenson, 2005; Kiess, Galler, Reich, Müller, Kapellen Deutscher, & Kratzsch, 2001). Unfortunately, the prevalence of both adult and childhood obesity is rising rapidly, particularly at the heavier end (the heaviest group is even heavier today), and at epidemic proportions as compared to statistics from twenty years ago (Berg, 1997; Flegal, Troiano, 2000; Najjar, & Rowland, 1987; Strauss & Pollack, 2001).

Childhood obesity is affecting minorities at a higher rate than the general population. Nationally representative data from 2007-2008 provides estimates of childhood obesity (Odgen, Carroll, Curtin, Lester, Lamb, & Flegal, 2010). These data show an average increase in prevalence of 4.9% in 8 years. An average of 21% of Mexican-American children and adolescents (male and female) are obese, which is significantly greater than non-Hispanic white children (Odgen, Carroll, Curtin, Lester, Lamb, & Flegal, 2010).

Despite the fact that Hispanics are the fastest growing minority in the U.S. and have the greatest prevalence of childhood obesity, the research on the contributors to this condition within this population is scarce. The scarcity of available scientific literature on such a serious condition as obesity, in such a relevant group of the U.S. population makes it imperative to conduct research that identifies the contributors to weight gain. Increasing the body of knowledge about obesity in Hispanics may aid in the development of preventive measures. Identification of factors contributing to obesity in Hispanic children may lead to an increase in the quality of life of the population as well as a decrease in the economic burden to society. Also, providing studies in specific ethnic groups can provide information useful to healthcare practitioners working with them.

The overall objective of this study was to determine the relationship between maternal-child feeding practices and child BMI and child dietary restraint in Mexican-American families. We also hoped to observe the modifying effect of maternal BMI on these relationships while exploring the effects of socioeconomic status and acculturation on children's BMI. The hypothesis was that the child's BMI would be positively correlated with maternal perceived

responsibility, perceived child's weight, concern, restriction, and monitoring; and negatively correlated with pressure to eat was tested.

Review of Literature

The factors likely to contribute to becoming obese are multiple and complex (Jebb, 1997). Research has shown that biological and metabolic factors, which are significantly influenced by genetics, play a role in the development of obesity by determining individual predisposition to weight gain (Filozof & González, 2000). But it is an obesogenic environment acting to promote increased energy intake or decreased energy expenditure that is considered the fundamental factor associated with weight gain (World Heath Organization, 2000; Hill & Peters, 1998). As individuals are exposed to obesity promoting environments (unlimited availability of convenient energy-dense foods combined with a very low need of daily activity for survival), many attempt to regulate and limit weight gain by consciously controlling food intake (Schur, Noonan, Polivy; Glodberg, & Buchwald, 2009; de Lauzon-Guillain, Basdevat, Romon, Karlsson, Borys, Charles, & The FLVS Study Group, 2006; Korkeila, Rissanen, Sørensen, & Koskenvuo, 1999). Dietary restraint is described as the chosen method of weight loss in a longitudinal study on weight loss and weight gain of Finnish adult twins (Korkeila, Rissanen, Sørensen, & Koskenvuo, 1999).

In a similar way, parents may attempt to control their children's weights by restricting the children's food intake. Research has found that parental dietary restriction takes place partly in response to the parent's own perceptions about weight and their ability to control children's food intake: parents that perceive themselves as overweight, those who restrain themselves, and those concerned with their child's weight are more likely to exercise dietary restriction over their children (Birch & Fisher, 2000). Birch and Fisher found this to be true after testing a model that proposes the mother's dietary self-restraint and concerns with her daughter's weight are predictors of the mother's restriction of the daughter's food intake (Birch & Fisher, 2000). Other

authors have found similar results (Francis, Hofer, Birch, 2001; Johannsen, Johannsen, & Specker, 2006; Campbel, Crawford, Ball, 2006; Blissett, Meyer, & Haycraft, 2006). Blissett and colleagues found a significant correlation between bulimia scores in mothers and their restrictive feeding practices towards their daughters (Blissett, Meyer, & Haycraft, 2006). Robinson and colleagues found a significant relationship between parental control and parents' own perceptions of weight (Robinson, Kiernan, Matheson, & Farish Haydel, 2001). One possible undesirable effect of restrictive feeding practices is that children are conditioned to respond to external cues (food portion size, cleaning the plate, palatability of foods) instead of internal cues. Responding to external cues versus internal ones could promote poor eating regulation manifested as eating in the absence of hunger and over consuming restricted foods when freely accessible (Birch, Fisher, Krahnstoever, 2003; Joyce & Zimmer-Gembeck, 2009). Poor self-regulation of intake (ignoring their own feelings of hunger and satiation) may mediate weight gain in children (Birch & Fisher, 2000; Birch, Fisher, Krahnstoever, 2003; Joyce & Zimmer-Gembeck, 2009; Anzman & Birch, 2009).

Dietary restriction is not the only aspect of parental dietary control. Besides restricting the intake of certain foods, parents may also monitor what, when, and how much their children eat and may also pressure them to eat what is perceived as healthy food or more food. In their study about the relationships of restrictive feeding practices and girl's eating in the absence of hunger, Birch, Fisher & Krahnstoever, found that mothers with high levels of restriction also reported high levels of monitoring (2003). They also found, that mothers of non-overweight daughters pressured their daughters to eat more than did the mothers of overweight daughters. Faith, Berkowitz, Stalling, Kerns, Storey, & Stunkard found similar results (2004).

In a study conducted by Birch and Fischer, similar results were reported (Birch & Fisher, 2000). Many other studies have documented a negative relationship between pressure to eat and BMI (Robinson, Kiernan, Matheson, & Farish Haydel, 2001; Faith, Berkowitz, Stalling, Kerns, Storey, & Stunkard, 2004; Santos, Kain, Domínguez-Vásquez, Lera, Galván, Corvalán, & Uauy, 2009). Pressure to eat has been also associated with lower consumption of fruit and vegetable and micronutrient intake in non-Hispanic and Hispanic samples (Campbel, Crawford, Ball, 2006; Fisher, Mitchell, Smiciklas-Wright, & Birch, 2002; Wardle, Carnell, & Cooke, 2005; Matheson, Robinson, Mitchell, Smiciklas-Wright, & Birch, 2006).

Studies also suggest that parental restriction and pressure may lead to dietary restraint in children and especially in girls (Carper, Fisher, & Birch, 2000; Francis, Birch, 2005). Using the Child Feeding Questionnaire, Carper, Fisher, & Birch found a relationship between restraint and emotional disinhibition in 4-6 year-old girls (2000). In their study, they found daughter's dietary restraint and disinhibited eating to be related to their perceptions of parental pressure to eat more and dietary disinhibition to be related to dietary parental restriction. Using a different instrument to longitudinally measure child dietary restraint, Francis and Birch found maternal dietary restriction as a form of pressure for daughters to lose weight to be related to dietary restraint in 5 through 12 year-old girls (Francis, Birch, 2005). Edmunds and Hill found highly restrained children to report significantly greater parental control of their eating (Edmunds, Hill, 1999).

The body of research on the above associations is limited for people of Hispanic origin. The majority of studies that have found a positive relationship between BMI and child feeding

practices have mostly sampled white, middle class, well-educated mothers and their daughters (Birch & Fisher, 2000; Francis, Hofer, Birch, 2001; Johannsen, Johannsen, & Specker, 2006; Campbel, Crawford, Ball, 2006; Blissett, Meyer, & Haycraft, 2006; Robinson, Kiernan, Matheson, & Farish Haydel, 2001; Birch, Fisher, Krahnstoever, 2003; Joyce & Zimmer-Gembeck, 2009; Anzman & Birch, 2009; Faith, Berkowitz, Stalling, Kerns, Storey, & Stunkard, 2004; Fisher, Mitchell, Smiciklas-Wright, & Birch, 2002; Johnson, & Birch, 1994; Sherry, McDivitt, Birch, Cook, Sanders, Prish, Francis, & Scanlon, 2004; Spruijt-Metz, Li, Birch, Fisher, & Goran, 2002). Some studies carried out in other ethnic groups have found differing results (Campbel, Crawford, Ball, 2006; Robinson, Kiernan, Matheson, & Farish Haydel, 2001; Santos, Kain, Domínguez-Vásquez, Lera, Galván, Corvalán, & Uauy, 2009; Spruijt-Metz, Li, Birch, Fisher, & Goran, 2002; , Faith, Kerns, 2005) which may indicate that more studies in other ethnic and socioeconomic groups are needed to test the relationships between child feeding practices and weight status.

Because the term "Hispanic" spans a heterogeneous group of peoples with separate cultural heritages, and culture itself affects eating habits and attitudes about food and feeding, it made sense to narrow down the research population to a specific group defined by common origin and cultural background. I chose Mexicans-Americans for practical purposes since this is the most prevalent population group of Hispanic origin.

Summary

Research has shown that an obesogenic environment acting to promote increased energy intake or decreased energy expenditure is considered fundamental to weight gain. Parents attempt to

control their children's weight by restricting food intake or pressuring children to eat certain foods, in certain amounts, and/or at certain times. This promotes poor eating regulation in children by conditioning them to respond to external cues instead of internal ones, with a resulting tendency to eat in the absence of hunger. Birch and colleagues' research and that of many other authors support this theory but most of the research has been done in middle class Caucasian girls. Considering that Hispanic children disproportionately suffer from obesity and that studies on this topic are limited in this population, more studies addressing the effects of restriction and other maternal feeding practices on child BMI on Hispanics are needed.

Methods and Materials

Design

The study was cross sectional in nature and looked at associations between child BMI (BMI_{ch}, dependent variable) and maternal feeding practices (MFP, independent variable): pressure to eat, dietary restriction, and monitoring of intake. Because of the documented influence of other factors on child BMI (BMI_{ch}) such as maternal BMI (BMI_M) and mother's socioeconomic status (SES) as well as her attitudes towards feeding, including her perceived responsibility for feeding the child, perception and level of concern about the child's weight, these were measured with the intent to include them in the correlation analyses (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). Acculturation level (adherence to culture from country of origin and/or from country of current residence) was also measured with the intent to explore its possible effects on BMI_{ch}. Dietary restraint was measured in older children with the intention to measure its associations with BMI_{ch}. I hypothesized that BMI_{ch} and child's dietary restraint were positively correlated with maternal dietary restriction and monitoring and negatively correlated with maternal pressure to eat.

Subject selection

Sampling

A convenience sample of 35 Mexican women and their youngest biological children living in the Grand Rapids, Michigan area consented to enter the study, with one child/mother pair per family. The inclusion criteria were: first or second-generation Mexican-American women who spoke Spanish or English and had children between 5-15 years of age. Children with any of the following conditions were not included in the study: severe food allergies or chronic medical

problems affecting food intake, and/or vegetarian diets[1] (Di Genova, Guyda, 2007).

Subjects were recruited from local churches and businesses within the Grand Rapids, Michigan area. Recruitment took place in one of three ways: through recruitment flyers (Appendix A) posted with appropriate permissions at the above mentioned places; by word of mouth through church members and/or staff members that served as contact persons; or via direct recruitment with flyers by the principal investigator. After initial contact, each qualifying mother and her youngest qualifying child were requested to attend a data collection session either at the church or by arrangement at her house for consent and collection of data.

Sample size: Statistical considerations

In order to determine an appropriate sample size for the study, it was necessary to determine the number of events required for each variable analyzed in the linear and logistic regression to prevent bias in the regression coefficients. I was planning to enter five independent variables and explore two interaction terms. Research indicates that a minimum of ten events per variable is required to avoid major problems of bias, imprecision, and improper coverage of confidence limits (Peduzzi, Concato, Kemper, Holford & Feinstein, 1996). Thus a minimum of seventy [70] mother-child pairs should have been recruited. To allow for incomplete data collection in 10% of the mother-child pairs, the target minimum sample size was increased to 80 subjects.

For practical reasons, due to poor response after considerable efforts invested in recruiting, graduate committee members and HRRC approved closing the enrollment of participants at 35

1 Vegetarianism is considered an atypical diet. Atypical diets are more likely to cause problems of malnutrition in children, especially when -in the case of strict vegetarianism- foods are not appropriately chosen and/or lack adequate supplementation. This kind of diet may significantly restrict energy intake in children and negatively impact growth, potentially biasing the results of the study.

mother-child pairs. Based on a rough power analysis with a sample of size 35, a maximum of two explanatory variables in the model resulted in limited analysis (Cohen, 1992).

Study procedures

Measurements

Height was measured using a Seca 214 portable stadiometer (Seca, Hanover, MD). Weight was measured using a Tanita BWB-800S Digital Scale (Tanita Corporation of America, Inc., Arlington Heights, IL). Subjects were asked to remove their shoes and any heavy outer clothing for the anthropometric measurements. Both height and weight were measured twice, to the nearest 0.1 cm and 0.1 kg respectively. BMI was calculated for the mothers. BMI *z*-scores and BMI percentiles based on age and sex were calculated for each child using The Children's Hospital of Philadelphia Research Institute's online pediatric z-score calculator (The Children's Hospital of Philadelphia Research Institute) based on the 2000 Centers for Disease Control and Prevention (CDC) growth charts (Kuczmarski, Ogden, & Guo, 2000; Centers for Disease Control and Prevention, 2009; Centers for Disease Control and Prevention).

Mothers' demographic information, level of acculturation and feeding practices were collected through self-administered questionnaires in the language of their choice (Appendix B).

Data collection instruments

Demographic data and socio-economic status

Demographics and SES information were collected through a Demographic Questionnaire (Appendix B), which contained the following information: child's date of birth and gender as well as the subject's and the subject's partner's education (highest grade completed), occupation,

age and age at child's birth. The author developed this questionnaire in English and Spanish using the information necessary to calculate a SES score according to Hollingshead (Gottfried, 1985).

The Hollingshead 2-factor index contains two subscales: occupational and educational. In the occupational scale, professions fall into one of seven [7] ranks according to their score and value. Scores are assigned as follows: 1 to higher executives of large concerns, proprietors and major professionals; 2 to business managers, proprietors of medium-sized businesses and lesser professionals; 3 to administrative personnel, small business owners and minor professionals; 4 to clerical workers, technicians, and owners of title businesses; 5 to skilled manual employees; 6 to machine operators and semiskilled employees; and 7 to unskilled employees. In the educational scale, individuals fall into one of seven ranks according to their years of education. Scores are assigned as follows: a score of 1 is assigned to those with professional degrees; 2 to four-year college graduates with bachelor's degrees; 3 to graduates of one to three year college and business schools; 4 to high school graduates; 5 to subjects with 10-11 years of school (part of high school); 6 to subjects with 7-9 years of school; and 7 to subjects with less than 7 years of school. After assigning each subject an occupational and an educational score, these scores were weighted (occupational score x 7 and educational score x 4). By adding the weighted scores, the SES score is obtained. The SES reflects the five social strata: scores of 11-17 fall into the upper class; 18-31, upper middle class; 32-47 middle class; 48-63, lower middle class; and 64-77, low class. Mothers' demographics were collected to include in the statistical analyses given their documented influence in the likelihood of a child becoming an overweight or obese youth (Classen, & Hokayem, 2005).

Acculturation

Mothers' level of acculturation was measured using Marín and Gamba's Bi-dimensional Acculturation Scale (BAS, Appendix B) developed and validated in a random sample of 254 Hispanics and non-Hispanics in 1996 (Marín & Gamba, 1996). Marín and Gamba designed this scale in both English and Spanish and both versions are available for public use without permission. This tool is short, and it has been used with other behavioral surveys related to healthy eating. It was found to have high internal consistency, with a Cronbach's alpha value of 0.80 (n=31). The BAS consists of 12 items that measure language and media preferences, length of time in the U.S., and ethnic self-identification for each cultural domain (Hispanic and non-Hispanic). For each subject, each item is categorized in a four-point scale ranging from almost never [1] to almost always [4] for items 1 through 6 and 19 through 24; and from very poorly [1] to very well [4] for items 7 through 18. The answers to the 12 items per cultural domain were averaged across items for each respondent. Each respondent was, therefore, assigned 2 scores: one for the Hispanic (HIS) domain, another one for the non-Hispanic domain (non-HIS), with a possible total score range from 1 to 4 for each domain. Both scores were used to define the level of acculturation of the subject by combining them into 4 new subcategories (Table 1): highly adhered to both cultures (High Non-his/ High His); highly adhered to country of residence and low adherence to culture of country of origin (High Non-His/ Low His); low adherence to country of residence and highly adhered to culture of country of origin (Low Non-his/ High His); and low adherence to both (Low Non-his/ Low His). Using the BAS questionnaire, mothers were asked to estimate the frequency they think and speak in either language (English and Spanish). They were then asked to estimate their proficiency in reading, writing, listening, and understanding music in English and Spanish. Finally they were asked to estimate the frequency

with which they use electronic media (television, radio) and listen to music in each language.

Maternal feeding practices

The Child Feeding Questionnaire (CFQ, Appendix B) was used with permission (Appendix A) to measure maternal feeding practices. This questionnaire was developed in English by Birch and colleagues (Birch, Fisher, Grimm-Thomas, Markey, Sawyer, & Johnson, 2001) and has been tested and used by several authors (Johnson, & Birch, 1994; Birch, Fisher, Grimm-Thomas, Markey, Sawyer, & Johnson, 2001; Corsini, Danthiir, Kettler, & Wilson, 2008; Anderson, C. B., Hughes, S. O., Fisher, J.O., & Nicklas, 2005; Faith, Storey, Kral, Pietrobelli, 2008). The CFQ assesses parent attitudes and practices regarding child obesity and child feeding practices. It has been tested in different models providing a good fit for the data with internal consistency scores above 70% as well as limited evidence for validity provided by relationships between CFQ factors and children's weight status. The authors consider it appropriate to use with parents of children between preschool and middle school levels and suggest its applicability in broad racial/cultural settings. The questionnaire contains 31 items on a five point response scale measuring seven parental factors related to child feeding: four subscales that measure specific feeding attitudes (perceived responsibility for feeding, perceived parent weight, perceived child weight, concern about child's weight), and three subscales that measure aspects of parental control over feeding (restriction, pressure to eat, and monitoring of food intake; see Appendix B for the CFQ subscales and corresponding questions). Responses to each of the 31 items were given a score between 1 and 5 and a subscale score for each of the seven subscales was obtained by calculating the mean score for the items loading on that subscale.

Mothers were asked to rate their perceived responsibility for feeding their child through several questions on type of foods, their timing and portion sizes on a 5-point scale ranging from never

[1] to always [5]. Mothers were asked to judge their own weight at four points in their life (childhood, adolescence, 20s and at present) using a 5-point scale ranging from markedly underweight [1] to markedly overweight [5]. They were asked again to rank how they perceive their child's weight during the child's life (toddler, pre-schooler, kindergarten-2nd grade, 3rd – 5th grade, 6th-8th grade and at present) using the same scale. Mothers were asked about their concern for their child's weight with possible responses ranging from unconcerned [1] to very concerned [5]. Restriction and pressure-to-eat domains were measured through several questions on keepin her child from or offering certain foods with possible answers ranging from disagree [1] to agree [5]. Mother's food monitoring behaviors were measured with several questions on the monitoring of sweets, fatty foods and snack foods with possible answers ranging from never [1] to always [5].

Internal consistency coefficient (Cronbach's alpha, Table 2) for the total sample on most domains of the CFQ were above the 0.70 standard and below the 0.90 upper limit recommended for individual assessment (Cronbach, 1951; Mohsen & Reg, 2011; Table 1): perceived responsibility α=0.79 (3 items) and α=0.87 after removing question (Q) 1; perceived parent weight α=0.64 (4 items) and α=0.81 after removing QQ 4 and 7; concern about child's weight α=0.87 (3 items) and α=0.88 after removing Q16; restriction α=0.78 (8 items) and α=0.81 after removing QQ 19,21,and 22; monitoring α=0.87(3 items) and 0.92 after removing Q31. However, the Cronbach's alpha for perceived child weight α=0.33 (6 items) and pressure α=0.64 (4 items) remained below 0.70 despite exploration of removal of each or several of the items. Therefore, perceived child weight and pressure were not included in the statistical analyses.

Maternal perception of overweight

Maternal perception of overweight was additionally measured by using the schematic drawings shown in Figure 1, which has been adapted by the author of this study in both English and Spanish using the drawings of Collins (Collins, 1991; permission to use not needed). This is a pictorial instrument depicting fourteen (seven male and seven female) child figures that illustrate body weight ranging from very thin to obese. Each set of figures is sequentially numbered from very thin [1] to very overweight [7], but numbers were hidden from the subjects. The mothers were asked to indicate which of the figures first represented the figure of an overweight child.

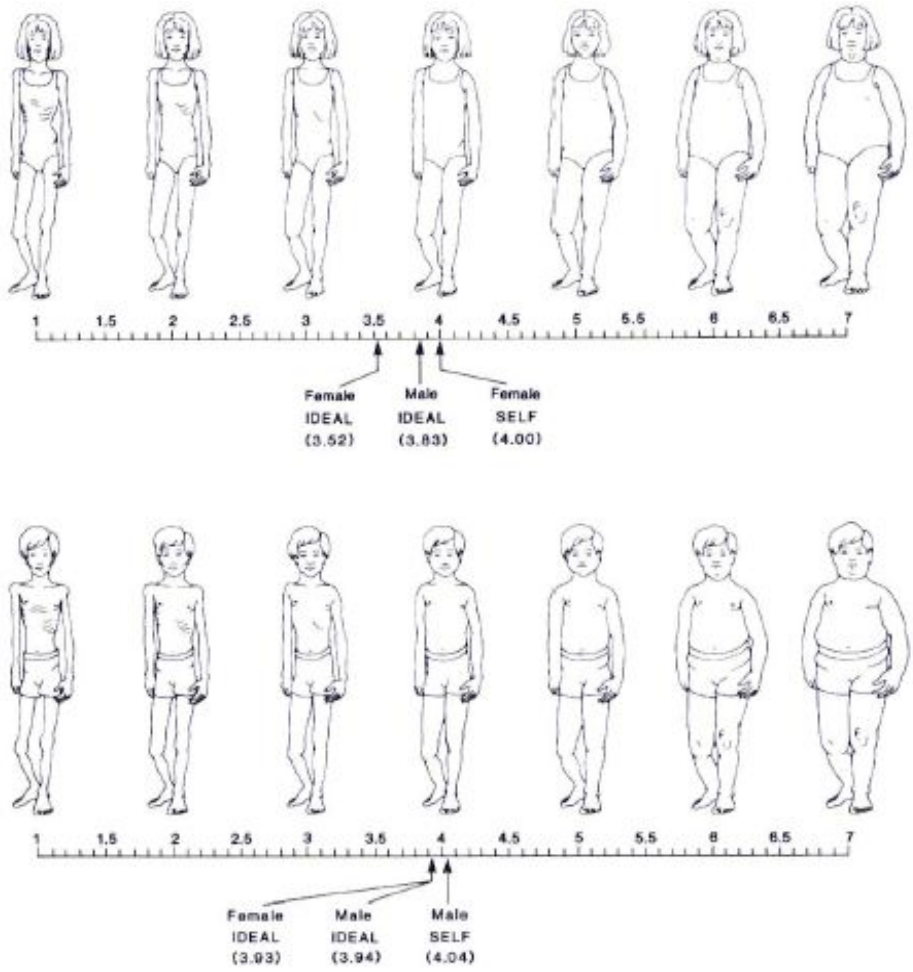

Figure 1. Schematic drawings of child figures depicting weight.

Children's information: Eating behavior

A revised version of Stunkard and Messik's 51-item Three Factor Eating Questionnaire (TFEQ) -the Three Factor Eating Questionnaire Revised 21-item version (TFEQ-R21)- (used with permission, Appendix A) was administered to children 11 years or older in order to measure restraint. This questionnaire was developed using a sample of obese individuals (Karlsson, Persson, Sjöström, & Sullivan, 2000; Stunkard, & Messik, 1985). A shorter 18-item version was developed and tested in the general population, which was later refined by the addition of three questions to the emotional eating domain (de Lauzon-Guillain, Romon, Deschamps, Lafay, Borys, Karlsson, … &Ville, 2004; Bushmakin, Gerber, Leidy, Sexton, Lowe, & Karlsson, 2009). It has been used in the study of eating behavior and has shown to be related to energy, macronutrient and sweet and fattening food intake in the general population.

The TFEQ-R21 measures three aspects or constructs of eating behavior: restrained eating, uncontrolled eating, and emotional eating. It consists of 21 items on a four-point response scale: [1] definitely false to [4] definitely true. The cognitive restraint scale is composed of 6 items 2, 11, 12, 15, 16, and 18 (see Appendix B for the TEFQ-R21 subscales and corresponding items). The uncontrolled eating scale is composed of 8 items; the emotional eating scale of 3 items. Responses to each of the 21 items were to be given a score between 1 and 4 and item scores summated into scale scores for cognitive restraint, uncontrolled eating, and emotional eating. The raw scale scores are to be transformed into a 0-100 scale: [(raw score - lowest possible raw score)/possible raw score range] X 100; and the "half-scale" method is used to compensate for missing data on some items with higher scores in the respective scales indicating greater

cognitive restraint, uncontrolled or emotional eating. In the absence of a significant sample of children over the age of 11 (n=8), data obtained with the TFEQ-R21 was not used in the statistical analysis.

Statistical analysis

Data processing

Data was entered and cleaned using the Epi Info statistical software for Epidemiology developed by the Centers for Disease Control and Prevention (CDC).

Data analysis

Data was analyzed using IBM's Statistical Package for the Social Sciences (SPSS) software. Descriptive statistics were calculated for mother's age and age at child's birth, mother's socioeconomic status, mother's acculturation level, mother's perception of weight, mother's BMI, child BMI z- score (BMI_{ch}-z), and MFP. To evaluate the difference in proportion in categorical variables, Fisher's Exact Test was used instead of Chi-square tests because conditions test were not met. Cronbach's alpha coefficient was used to estimate the reliability of the CFQ for the sample. Pearson product-moment correlation tests were performed to explore strength of associations between child's BMI_{ch}-z and mother's age at child's birth, mother's perception of overweight, mother's BMI, mother's scores on child-feeding questionnaire (restriction and monitoring children's food intake). No correlation analyses were done with BMI_{ch}-z and acculturation level because of the cultural homogeneity of the sample: 82.86% of mothers fell within the Low Non-His/ High His category. Multiple linear regression analyses were used to test associations between MFP, and BMI_{ch}-z, adjusting for BMI_M. P-values < 0.05 were considered statistically significant.

Ethical considerations

Institutional review and approval

To ensure that the basic rights and welfare of the research participants were protected, the protocol for this study was submitted to and approved by Grand Valley State University's Human Research Review Committee (HRRC, Appendix A). Research activities did not begin until final written approval of the thesis research proposal was received.

Translation services

In order to accommodate the needs of the participants by offering written material in the language of their preference, consent forms and data collection instruments originally designed in English were translated into Spanish.

Data collection instruments CFQ and TFEQ-21, were translated into Spanish as well as certified for accuracy and cultural relevance by Voices for Health Inc. (VFH) (Appendix A for certification & Appendix B for Spanish versions) located at 2851 Michigan St. NE, Suite 104, Grand Rapids, MI 49506 tel. no. (616) 233-6505. Considering that having the Consent/Assent forms translated by this service would have exceeded the available budget, these were translated by the author into Spanish (author's mother tongue) and proofread and certified for accuracy by the Department of Modern Languages and Literatures at Grand Valley State University.

Informed consent

Written informed consent was obtained from each mother and each child 7 through 15 years of age in the language of their choice; additional written permission was obtained from the mothers for the children to participate. (Appendix A). Assent for children aged 5 and 6 years was waived based on age.

Summary

This was a cross sectional, correlational study in a convenience sample of 35 Mexican child-mother pairs that looked at associations between child BMI (BMI_{ch}) and children's dietary restraint (dependent variables) with MFP (independent variables): pressure to eat, dietary restriction, and monitoring of intake. Other independent variables measured were SES, maternal BMI (BMI_M\), maternal attitudes (perceived responsibility to feed; perception of and concern for weight), and acculturation level. Data was collected via self-administered questionnaires and schematic drawings as well as measurements of height and weight of mothers and children. BMI (kg/m^2) were calculated for all subjects; z-scores were calculated for BMI_{ch}. Fisher's exact test was used to explore difference in proportions in categorical variables. Cronbach's alpha coefficient was used to estimate instrument reliability. Pearson correlation analyses were used to explore dependent-independent variables associations. Multiple variable regression was used to determine strength of associations when adjusting for BMI_M. *P*-values < 0.05 were considered statistically significant.

Results

The sample of mothers (Table 3) in this study was homogeneous. Mothers were 37(±6.1) years old on average with an average age at child's birth of 27(±6.2) years. Most of the mothers had similar categories for social class, acculturation level, weight status and perception of overweight. About 77% were low social class, 83% highly adhered to Mexican culture/lowly adhered to American culture while the opposite (high adherence to American culture/low adherence to Mexican culture) was true for none of the mothers. Most mothers (80%) were overweight with a mean BMI of 29.91(5.6). When looking at the schematic drawings of boys and girls, mothers tended to rate overweight children as overweight; the average score for schematic drawings was 5.64 (0.84), with 5.5 (0.9) for boys and 5.7 (0.77) for girls, showing mothers accurately perceived an overweight child as overweight regardless of gender.

The children (Table 4) in this study were similar in age, social class, maternal acculturation level, and weight status distribution. Average age was 9.5 ± 2.79 years (8.96 ± 2.79 for boys & 10.03 ± 2.80 for girls. Seventy-seven percent of children were low social class (boys=72%, girls=82%); and 86.86% of mothers were lowly acculturated to American culture but highly adherent to their Mexican culture and this did not differ by child's gender (boys=89%, girls=76%, p=0.5). The average BMI percentile was 74.31 ± 27.49 (boys=77.56 ± 23.91, girls=70.06 ± 29.84) and 57% of children were overweight (boys=61%, girls=53%). Fisher's Exact Test of independence showed no statistically significant gender differences in children regarding their social class (p=0.5), maternal acculturation level (p=0.5) or BMI_{ch} percentiles (p=0.9) (Table 4). There was also no statistically significant difference in social (p=0.8), cultural (p=0.8) or BMI_M (p=0.8)

differences between overweight and non-overweight children (Table 5). This table also shows non-overweight and overweight mothers had similar likelihood of having overweight children. Additionally, as shown in Table 5, mothers who had a lower SES and identified themselves as highly adherent to Mexican culture were more likely to be overweight; but the increase in likelihood was not statistically significant (p=0.5 and p=0.6) according to Fisher's test.

Table 6 shows CFQ average scores for perceived responsibility, 4.09 (boys=3.98, girls=4.20); perceived parent weight 3.11 (boys=2.97, girls=3.25); concern 2.90 (boys=3.22, girls=2.56); restriction 3.30 (boys=3.55, girls=3.03); and monitoring 3.71 (boys=3.78, girls=3.63).

When looking at Pearson correlation coefficients (Table 7), data shows no associations of child BMI z-scores (BMI_{ch}-z) with mother's age at birth (r(35)=0.03) or social class (r(35)=0.06). The BMI_{ch}-z was not associated with mother's concern for child's weight (r(35)= -0.03). There was a small but insignificant positive association between BMI_{ch}-z and BMI_M (r(35)=0.27, p=0.11) and mother's own perception of weight (r(35)= -0.12, p=0.48); also between BMI_{ch}-z and restriction of foods (r(35)=0.14, p=0.40). The BMI_{ch}-z was slightly negatively correlated with mother's perceived responsibility for feeding (r(35)=-0.13 p=0.46) and monitoring of intake (r(35)= -0.12, p=0.48). These associations were not statistically significant (see p above).

The results of multiple regression analysis are presented in Table 8. According to unstandardized coefficients (estimates, see table), none of the maternal feeding practices were statistically significant in predicting BMI_{ch}. F-ratio values show maternal feeding practices do not predict BMI_{ch} when adjusting for BMI_M.

Summary

Mothers were 37(6.1) years old, 77% fell into a low social class, 83% were highly adhered to Mexican culture/lowly adhered to American culture, and 80% were overweight. They had a relatively accurate perception of child overweight with schematic drawing scores averaging 5.64. Average child age was 9.5 ± 2.79 years with no significant child gender differences for variables tested. Fifty-seven percent of children were overweight. Pearson correlation coefficients show no significant associations of child BMI z-scores with social class or concern for weight; a small non-significant positive association with BMI_M and restriction; and a non-significant negative correlation with perceived responsibility and monitoring. Associations of BMI_{ch}–z with acculturation, perceived child weight, and pressure to eat were not tested. Maternal feeding practices and maternal BMI failed to significantly predict BMI_{ch}–z Also, maternal child feeding practices were not associated with BMI_{ch}-z when adjusting for maternal BMI.

Discussion

This study was one of few to investigate the relationship between MFP and BMI_{ch} in a Hispanic population. Unlike studies conducted in mainly Caucasian middle class samples, I found no significant associations between these variables. Although not statistically significant, results show a small positive association between BMI_{ch} and restriction of food, as well as a small negative association with mother's perceived responsibility for feeding and monitoring.

Other studies have found gender differences in maternal feeding practices, specifically higher monitoring in boys and greater concern in girls (Johnson, & Birch, 1994; Spruijt-Metz, Li, Birch, Fisher, & Goran, 2002; Spruijt-Metz, Li, Birch, Fisher, & Goran, 2006), which I did not find in my Mexican mother-child pairs. Mexican mothers seem to have similar perceptions, attitudes, concerns and practices for both boys and girls.

Caucasian and African American mothers have been found to show higher pressure to eat with children who have a lower BMI (Spruijt-Metz, Li, Birch, Fisher, & Goran, 2002; Faith, Kerns, 2005). I was not able to explore this association, as the CFQ did not appear to accurately measure this subscale in Mexican mothers (Cronbach, 1951; Mohsen & Reg, 2011**;** Table 2). In the future, other measurements or questions may need to be validated in order to measure this MFP in Hispanic mother-child pairs.

Cultural influences in non-white mothers have been thought to result in more tolerance and even the inability to recognize obesity in children (Hackie & Bowles, 2007). In this sample where

50% of the children were overweight, the mothers selected the correct schematic drawing indicating their child was overweight. Yet these mothers had lower concern scores in regards to their child's weight as compared to African American mothers (Spruijt-Metz, Li, Birch, Fisher, & Goran, 2006). Since the hypothesized mechanism is that maternal concern for a child's weight increases maternal restriction of food (Francis, Hofer, Birch, 2001; Webber, Hill, Cooke, Carnell, & Wardle, 2010; May, Donohue, Scanlon, Sherry, Dalenius, Faulkner, & Birch, 2007), which in turn prevents children from regulating their food intake resulting in obesity (Joyce & Zimmer-Gembeck, 2009), it is possible that there truly is no association in MFP and child's obesity in Mexican families.

The finding of a non-significant positive association between BMI_{ch} and BMI_M by Pearson's was surprising, as previous studies have indicated positive associations between child BMI and maternal BMI both through environment and genetics (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997; Lawlor, Smith, O'Callaghan, Alati, Mamun, Williams, & Najman, 2007) and intrauterine exposure (Laitinen, Jääskeläinen, Hartikainen, Sovio, Vääräsmäki, Pouta, Kaakinen, & Järvelin, 2012). It is also possible the lack of significant association in this sample might result from a decrease in power due to sample size (N). According to Cohen (1992, table 9), an N of 85 is needed to detect a medium difference when testing for significance of a product-moment correlation coefficient r (with a power of 0.80 at α=0.05); a sample size of 64 is needed when carrying out a multiple linear regression for two groups. The small size of the sample (n=35) is likely to have decreased the chance of detecting significant differences in the population. Thus, caution must be exercised when interpreting the results. Further studies need to be performed in larger scale for increased power.

Another issue with my sample was the homogeneity of the variables of interest. First, socioeconomic status (SES) was measured in order to account for its potential cofounding effect on existing relationships between MFP and BMI_{ch} (Rosenkranz, Dzewaltwoski, 2008). The fact that the sample was socioeconomically homogeneous, with most families falling into the same social class, made it unnecessary to control for socioeconomic status. Second, as indicated above, culture may impact tolerance towards recognition of obesity in children. I was unable to explore the relationship between culture and MFP as my sample of mothers was highly adhered to Mexican culture and had low adherence to the American culture. This is still an aspect that needs to be explored. In addition, I hypothesized that women with predominantly American attitudes would be more restrictive and perceive their child more overweight as it is the case with Caucasian mothers (Spruijt-Metz, Li, Birch, Fisher, & Goran, 2006). I was unable to explore this relationship because most mothers were highly adhered to Mexican culture and less adhered to American culture. This is still an aspect that needs to be explored.

Finally, previous studies have indicated that maternal feeding practices may impact dietary restraint in older children. I was not able to explore this hypothesis with my design because I indicated that mother child-pairs would use the youngest child. This resulted in a sample of very young children with only eight children over the age of 11 (n=8). Since this has been found to be significant in other populations it needs to be explored further.

Conclusion

Summary of the study

Both adult and childhood obesity have become a serious problem in the United States with prevalence increasing rapidly in the general population as well as in minorities. Research supports the theory of environmental factors (e.g. an obesogenic environment inclusive of certain maternal feeding practices and attitudes), playing a role in weight gain. Most research has been done in middle class Caucasian girls but research in Hispanic groups is scant.

The purpose of this cross-sectional, correlational study was to determine the relationship between maternal feeding practices (MFP) and child BMI (BMI_{ch}) while examining the modifying effects of maternal BMI (BMI_M) on this relationship and exploring the effects of demographics and culture on BMI_{ch} in Mexican-American mothers and their children. I hypothesized that BMI_{ch} would be positively correlated with maternal perceived responsibility, perceived child's weight, concern, restriction, and monitoring; and negatively correlated with pressure to eat. To test this hypothesis, height and weight were measured for 35 Mexican child-mother pairs and maternal demographic, cultural, and child feeding information was gathered using self-administered questionnaires and schematic drawings. BMI was calculated for all subjects as well as BMI z-scores (BMI_{ch}-z) for children. Differences in proportions of discrete variables were tested using *Fisher's exact test. Cronbach's alpha coefficient* was used to estimate reliability of the child feeding questionnaire domains. Associations between continuous variables were analyzed using *Pearson correlation.* Multiple regression analyses tested the strength of associations between maternal child feeding practices and BMI_{ch}-z, adjusting for BMI_M. *P*-values < 0.05 were considered statistically significant.

Mothers were 37(6.1) years old, and most fell within a low social class and were highly adherent to their culture of origin; 80% were overweight and had a relatively accurate perception of child overweight. Average child age was 9.5 ± 2.79 years with no significant socioeconomic, cultural and anthropometric differences per gender. 57% of children were overweight. Associations of BMI_{ch} with acculturation and pressure were not tested. No significant associations of MFP and BMI_{ch}-z were found and maternal feeding practices and maternal BMI failed to significantly predict BMI_{ch}-z. Also maternal child feeding practices were not associated with BMI_{ch}-z when adjusting for BMI_M.

Conclusion

This study found no significant associations between MFP and BMI_{ch} in a socioeconomically and culturally homogeneous small sample of Mexican-American mothers and their children. BMI_M and MFP also failed to predict BMI_{ch}. The lack of significant association of BMI_{ch} with maternal BMI differs from the literature, which might be explained by the small size of the sample. Mexican mothers in this study differ from mothers of other cultural backgrounds in that they tend to accurately perceive overweight in their children, they have little concern for their children's weight and show no difference in their feeding attitudes and practices over child weight across genders. These findings indicate interventions in MFP might not significantly impact childhood obesity in Hispanic groups; however, the small sample in this study and consequent decrease in power should be considered when interpreting these results.

Recommendations

Because I was not able to explore the association of BMI_{ch} with perceived child weight and pressure, as the CFQ did not accurately measure this subscale in the study sample, these domains in the CFQ should be revised and validated in Mexican-American mother-child pairs for future studies.

The contrasting results of a lack of a significant BMI_{ch} -MFP association in this sample might have resulted from a decrease in power due to sample size. Thus, further studies on BMI_{ch} and MFP need to be performed in a larger sample.

Cultural homogeneity of the sample was another issue of this study since most mothers were highly adhered to their culture of origin and not to their host (American) culture. This prevented the exploration of the relationship between culture and MFP. Future studies should consider a design in which there is a range of adherence to culture of origin.

Finally, the hypothesis correlating child dietary restraint with BMI_{ch}, which has been found to be significant in other populations, was not tested because of my sample consisting of younger children. For this reason I suggest this be explored further either in a larger sample of older children or in a similar sample with an adapted version of the TFEQ for this age group.

With the high rate of obesity in Hispanic children a future study in a larger, diverse sample is warranted.

Tables

Table 1. Acculturation Level Subcategories

Adherence to American Culture	Adherence to Mexican Culture	
	High	Low
High	High Non-his/ High His	High Non-his/ Low His
Low	Low Non-his/ Low His	Low Non-his/ High His

Table 2. Reliability of CFQ & Schematic drawings

Subscale	**Cronbach's alpha**		
	With all items	With item(s) removed	Item(s) removed
Perceived responsibility	0.79 (n=3)	0.87 (n=2)	Q1
Perceived parent weight	0.64 (n=4)	0.81(n=2)	Q4, Q7
Perceived child weight	0.33 (n=6)	0.16 (n=1)	Q3
Concern	0.87 (n=3)	0.88 (n=2)	Q16
Restriction	0.78 (n=8)	0.81 (n=4)	Q19, Q21, Q22
Pressure	0.52 (n=3)	-	-
Monitoring	0.87(n=3)	0.92(n=2)	Q31
Schematic drawings	0.98 (n=2)	-	-

Table 3. Characteristics of Mothers

Variable	Values
Mean age [years] (SD)	36.7(6.1)
Mean age at birth [years] (SD)	27.4(6.2)
SES[1][n]	
Mean score (SD)	65.9(7.9)
Class [n]	
Middle[1]	3.0%
Lower middle[7]	20.0%
Low[27]	77.0%
BAS[2][n]	
Low Non-His/ Low His [1]	2.8%
Low Non-His/ High His [29]	82.8%
High Non-His/ High His [5]	14.3%
High Non-His/ Low His [0]	0.00%
BMI[3] {kg/m^2}	
Mean(SD)	29.91(5.6)
BMI 18.5-24.99 [n=7]	20.0%
BMI≥25 [n=28]	80.0%

[1]Socioeconomic Status (Hollingshead 2-factor index)
[2]Bi-dimensional Acculturation Scale: HIS=Adherence to Hispanic culture, Non-His= Adherence to Non-Hispanic culture.
[3]BMI=body mass index

Table 4. Characteristics of Children by Gender

Variable [n]	Total [35]	Male [18]	Female [17]	p^4
Gender %	100	51.40	48.60	
Mean age (years) (SD)	9.5(2.8)	8.9(2.8)	10.0(2.8)	
SES[1][n]				0.5
Middle	[8] 23.0%	[5] 28.0%	[3] 18.0%	
Low	[27] 77.0%	[13] 72.0%	[14] 82.0%	
BAS[2][n]				0.5
Low Non-His/Low His [1]	[1] 2.8%	[0] 0.0%	[1] 5.9%	
Low Non-His/High His [29]	[29] 82.8%	[16] 89.0%	[13] 76.5%	
High Non-His/High His [5]	[5] 14.3%	[2] 11.0%	[3] 17.6%	
BMI_{ch} [3] {kg/m^2}				-
Mean(SD)	19.83(4.2)	17.33	19.93	
		(7.1)	(4.9)	
BMI_{ch} Percentile[3] (SD)	74.3(27.5)	77.6	70.1	0.9
$<85^{th}$ [n]	[15] 42.8%	(23.9)	(29.8)	
85^{th} to $<95^{th}$ [n]	[14] 40.0%	[7] 38.9%	[8] 47.0%	
$>95^{th}$ percentile [n]	[6] 17.0%	[7] 38.9%	[7] 41.0%	
		[4] 22.2%	[2] 12.0%	
Mean BMI_{ch} z-score (SD)	0.84(1.0)	0.99(0.9)	0.69(1.0)	-

[1]Socioeconomic Status (Hollingshead 2-factor index)
[2]Bi-dimensional Acculturation Scale: HIS=Adherence to Hispanic culture, Non-His= Adherence to Non-Hispanic culture.
[3]BMI=body mass index, from age and gender-specific cut off points from CDC growth charts
[4] Fisher's exact test

Table 5. Social class, acculturation by maternal and child BMI

Variable	BMI_M [3] {kg/m^2}			BMI_{ch} [4] {kg/m^2} percentiles		
	18.5-24.9 [7]	**≥25 [28]**	***p***	**<85th [15]**	**≥85th [20]**	***p*** [5]
SES_{New} [1][n]			0.5			0.8
Middle [8]	(2)25.0%	(6)75.0%		(4)50.0%	(4)50.0%	
Low [27]	(5)19.0%	(22)81.0%		(12)44.0%	(15)56.0%	
BAS [2][n]			0.6			0.8
LowNon-His/LowHis [1]	(0)0.0%	(1)100.0%		(0)0.0%	(1)100.0%	
LowNon-His/HighHis [29]	(5)17.0%	(24)83.0%		(13)45.0%	(16)55.0%	
HighNon-His/HighHis [5]	(2)40.0%	(3)60.0%		(2)40.0%	(3)60.0%	
BMI_M {kg/m^2} 18.5-24.99 [7]	n/a	n/a	n/a	(4) 11.00%	(3) 9.00%	0.8
≥25 [28]				(12) 34.00%	(16) 46.00%	

[1]Socioeconomic Status (Hollingshead 2-factor index)
[2]Bi-dimensional Acculturation Scale: HIS=Adherence to Hispanic culture, Non-His= Adherence to Non-Hispanic culture.
[3] BMI_M = maternal body mass index
[4] BMI_{ch} = child body mass index, from age and gender-specific cut off points from CDC growth charts
[5] Fisher's exact test

Table 6. Child Feeding Questionnaire: Mean scores by gender

Subscale	Mean (SD)	Male	Female
Perceived responsibility	4.08(0.94)	3.98(1.16)	4.20(0.67)
Perceived parent weight	3.11(0.46)	2.97(0.44)	3.25(0.35)
Concern with child's weight	2.90(1.46)	3.22(1.34)	2.56(1.61)
Restriction of foods	3.30(1.10)	3.55(0.97)	3.03(1.11)
Monitoring intake	3.71(0.99)	3.78(0.69)	3.63(0.86)

Table 7. Pearson Correlation Coefficients between child's BMI z-scores and mother's BMI, social class, and maternal feeding practices

Variable	Child's BMI z-Score	*p*
Mother's age at birth	0.04	0.84
Social class scores	0.06	0.73
Mother's perception of overweight	-0.22	0.29
Mother's BMI	0.27	0.11
Perceived responsibility	-0.13	0.46
Perceived parent weight	0.12	0.48
Concern for child's weight	-0.03	0.87
Restriction	0.14	0.40
Monitoring	-0.12	0.48

Table 8. Associations of child's BMI z-scores with maternal attitudes and feeding practices adjusting for Maternal BMI

Variable	Estimates (Standard Error) [1]	Overall *F* statistic & *p*
Perceived responsibility, BMI_M	-0.16(0.18), 0.045(.03)	F(2,32)=1.67, *p*=0.20
Perceived parent weight, BMI_M	-0.28(0.44), 0.06(0.04)	F(2,32)=1.49, *p*=0.24
Concern child's weight, BMI_M	-0.02(0.12), 0.05(0.03)	F(2,32)=1.29, *p*=0.29
Restriction, BMI_M	-0.02(0.16), 0.05(0.03)	F(2,32)=1.28, *p*=0.29
Monitoring, BMI_M	-0.12(0.17), 0.05(0.03)	F(2,32)=1.53, *p*=0.23

[1] Multiple variable regression
[2] BMI_M = maternal body mass index

Table 9. Sample size (*N*) determination: rough power analysis.

N for Small, Medium, and Large ES at Power = .80 for α = .01, .05, and .10[1]

	α								
	.01			.05			.10		
Test	Sm	Med	Lg	Sm	Med	Lg	Sm	Med	Lg
1. Mean dif	586	95	38	393	64	26	310	50	20
2. Sig *r*	1,163	125	41	783	85	28	617	68	22
3. *r* dif	2,339	263	96	1,573	177	66	1,240	140	52
4. *P* = .5	1,165	127	44	783	85	30	616	67	23
5. *P* dif	584	93	36	392	63	25	309	49	19
6. χ^2									
1*df*	1,168	130	38	785	87	26	618	69	25
2*df*	1,388	154	56	964	107	39	771	86	31
3*df*	1,546	172	62	1,090	121	44	880	98	35
4*df*	1,675	186	67	1,194	133	48	968	108	39
5*df*	1,787	199	71	1,293	143	51	1,045	116	42
6*df*	1,887	210	75	1,362	151	54	1,113	124	45
7. ANOVA									
2*g*[a]	586	95	38	393	64	26	310	50	20
3*g*[a]	464	76	30	322	52	21	258	41	17
4*g*[a]	388	63	25	274	45	18	221	36	15
5*g*[a]	336	55	22	240	39	16	193	32	13
6*g*[a]	299	49	20	215	35	14	174	28	12
7*g*[a]	271	44	18	195	32	13	159	26	11
8. Mult *R*									
2*k*[b]	698	97	45	481	67	30			
3*k*[b]	780	108	50	547	76	34			
4*k*[b]	841	118	55	599	84	38			
5*k*[b]	901	126	59	645	91	42			
6*k*[b]	953	134	63	686	97	45			
7*k*[b]	998	141	66	726	102	48			
8*k*[b]	1,039	147	69	757	107	50			

Note. ES = population effect size, Sm = small, Med = medium, Lg = large, diff = difference, ANOVA = analysis of variance. Tests numbered as in Table 1.
[a] Number of groups. [b] Number of independent variables.

[1] From Cohen, J. (1992). **A power primer.** *Psychological Bulletin*, *112*(1), 155-159.

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Appendices

Appendix A. HRRC Materials

HRRC Approval letter

GRAND VALLEY STATE UNIVERSITY
www.gvsu.edu

DATE:	October 26, 2010
TO:	Larissa Fluegel
FROM:	Grand Valley State University Human Research Review Committee
STUDY TITLE:	[186773-2] The Relationship between Maternal Feeding Practices and Child's BMI and Child's Dietary Restraint in Mexican-American Families of Grand Rapids.
REFERENCE #:	11-22-H
SUBMISSION TYPE:	Revision
ACTION:	APPROVED
APPROVAL DATE:	October 26, 2010
EXPIRATION DATE:	October 26, 2011
REVIEW TYPE:	Expedited Review

Thank you for your submission of materials for this research study. The Human Research Review Committee has approved your research plan application as compliant with all applicable sections of the federal regulations, Michigan law, GVSU policies and HRRC procedures. All research must be conducted in accordance with this approved submission.

This approval is based on no greater than minimal risk to research participants. This study has received expedited review, category 2-2 and 2-4 based on the Office of Human Research Protections 1998 Guidance on Expedited Review Categories. Please note the following four points are made as advisory only; they do not affect the approvability of the study.

1. **The SES scale appears appropriate only for working individuals, i.e. homemaker or mother is not an occupation option, which immediately puts them into the lower bracket. This may be insulting to the participant and you may wish to consider adding this option.**
2. **The scales measuring feeding practices and eating were translated into Spanish but not been tested for cultural validity yet are likely to be highly influenced by culture. You may wish to consider exploring ways to validate these tools, to add merit to the study and make a contribution to the relevant literature. Lacking cultural validity may be consider a serious design flaw by manuscript reviewers.**
3. **FYI, there are faculty in Psychology who may be able to assist you in the statistical evaluation of the comparability of scales. Dr. Hendersen the Chair could refer you.**
4. **The use of scales (e.g., Stunkard three factor questionnaire) published in copyrighted publications normally require the publisher's permission and there is no indication this has been done. In addition to copyright law compliance, some journals require evidence that scales were legally used before they will publish research based on those scales.**

Please insert the following sentence into your information/consent documents as appropriate. All project materials produced for participants or the public must contain this information.

This research protocol has been approved by the Human Research Review Committee at Grand Valley State University. File No. 11-22-H Expiration: October 26, 2011.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note the following in order to comply with federal regulations and HRRC policy:

1. Any revision to previously approved materials must be approved by this office prior to initiation. Please use the *Change in Protocol* forms for this procedure. This includes, but is not limited to, changes in key personnel, study location, participant selection process, etc.
2. All UNEXPECTED PROBLEMS and SERIOUS ADVERSE EVENTS to participants or other parties affected by the research must be reported to this office within two days of the event occurrence. Please use the UP/SAE Report form.
   All instances of non-compliance or complaints regarding this study must be reported to this office in a timely manner. There are no specific forms for this report type.
3. All required research records must be securely retained in either paper or electronic format for a minimum of three years following the closure of the approved study. This includes signed consent documents from all participants.
4. This project requires continuing review by our office on an annual basis. Please use the appropriate *Continuing Review* forms when applying for approval extension.
   - Protocols that are active and open for enrollment require both the Primary Investigator and Authorizing Official to electronically sign the Continuing Review submission in IRBNet.
   - Protocols that are open for data analysis ONLY, require the Primary Investigator's signature.

If you have any questions, please contact the HRRC Office, Monday through Thursday, at (616) 331-3197 or hrrc@gvsu.edu. The office observes all university holidays, and does not process applications during exam week or between academic terms. Please include your study title and reference number in all correspondence with this office.

cc:

Consent for participation –mother, English

Consent for Participation in Research

THE RELATIONSHIP BETWEEN MATERNAL CHILD FEEDING PRACTICES AND CHILD'S BMI AND DIETARY RESTRAINT IN MEXICAN-AMERICAN FAMILIES OF GRAND RAPIDS

1. Introduction. You are being asked to participate in a research study that is looking at how mothers feed their children and children's weight. The researchers are Larissa Fluegel and Debbie Lown, Ph. D. in the Department of Biomedical Sciences at Grand Valley State University.

In order to decide whether or not you should agree to be part of this research study, you should receive enough information about its risks and benefits. This consent form gives detailed information about the research study, which will be discussed with you. If you wish to participate in this study you will be asked to sign this form.

Your child has also been asked to join this research project. You will be asked for permission for your child to participate in a separate form.

2. Purpose of This Research Study. The purpose of this research project is to see if the way a mother feeds her child is related to the child's weight and the way he/she feeds him/herself.

- To be included in this study a person must be: first or second-generation Mexican-American, a woman who speaks Spanish or English and has a child between 5-15 years of age. Children between 5-15 years of age will be included in the study with their mothers. Children with severe food allergies, chronic medical problems affecting food intake, vegetarian diets will not be included in the study.
- You are being asked to participate in this study because you meet all these criteria.

3. Length of Your Participation. Once all measurements and data are collected from you and your child your participation in this study will end.

4. Study Procedures. Should you consent to participate in this research project height and weight will be measured for you and your child. You and your child will also be asked to fill out questionnaires asking you about ways you feed your children and eating practices of your child. The whole process should take about 30 minutes. We will be asking you about your demographic information, questions about your cultural identity and questions about how you feed your child; we will also ask you to look at drawings of children for you to choose the one that looks overweight to you.

5. What Will Happen When You Complete the Study? When your participation in the study ends, your will be done providing us information related to the study.

6. Possible Risks of Taking Part in this Study. Regarding risks and discomforts of this study: there exists a slight chance that confidentiality and privacy may be violated. Attempts will be made to measure height and weight in a separate room, however results may be over heard and seen by others. There is also a chance that your might feel uncomfortable when

completing the questionnaires. In order to make this less uncomfortable, you will have time alone to complete the questionnaires. In order to minimize this risk, the information from each individual will be kept in manila folders for only the research person and the participant and parent/legal guardian to have access.

7. Costs for Taking Part in this Study. Your involvement in this study will not result in any additional costs to you.

8. Payment for Taking Part in this Study. You or your child will not be paid for this research study.

9. Possible Benefits to You for Taking Part in the Study. There is no benefit from participating in this study.

10. About Participating in this Study. Your participation in this research project is VOLUNTARY. If you decide to participate, you are free to drop out of the study at any time without penalty. If you decide to stop taking part of this study, you should tell the investigator.

Another option you have is not to take part in this research project.

11. Confidentiality of Study Records. Data for this project is being collected anonymously. Neither researchers nor anyone else will be able to link the data to you.

- The information collected in this research study is confidential. However, the investigator, the advisor, the thesis research committee, Grand Valley State University's Human Research Review Committee (a safety board for people who volunteer for research) may look at your record when necessary. No information about you, during the research project, will be told to others without your written approval, except:
  - if necessary to protect you rights or welfare; or
  - if required by law.

- When the results of the research project are published or discussed in conferences, NO information that would identify you will be included. All computer files and written information will be stored for at least seven (7) years after the completion of this study in a locked office to which only research project staff have the key. Computer records will have identification numbers only, for example, 201, 202, etc., NO names will be used; and files will be encrypted.

12. Release of Personal Information. We will do our best to ensure that your personal information is kept confidential and private to the maximum extent required by law. We cannot guarantee absolute confidentiality and privacy. Your personal information may be disclosed if required by law. If information from this study is published or presented at scientific meetings, your name and other personal information will not be used.

13. Financial Conflict of Interest. There are no financial conflicts of interest in this study. The investigators have received money to conduct this investigation but they will not be paid. The researcher will use the money for expenses directly related to conducting the research.

14. If you have questions you may ask them now. If you have questions later, you may contact the researchers, Larissa E. Fluegel at (616) 581-6558 or Debbie Lown (616) 331-8919. If you have any questions about your rights as a participant in this research project, you may call Grand Valley State University Human Research Review Committee at (616) 331-3197 or hrrc@gvsu.edu

DOCUMENTATION OF INFORMED CONSENT

By signing this consent form and by initialing each page, you certify you have read this form, you have had the opportunity to ask questions about this study and this form, and you have received answers that fully satisfy those questions. You are voluntarily signing this consent as evidence of your decision to participate in this research study.

You will receive a signed copy of this Research Informed Consent Form.

_____ _____

Signature of Study Participant Date

_____

Printed Name of Study Participant

_____

Printed Name of Child

_____ _____

Signature of Person Obtaining Consent Date

_____ _____

Signature of Principal Investigator Date

This research protocol has been approved by the Human Research Review Committee at Grand Valley State University. File No. 11-22-H. Expiration: October 26, 2011

Version Date 03 11/24/2010

Consent for participation –mother, Spanish

Consentimiento de participación en la investigación

RELACIÓN ENTRE LAS PRÁCTICAS MATERNAS DE ALIMENTACIÓN INFANTIL Y EL IMC Y LAS RESTRICCIONES ALIMENTARIAS DEL NIÑO EN FAMILIAS MEXICANO-AMERICANAS DE GRAND RAPIDS.

1. **Introducción.** Se le ha pedido afiliarse a un proyecto de investigación que observa cómo las madres alimentan a sus hijos y el peso de éstos. Las investigadoras son Larissa E. Fluegel y Debbie Lown, Ph. D. con el Departamento de Ciencias Biomédicas de la Universidad Estatal de Grand Valley (GVSU).

Con el fin de decidir si está o no de acuerdo en participar en este estudio de investigación, usted debe recibir información suficiente sobre sus riesgos y beneficios. Este formulario de consentimiento le da información detallada sobre el estudio, el cual será discutido con usted. Si desea participar en este estudio se le pedirá firmar este formulario.

A su hijo(a) también se la ha pedido afiliarse a este proyecto. En un formulario separado, se le pedirá permiso para que su hijo(a) participe.

2. **Objetivo de este estudio de investigación.** El objetivo de este proyecto de investigación es observar si la forma en que una madre alimenta a su hijo(a) está relacionado con el peso del mismo y la forma en que éste(a) se alimenta a sí mismo.

- Para ser incluida en este estudio, una persona debe ser: de primera o segunda generación mexicano-americana, mujer hispano- o anglo- parlante y que tiene un(a) hijo(a) entre 5-15 años de edad. Los niños entre 5-15 años de edad serán incluidos en este estudio con sus madres. Aquéllos con alergias alimentarias severas, problemas médicos crónicos que afecten la ingesta de alimentos y/o dietas vegetarianas no serán incluidos en este estudio.
- Se le ha pedido participar en este estudio porque usted cumple con todos estos requisitos.

3. **Duración de su participación.** Una vez que todas las medidas y datos de usted y su hijo(a) sean recolectados, su participación en este estudio finalizará.

4. **Procedimientos de investigación.** En caso de consentir en la participación en este proyecto de investigación, se tomarán el peso y la talla de su hijo(a) y de usted. También se les pedirá llenar cuestionarios acerca de la manera en que alimenta a sus hijos y las prácticas alimentarias de su hijo(a). El proceso completo tomará alrededor de 30 minutos. Obtendremos su información demográfica, información sobre su identidad cultural, y sobre cómo alimenta a su hijo(a); también le pediremos que observe dibujos esquemáticos para que escoja el que le parezca estar en sobrepeso.

5. **¿Qué pasará cuando haya completado el estudio?** Cuando su participación en este estudio termine, usted habrá terminado de proveer información relacionada con el mismo.

6. **Posibles riesgos por participar en este estudio.** En referencia a los riesgos y las molestias potenciales de este estudio: existe una pequeña posibilidad de que la confidencialidad y la privacidad sean quebrantadas. Se harán intentos de medir la talla y el peso en una sala separada, no obstante, los resultados pueden ser escuchados o vistos por otros. También existe la posibilidad de sentirse incómodo(a) al completar los cuestionarios. Para hacer esto menos incómodo, se le dará tiempo a solas para completarlos. Para minimizar dichos riesgos, la información de cada individuo se mantendrá en una carpeta de manila a la cual sólo tendrán acceso las investigadoras, el participante y el padre/madre/tutor.

7. **Costos por participar en este estudio.** Su participación en este estudio no resultará en ningún costo adicional para usted.

8. Pago por participar en este estudio. Ni a usted ni a su hijo(a) se les pagará por este estudio.

9. Posibles beneficios para usted por participar en esta investigación. No existe ningún beneficio por participar en este estudio.

10. Sobre la participación en este estudio. Su participación en este proyecto de investigación es VOLUNTARIA. Si decide participar, tiene la libertad de retirarse en cualquier momento sin penalización alguna. Si decide dejar de participar, debe decírselo a las investigadoras.

Otra opción que tiene es no participar en este proyecto de investigación

11. Confidencialidad de los expedientes del estudio. Los datos para este proyecto serán recolectados de forma anónima. Ni las investigadoras ni nadie más podrán vincular la información a usted.

- La información recolectada en este estudio es confidencial. Aún así, la investigadora, la asesora, el comité de investigación de la tesis y los miembros del Comité de revisión de la investigación en seres humanos de la GVSU (una junta de seguridad para la gente que se ofrece como voluntaria para la investigación) pueden revisar su expediente cuando sea necesario. Ninguna información sobre usted, durante el proyecto de investigación, será compartida con otros sin su aprobación escrita, excepto:
  -de ser necesario para proteger sus derechos o su bienestar (por ejemplo, si se lesiona y necesita cuidado de emergencia); o
  -de ser requerido por la ley.

- Cuando los resultados de esta investigación sean publicados o discutidos en conferencias, NO será incluida ninguna información que pueda identificarle. Todas las carpetas informáticas y la información escrita serán almacenadas por lo menos durante siete (7) años después de completado este estudio en una oficina con seguro cuya llave sólo posee el personal de investigación. Los archivos informáticos tendrán números de identificación solamente, por ejemplo 201, 202, etc. NO serán utilizados nombres y las carpetas serán cifradas

12. Divulgación de información personal. Haremos nuestro mejor esfuerzo para asegurar que su información sea mantenida de manera confidencial y privada en la medida máxima requerida por la ley. No podemos asegurar confidencialidad y privacidad absolutas. Su información podría ser divulgada de ser requerido por la ley. En caso de que la información de este estudio sea publicada o presentada en reuniones científicas, NO serán utilizados ni su nombre ni ninguna información personal.

13. Conflicto de intereses financieros. No hay conflictos de intereses económicos en este estudio. Las investigadoras han recibido dinero para llevar a cabo esta investigación, pero no serán pagadas. Las investigadoras utilizarán el dinero para los gastos directamente relacionados con la realización de la investigación.

14. Si tiene preguntas, puede hacerlas ahora. Si tiene preguntas luego, puede contactar a las investigadoras: Larissa E. Fluegel al (616) 581-6558 o Debbie Lown (616) 331-8919. Si tiene preguntas sobre sus derechos como participante en este proyecto de investigación, puede llamar al Comité de revisión de la investigación en seres humanos de GVSU (616) 331-3197 ó hrrc@gvsu.edu

DOCUMENTACIÓN DEL CONSENTIMIENTO INFORMADO

Al firmar este formulario de consentimiento y al poner sus iniciales en cada página, usted certifica que lo ha leído, ha tenido la oportunidad de hacer preguntas sobre el mismo y sobre este estudio y se le han proporcionado respuestas que totalmente satisfacen dichas preguntas. Usted está firmando este consentimiento voluntariamente como evidencia de su decisión de participar en este estudio de investigación.

Usted recibirá una copia firmada de este formulario de consentimiento informado.

_____ _____

Firma del(a) participante en el estudio Fecha

_____

Nombre impreso del(a) participante en el estudio

_____

Nombre impreso del(a) niño(a)

_____ _____

Firma de la persona que obtiene consentimiento Fecha

_____ _____

Firma del(a) investigador(a) principal Fecha

This is to verify that this is a true and correct translation of the original document.

February 25, 2011

Medar Serrata, Ph.D.
Assistant Professor of Spanish
Department of Modern Languages and Literatures

Este protocolo de investigación ha sido approbado por el Comité de revisión de la investigación de la Universidad Estatal de Grand Valley. Archivo no. 11-22-H Expiración: 26 de octubre, 2011

Permission for child participation –mother, English

Parental Permission for Participation in Research

THE RELATIONSHIP BETWEEN MATERNAL CHILD FEEDING PRACTICES AND CHILD'S BMI AND DIETARY RESTRAINT IN MEXICAN-AMERICAN FAMILIES OF GRAND RAPIDS

PARENT/LEGAL GUARDIAN PERMISSION

1. Why is my child being asked?

Your child is being asked to join in a research project that is looking at how mothers feed their children and how this is related to the children's weight.

The researchers are Larissa E. Fluegel and Debbie Lown, PhD in the Department of Biomedical Sciences at Grand Valley State University.

Your child has been asked to join this research project because she/he is in between the ages of 5-15 years.

2. Why is this research project being done?

Family environment, specifically how mothers feed their children, has been shown to be related to children's weight. This research will increase the knowledge of the role of how mothers feed their children and how this is related to the children's weight. Also, how cultural factors may affect this relationship.

3. What will my child be asked to do?

Your child will be asked to allow us to take his/her weight and height. We will also be asking him/her about his/her eating behaviors if he/she is age 11 or older.

Your child's participation in this research project is voluntary. If you decide to allow your child to join, you are free to pull her/him out of the study at any time.

4. What are the potential risks and discomforts?

There exists a slight chance that confidentiality and privacy may be violated. Attempts will be made to measure height and weight in a separate room; however, results may be over heard and seen by others. In order to minimize this risk, the information from each individual will be kept in manila folders for only the research person and the participant and legal guardian/parent to have access. There is also a chance that your child might feel uncomfortable when completing the eating behavior questionnaire. In order to make this less uncomfortable, he/she will have time alone to complete the questionnaire.

5. What is the purpose of this research project?

The purpose of this research project is to see how the results from the questionnaires are related to the children's weight.

6. Are there benefits to taking part in the research project?

There is no benefit from participating in this study.

7. What other options are there?
The alternative is not to take part in this research project.

8. What about privacy and confidentiality?
The people who may know that your child is in this research project are the researcher, the advisor, the thesis research committee and members of the GVSU's Human Research Review Committee (a safety board for people who volunteer for research). No information about your child, during the research project, will be told to others without your written approval, except:

-if necessary to protect your child's rights or welfare (for example, if your child is injured and need emergency care); or
-if required by law.

When the results of the research project are published or discussed in conferences, NO information that would identify your child will be included.

All computer files and written information will be stored for at least seven (7) years after the completion of this study in a locked office to which only research project staff has the key. Computer records will have identification numbers only, for example, 201, 202, etc., NO names will be used; and files will be encrypted.

9. What are the costs for participating in this program?
There are no costs to you.

10. Will my child be reimbursed for any of her expenses or paid for her participation in this research study?
Your child will not be paid for this research study.

11. Can I withdraw my approval to allow my child to participate?
If you don't want your child to be in this research project, you don't have to allow her/him to join. This research project is VOLUNTARY. If you decide to allow your child to participate, you are free to take her/him out of the research project at any time.

12. Who should I contact if I have questions?
The primary researcher is Larissa E. Fluegel. You may ask any questions you have now. If you have questions later, you may contact the researchers, Larissa E. Fluegel at (616) 581-6558 or Debbie Lown (616) 331-8919.

13. What are my child's rights as a research project participant?
If you have any questions about your child's rights as a participant in this research project, you may contact Grand Valley State University Human Research Review Committee at (616) 331-3197 or hrrc@gvsu.edu.

Remember:
Your child's participation in this research project is voluntary. It is up to you to decide whether or not to allow her/him to participate in this research project. If you decide to allow your child to participate, you are free to take her/him out of the research project at any time.
You will be given a copy of this form for your information and to keep for your records.

14. Signature of Parent/Legal Guardian of Child Participant

I have read (or someone has read to me) the above information. I was given the opportunity to ask questions and the answers to those questions have satisfied me. I have been given a copy of this form.

DOCUMENTATION OF INFORMED CONSENT

By signing this consent form and by initialing each page, you certify you have read this form, you have had the opportunity to ask questions about this study and this form, and you have received answers that fully satisfy those questions. You are voluntarily signing this consent as evidence of your decision to participate in this research study.

You will receive a signed copy of this Research Informed Consent Form.

By signing this consent form, you have not waived any of your legal rights or released the parties involved in this study from liability for negligence.

_____ _____

Signature of Study Participant Date

_____

Printed Name of Study Participant

_____

Printed Name of Child

_____ _____

Signature of Person Obtaining Consent Date

_____ _____

Signature of Principal Investigator Date

This research protocol has been approved by the Human Research Review Committee at Grand Valley State University. File No. 11-22-H. Expiration: October 26, 2011

Permission for child participation –mother. Spanish

Permiso de participación en la investigación

RELACIÓN ENTRE LAS PRÁCTICAS MATERNAS DE ALIMENTACIÓN INFANTIL Y EL IMC Y LAS RESTRICCIONES ALIMENTARIAS DEL NIÑO EN FAMILIAS MEXICANO-AMERICANAS DE GRAND RAPIDS.

PERMISO DEL PADRE/TUTOR

1. ¿Por qué se le pide a mi hijo(a) participar en este proyecto?
Se le ha pedido a su hijo(a) afiliarse a un proyecto de investigación que observa cómo las madres alimentan a sus hijo(a)s y cómo esto se relaciona con el peso de los niños.
Las investigadoras son Larissa E. Fluegel y Debbie Lown, Ph. D. en el Departamento de Ciencias Biomédicas de la Universidad Estatal de Grand Valley (GVSU).
Se le ha pedido a su hijo(a) participar en este proyecto porque se encuentra entre las edades de 5-15 años.

2. ¿Por qué se realiza este proyecto de investigación?
El ambiente familiar, específicamente cómo las madres alimentan a sus hijos, ha mostrado estar relacionado con el peso de estos. Este estudio aumentará el conocimiento sobre el papel de las madres en la alimentación de sus hijos y cómo esto está relacionado con el peso de los mismos. También, cómo los factores culturales pueden afectar dicha relación.

3. ¿Qué se le pedirá a su hijo(a)?
Se le pedirá a su hijo(a) que nos permita tomarle su peso y su talla. También le preguntaremos sobre sus comportamientos alimentarios si tiene 11 años o más.
La participación de su hijo(a) en este proyecto de investigación es voluntaria. Si decide permitir su participación en el mismo, usted tiene la libertad de retirarlo(a) en cualquier momento.

4. ¿Cuáles son los riesgos y molestias potenciales?
Existe una pequeña posibilidad de que la confidencialidad y la privacidad sean quebrantadas. Se harán intentos de medir la talla y el peso en una sala separada, no obstante, los resultados pueden ser escuchados o vistos por otros. Con el fin de minimizar dicho riesgo, la información de cada individuo se mantendrá en una carpeta de manila a la cual sólo tendrán acceso las investigadoras, el participante y el padre/tutor. También existe la posibilidad de que su hijo(a) se sienta incómodo(a) al completar el cuestionario sobre su comportamiento alimentario. Con el fin de hacer esto menos incómodo, se le dará tiempo a solas para completarlo.

5. ¿Cuál es el objetivo de este proyecto de investigación?
El objetivo de este proyecto de investigación es observar cómo los resultados de los cuestionarios están relacionados con el peso de los niños.

6. ¿Existe algún beneficio de participar en este proyecto de investigación?
No existe ningún beneficio por participar en este estudio.

7. ¿Qué otras opciones hay?
La alternativa es no participar en este proyecto de investigación.

8. ¿Qué pasa con la privacidad y la confidencialidad?
Las personas que pueden saber que su hijo(a) está en este proyecto de investigación son la investigadora, la asesora, el comité de investigación de la tesis y los miembros del Comité de

DOCUMENTACIÓN DEL CONSENTIMIENTO INFORMADO

Al firmar este formulario de consentimiento y al poner sus iniciales en cada página, usted certifica que lo ha leído, ha tenido la oportunidad de hacer preguntas sobre el mismo y sobre este estudio y se le han proporcionado respuestas que totalmente satisfacen dichas preguntas. Está firmando este consentimiento voluntariamente como evidencia de su decisión de participar en este estudio de investigación.

Recibirá una copia firmada de este formulario de consentimiento informado.

Al firmar este formulario de consentimiento, no ha renunciado a ninguno de sus derechos legales o puesto en libertad a las partes involucradas en este estudio de la responsabilidad por negligencia.

_____ _____

Firma del(a) participante en el estudio Fecha

_____

Nombre impreso del(a) participante en el estudio

_____

Nombre impreso del(a) niño(a)

_____ _____

Firma de la persona que obtiene consentimiento Fecha

_____ _____

Firma del(a) investigador(a) principal Fecha

Grand Valley State University
Allendale, Michigan
Modern Languages and Literatures

This is to verify that this is a true and correct translation of the original document.

February 25, 2011

Medal Serrata, Ph.D.
Assistant Professor of Spanish
Department of Modern Languages and Literatures

Este protocolo de investigación ha sido aprobado por el Comité de revisión de la investigación de la Universidad de Grand Valley. Archivo no. 11-22-H. Expiración: 26 de octubre, 2011

Assent for Participation in Research (Children 12-15 years of age)

THE RELATIONSHIP BETWEEN MATERNAL CHILD FEEDING PRACTICES AND CHILD'S BMI AND DIETARY RESTRAINT IN MEXICAN-AMERICAN FAMILIES OF GRAND RAPIDS

1. My name is Larissa Fluegel, the leader of the research project you are being asked to join.

2. We are asking you to take part in this research project because we are trying to learn how mothers feed their children and how this is related to the children's weight.

3. If you agree to be in this research project, we will measure your weight and height. This will be done in a private location. We will be asking you about your eating behaviors.

4. There is a chance that others hear the results of your measurements but we will do our best to prevent this from happening. There is also a chance that your might feel uncomfortable when completing the eating behavior questionnaire. In order to make this less uncomfortable, you will have time alone to do this part.

5. There will be no benefit to you from participating in this research project. This study may increase our knowledge on what influences how mothers feed their children. Also we may know about the relationship between how mothers feed their children and how this affects their weight.

6. Please talk it over with your parents or legal guardian before you decide whether or not to participate. We will also ask your parents or legal guardian(s) to give their permission for you to take part in this project. But even of your parents or legal guardians say "yes", you can still decide not to do this.

7. You don't have to be in this project if you don't want to participate. Remember, being in this research project is up to you and no one will be upset if you don't want to participate. If you decide to take part in the research project and change your mind later and want to stop, that's okay too.

8. Information from this research project may be shared with members of the Human Research Review Committee at GVSU.

9. You can ask any questions you have about the study. If you have questions later that you didn't think of before, you can call Larissa Fluegel at (616) 551-0241.

10. Signing your name at the bottom means that you agree to be in this study. You and your parents or legal guardian(s) will be given a copy of this form after you have signed it.

Printed name of participant	Age	Signature of participant	Date

Printed name of researcher	Signature of researcher	Date

This research protocol has been approved by the Human Research Review Committee at Grand Valley State University. File No. 11-22-H. Expiration: October 26, 2011

Version Date 03 11/24/2010

Assent for participation –child, older Spanish

Asentimiento de participación en la investigación [niños de 12-15 años de edad]

RELACIÓN ENTRE LAS PRÁCTICAS MATERNAS DE ALIMENTACIÓN INFANTIL Y EL IMC Y LAS RESTRICCIONES ALIMENTARIAS DEL NIÑO EN FAMILIAS MEXICANO-AMERICANAS DE GRAND RAPIDS.

1. Mi nombre es Larissa E. Fluegel, líder del proyecto de investigación al cual le han pedido afiliarse.

2. Le pedimos participar porque tratamos de entender cómo las madres alimentan a sus hijos y cómo esto se relaciona con el peso de los niños.

3. De estar de acuerdo con participar en este proyecto de investigación, le tomaremos su peso y talla. Esto se hará en un lugar privado. Le haremos preguntas sobre sus comportamientos alimentarios.

4. Existe la posibilidad de que otros escuchen los resultados de sus medidas pero haremos nuestro mayor esfuerzo para evitar que esto suceda. También existe la posibilidad de que se sienta incómodo(a) al completar el cuestionario sobre comportamiento alimentario. Con el fin de hacer esto menos incómodo, se le dará tiempo a solas para completarlo.

5. No existe ningún beneficio por participar en este estudio. Este estudio puede aumentar nuestro conocimiento sobre lo que influye en forma en que las madres alimentan a sus hijos. También podemos saber sobre la relación entre la forma en que las madres alimentan a sus hijos y el peso de éstos.

6. Por favor hable con sus padres o tutor(es) antes de decidir si participa o no. También le pediremos permiso a sus padres o tutor(es) para que participe en este proyecto. Mas, aún si ellos dicen que "sí", usted puede decidir no hacerlo.

7. No tiene que participar en este proyecto si no lo desea. Recuerde, participar depende de usted y nadie se molestará si decide no hacerlo. Si decide participar y cambia de opinión luego y no desea participar, eso también está bien.

8. La información de este proyecto de investigación podrá ser compartida con los miembros del Comité de revisión de la investigación en seres humanos de GVSU.

9. Puede hacer cualquier pregunta que tenga sobre el estudio. Si tiene preguntas luego que no se les ocurran ahora, puede contactar a Larissa E. Fluegel al (616) 551-0241

10. El poner su nombre/firma abajo significa que está de acuerdo con participar en este estudio. Sus padres o tutor(es) recibirán una copia de este formulario después de que lo haya firmado.

Nombre impreso del(a) participante	Edad	Firma del(a) participante	Fecha

Nombre impreso del(a) investigador(a)	Firma del(a) investigador(a)	Fecha

Este protocolo de investigación ha sido aprobado por el Comité de revisión de la investigación de la Universidad de Grand Valley. Archivo no. 11-22-H. Expiración: 26 de octubre, 2011

Grand Valley State University
Allendale, Michigan
Modern Languages and Literatures

Assent for Participation in Research
(Children 7-11 years of age)

THE RELATIONSHIP BETWEEN MATERNAL CHILD FEEDING PRACTICES AND CHILD'S BMI AND DIETARY RESTRAINT IN MEXICAN-AMERICAN FAMILIES OF GRAND RAPIDS

I have been told about this research project that will collect information about my height and weight. I have been told that people who are helping with the project may see my height or weight information. My parents have been talked to about this project. I have talked with my parents or legal guardians about this project. I know I can change my mind about having my height and weight measured at any time and no one will be upset.

I wish to participate in this research project.

_____	_____
Printed name of participant	Date of verbal assent

_____	_____	_____
Printed name of researcher	Signature of researcher	Date

This research protocol has been approved by the Human Research Review Committee at Grand Valley State University. File No. 11-22-H. Expiration: October 26, 2011

Version Date 03 11/24/2010

Assent for participation –child, younger Spanish

Asentimiento de participación en la investigación (niño/as de 7-11 años de edad)

RELACIÓN ENTRE LAS PRÁCTICAS MATERNAS DE ALIMENTACIÓN INFANTIL Y EL IMC Y LAS RESTRICCIONES ALIMENTARIAS DEL NIÑO EN FAMILIAS MEXICANO-AMERICANAS DE GRAND RAPIDS.

Me han dicho sobre este proyecto de investigación que busca recolectar información acerca de mi talla y mi peso. Me han dicho que las personas ayudando con este proyecto podrían ver la información sobre mi talla y mi peso. A mis padres les han hablado sobre dicho proyecto. Yo he hablado con mis padres o tutor/es sobre el proyecto. Sé que puedo cambiar de opinión en cualquier momento sobre dejar que me tomen la talla y el peso y nadie se molestará.

Deseo participar en este proyecto.

_____ _____

Nombre impreso del(a) niño(a) Fecha del asentimiento oral

_____ _____

Firma del(a) investigador(a) principal Fecha

This is to verify that this is a true and correct translation of the original document.

February 25, 2011

Medar Serrata, Ph.D.
Assistant Professor of Spanish
Department of Modern Languages and Literatures

Este protocolo de investigación ha sido approvado por el Comité de revisión de la investigación de la Universidad de Grand Valley. Archivo no. 11-22-H. Expiración: 26 de octubre, 2011

Recruitment flyer. English

INDIVIDUALS NEEDED FOR RESEARCH STUDY

MOTHERS OF MEXICAN ORIGIN AND THEIR CHILDREN ARE NEEDED FOR A MASTER THESIS RESEARCH PROJECT ON WEIGHT/HEIGHT AND CHILD FEEDING PRACTICES. Primary researcher: Larissa E. Fluegel, Master of Science candidate; Advisor: Debbie Lown, PhD

Larissa Fluegel is a Master of Science in Biomedical Science candidate at Grand Valley State University conducting a study on how mother & child feeding practices relate to the child's weight. Ms. Fluegel is looking for Spanish speaking women and their children (between 5 and 15 years of age) of Mexican origin that are willing to participate in this research project.

Any information that is collected during any data collection session will be kept confidential. Information to be collected includes: general information, information on how mothers feed their children, and measured height and weight.

Each person will be asked to fill out questionnaires and to have their body weight and height measured. **This will take approximately 30 minutes.**

Interested in participating? Please contact Larissa by phone or email at (616) 551-0241 or flueglar@gvsu.edu.

This research protocol has been approved by the Human Research Review Committee at Grand Valley State University. File No. 11-22-H Expiration: October 26, 2011

Version & Date: 03 11/24/2010

Recruitment flyer, Spanish

SE BUSCA INDIVIDUOS PARA PROYECTO DE INVESTIGACION

SE NECESITA MADRES DE ORIGEN MEXICANO Y SUS HIJOS PARA UN PROYECTO DE INVESTIGACION DE MAESTRÍA ACERCA DEL PESO/TALLA Y LAS PRACTICAS DE ALIMENTACIÓN INFANTIL.

Investigadora principal: Larissa E. Fluegel, candidata para Maestría de Ciencias; Asesora: Debbie Lown, PhD

Larissa Fluegel es candidata para la Maestría de Ciencias en la Universidad de Grand Valley que busca llevar a cabo un estudio acerca de cómo (si) las prácticas de alimentación materna afectan al peso/talla de los niños. La Sra. Fluegel busca mujeres y sus hijos (entre 5 y 15 años de edad) de habla hispana y origen mexicano para servir como sujetos de investigación en dicho proyecto.

Toda información recolectada durante cualquier sesión de recolección de datos será manejada de manera confidencial. La información a ser recolectada incluye: información general, información sobre cómo las madres alimentan a sus hijos(as) y medidas de talla y peso.

A cada persona se le pedirá llenar cuestionarios y dejarse tomar las medidas de talla y peso. **Esto se tomará aproximadamente 30 minutos.**

¿Interesada en participar? Favor contacte a Larissa por teléfono al no. (616) 581-6558 ó por correo electrónico a la dirección flueglar@gvsu.edu.

Este protocolo de investigación ha sido aprobado por el Comité de revisión de la investigación de la Universidad de Grand Valley. Archivo no. 11-22-H Expiración: 26 de octubre, 2011

Version & Date: 03 11/24/2010

Permission to use: Child feeding questionnaire

FW: Child Feeding Questionnaire/ Appetite 36:201-210, 2001

"Sheryl shaffer" <sks21@psu.edu>
Sent: Monday, October 04, 2010 8:47 AM
To: Larissa Fluegel; sks21@psu.edu
Attachments: CFQ Instrument _P_1.pdf (101 KB) ; CFQ PDF.pdf (176 KB) ; CFQ Appendix _P_.pdf (128 KB) ; CFQ Scoring _P_.pdf (113 KB)

Hi Larissa,
I have attached the requested. Please let me know if you need anything
else.
Thanks,
Sheryl Shaffer
Assistant to Dr. Leann Birch
Center for Childhood Obesity
The Pennsylvania State University
129 Noll Laboratory
University Park, PA 16802
814-865-5246
sks21@psu.edu

From: Larissa Fluegel [flueglar@gvsu.edu]
Sent: Saturday, October 02, 2010 5:09 PM
To: Leann Birch
Subject: Child Feeding Questionnaire/ Appetite 36:201-210, 2001

LARISSA E. FLUEGEL
312 Padnos Hall . 1 Campus Drive, Allendale, MI 49401
flueglar@gvsu.edu . (616) 581-6558

October 03, 2010

Dr. Leann L. Birch
Department of Human Development and Family Studies,
S-211 Henderson South Building
The Pennsylvania State University
University Park, PA 16802

Dear Dr. Birch:

Greetings. Please accept this letter as a request for permission to use
the instrument developed by you and your colleagues in the study
referenced above.

While doing the literature research for my Masters Thesis research, I
found your interesting article and many others on child feeding
practices. Your instrument has been used by several authors as well in
studies about BMI and maternal feeding practices. I find it to be
potentially useful for my study which seeks partly to determine the
relationship between maternal feeding practices and the child's BMI in
Hispanic American families.

I am not sure if I need permission to use it since it is not stated in he research articles, but just in case, I am extending the request.

I am very excited to do this research project and looking forward to using the CFQ. Thank you very much for your time.

Cordially,

Larissa E. Fluegel
Master of Science Candidate, Grand Valley State University

From: Jan Karlsson <jan.karlsson@medicine.gu.se>
To: Larissa Fluegel <flueglar@gvsu.edu>
Date: Friday - October 15, 2010 7:34 AM
Subject: SV: RE: TF EQ-R12

Dear Larissa,

You have permission to use the short, revised version of the Three Factor Eating Questionnaire in your Master Thesis Research Project.

Best wishes,
Jan

Jan Karlsson, Psychologist, PhD
Institute of Health and Care Sciences
Sahlgrenska Academy
University of Gothenburg
Box 457
SE-405 30 Gothenburg
Sweden

Från: Larissa Fluegel [flueglar@gvsu.edu]
Skickat: den 5 oktober 2010 19:43
Till: Jan Karlsson
Ämne: Fwd: RE: TFEQ-R12

Dear Dr. Karlsson:

I was referred to you by Dr. Joseph Capelleri. I am seeking permission to use the Three Factor Eating Questionnaire for my Master Thesis Research Project. Details forwarded.

I look forward to hearing back from you. Thank you.

Sincerely,

Larissa Fluegel
Biomedical Sciences
Grand Valley State University

Child feeding questionnaire: Certification of cultural sensitivity

VOICES FOR HEALTH, INC.
Language & Culture Solutions

2851 Michigan Ave. NE, Suite 104
Grand Rapids, MI 49506
616-233-6505 *Fax* 616-233-6522
www.voicesforhealth.com

Client: Larissa Fluegel

Document(s): VFH L Fluegel Child Feeding Questionnaire Vers3 11-24-10 SPA (final with CR)
VFH L Fluegel Three Factor Eating Questionnaire Vers3 11-24-10 SPA (final with CR)

February 28, 2010

I verify that the above-named Spanish-language documents were reviewed and edited for linguistic and cultural sensitivity by two individuals who met the following specifications:

- Bilingual English/Spanish
- Female
- One from Mexico
- One a second generation Mexican living in the U.S.

I will be happy to answer any questions regarding our cultural review process.

Sincerely,

Michelle A. Scott

Michelle A. Scott, RN, MA
Translation Department Supervisor

Appendix B. Data Collection Tools

Demographic questionnaire, English

THE RELATIONSHIP BETWEEN MATERNAL CHILD FEEDING PRACTICES AND CHILD'S BMI AND DIETARY RESTRAINT IN MEXICAN-AMERICAN FAMILIES OF GRAND RAPIDS

DEMOGRAPHIC QUESTIONNAIRE

Date _____

Organization: _____

I. Information about your child
Date of birth: _____ Gender: M ___ F___

II. Information about you
A. Education (Please check the highest grade completed):
Less than elementary ____
Elementary school ____
Junior high school (grades 7-9) ____
High school (grades 10-12) ____
At least 1 year of college ____
Bachelor ____
Graduate/Advanced training ____
D. Age now: _____ Age at the time of the child's birth: _____
E. Occupation: _____

III. Measurements

		Measurement 1	Measurement 2
Mother's	Height		
	Weight		
	BMI		
Child's	Height		
	Weight		
	BMI		

Version & Date: 03 11/24/2010

Demographic questionnaire, Spanish

RELACIÓN ENTRE LAS PRÁCTICAS MATERNAS DE ALIMENTACIÓN INFANTIL Y EL IMC Y LAS RESTRICCIONES ALIMENTARIAS DEL NIÑO EN FAMILIAS MEXICANO-AMERICANAS DE GRAND RAPIDS.

CUESTIONARIO DEMOGRÁFICO

Fecha _____

Organización: _____

I. Información sobre su hijo(a)
Fecha de nacimiento: _____ Género: M F

II. Información sobre usted
A. Educación (favor marcar el nivel más alto que haya completado):
Menos que primaria ____
Escuela primaria ____
Escuela secundaria (grados 7-9) ____
Escuela preparatoria (grados 10-12) ____
Por lo menos 1 año de universidad ____
Licenciatura ____
Postgrado/entrenamiento avanzado ____

D. Edad actual: _____ Edad al momento del nacimiento de su hijo(a): _____
E. Ocupación: _____

III. Medidas

		Medida 1	Medida 2
Madre	Estatura		
	Peso		
	IMC		
Hijo(a)	Estatura		
	Peso		
	IMC		

Versión & Fecha: 03 24/11/2010

Bidimensional Acculturation Scale (BAS), English

THE RELATIONSHIP BETWEEN MATERNAL CHILD FEEDING PRACTICES AND CHILD'S BMI AND DIETARY RESTRAINT IN MEXICAN-AMERICAN FAMILIES OF GRAND RAPIDS

BIDIMENSIONAL ACCULTURATION SCALE

Date _____

Instructions: Please circle the number with the answer in the cell on the right that best describes the statement or question (about yourself) on the left.

Statement /Question	Answer (circle the number, only one)
1. How often do you speak English?	1= almost never 2 = sometimes 3= often 4= almost always
2. How often do you speak in English with your friends?	1= almost never 2 = sometimes 3= often 4= almost always
3. How often do you think in English?	1= almost never 2 = sometimes 3= often 4= almost always
4. How often do you speak Spanish?	1= almost never 2 = sometimes 3= often 4= almost always
5. How often do you speak in Spanish with your friends?	1= almost never 2 = sometimes 3= often 4= almost always
6. How often do you think in Spanish?	1= almost never 2 = sometimes 3= often 4= almost always
7. How well do you speak English?	1= very poorly 2= poorly 3= well 4= very well
8. How well do you read in English?	1= very poorly 2= poorly 3= well 4= very well

9. How well do you understand television programs in English?	1= very poorly 2= poorly 3= well 4= very well
10. How well do you understand radio programs in English?	1= very poorly 2= poorly 3= well 4= very well
11. How well do you write in English?	1= very poorly 2= poorly 3= well 4= very well
12. How well do you understand music in English?	1= very poorly 2= poorly 3= well 4= very well
13. Ho w well do you speak Spanish?	1= very poorly 2= poorly 3= well 4= very well
14. How well do you read in Spanish?	1= very poorly 2= poorly 3= well 4= very well
15. How well do you understand television programs in Spanish?	1= very poorly 2= poorly 3= well 4= very well
16. How well do you understand radio programs in Spanish?	1= very poorly 2= poorly 3= well 4= very well
17. How well do you write in Spanish?	1= very poorly 2= poorly 3= well 4= very well
18. How well do you understand music in Spanish?	1= very poorly 2= poorly 3= well 4= very well
19. How often do you watch television programs in English?	1= almost never 2 = sometimes 3= often 4= almost always

20. How often do you listen to radio programs in English?	1= almost never 2 = sometimes 3= often 4= almost always
21. How often do you listen to music in English?	1= almost never 2 = sometimes 3= often 4= almost always
22. How often do you watch television programs in Spanish?	1= almost never 2 = sometimes 3= often 4= almost always
23. How often do you listen to radio programs in Spanish?	1= almost never 2 = sometimes 3= often 4= almost always
24. How often do you listen to music in Spanish?	1= almost never 2 = sometimes 3= often 4= almost always

Bidimensional Acculturation Scale (BAS), Spanish

RELACIÓN ENTRE LAS PRÁCTICAS MATERNAS DE ALIMENTACIÓN INFANTIL Y EL IMC Y LAS RESTRICCIONES ALIMENTARIAS DEL NIÑO EN FAMILIAS MEXICANO-AMERICANAS DE GRAND RAPIDS.

ESCALA BIDIMENSIONAL DE ACULTURACIÓN

Fecha _____

Instrucciones: Favor encierre en un círculo el número de la respuesta a la derecha que mejor describa o responda la afirmación/pregunta (acerca de usted) de la izquierda

Afirmación/pregunta acerca de usted	Respuesta (encierre el número, solo uno)
1. ¿Con qué frecuencia habla usted inglés?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre
2. ¿Con qué frecuencia habla usted en inglés con sus amigo(a)s?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre
3. ¿Con qué frecuencia piensa usted inglés?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre
4. ¿Con qué frecuencia habla usted español?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre
5. ¿Con qué frecuencia habla usted en español con sus amigo(a)s?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre
6. ¿Con qué frecuencia piensa usted en español?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre
7. ¿Qué tan bien habla usted en inglés?	1= muy mal 2= no muy bien 3= bien 4= muy bien
8. ¿Qué tan bien lee usted en inglés?	1= muy mal 2= no muy bien

	3= bien 4= muy bien
9. ¿Qué tan bien entiende usted los programas de televisión en inglés?	1= muy mal 2= no muy bien 3= bien 4= muy bien
10. ¿Qué tan bien entiende usted los programas de radio en inglés?	1= muy mal 2= no muy bien 3= bien 4= muy bien
11. ¿Qué tan bien escribe usted en inglés?	1= muy mal 2= no muy bien 3= bien 4= muy bien
12. ¿Qué tan bien entiende usted música en inglés?	1= muy mal 2= no muy bien 3= bien 4= muy bien
13. ¿Qué tan bien habla usted en español?	1= muy mal 2= no muy bien 3= bien 4= muy bien
14. ¿Qué tan bien lee usted en español?	1= muy mal 2= no muy bien 3= bien 4= muy bien
15. ¿Qué tan bien entiende usted los programas de televisión en español?	1= muy mal 2= no muy bien 3= bien 4= muy bien
16. ¿Qué tan bien entiende usted los programas de radio en español?	1= muy mal 2= no muy bien 3= bien 4= muy bien
17. ¿Qué tan bien escribe usted en español?	1= muy mal 2= no muy bien 3= bien 4= muy bien
18. ¿Qué tan bien entiende usted música en español?	1= muy mal 2= no muy bien 3= bien 4= muy bien
19. ¿Con qué frecuencia ve usted programas de televisión en inglés?	1= casi nunca 2=algunas veces

	3= frecuentemente 4= casi siempre
20. ¿Con qué frecuencia escucha usted programas de radio en inglés?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre
21. ¿Con qué frecuencia escucha usted música en inglés?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre
22. ¿Con qué frecuencia ve usted programas de televisión en español?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre
23. ¿Con qué frecuencia escucha usted programas de radio en español?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre
24. ¿Con qué frecuencia escucha usted música en español?	1= casi nunca 2=algunas veces 3= frecuentemente 4= casi siempre

Child feeding questionnaire (CFQ), English

THE RELATIONSHIP BETWEEN MATERNAL CHILD FEEDING PRACTICES AND CHILD'S BMI AND DIETARY RESTRAINT IN MEXICAN-AMERICAN FAMILIES OF GRAND RAPIDS.

CHILD FEEDING QUESTIONNAIRE

Date _____

Instructions: Please circle the number with the answer in the cell on the right that best describes the statement or question (about yourself) on the left.

Statement /Question	Answer (circle the number, only one)
1. When your child is at home, how often are you responsible for feeding her?	1= never 2= seldom 3= half of the time 4= most of the time 5= always
2. How often are you responsible for deciding what your child's portion sizes are?	1= never 2= seldom 3= half of the time 4= most of the time 5= always
3. How often are you responsible for deciding if your child has eating the right kind of foods?	1= never 2= seldom 3= half of the time 4= most of the time 5= always
4. Your childhood (5-10 years old)	1= markedly underweight 2= underweight 3= normal 4= overweight 5=markedly overweight
5. Your adolescence	1= markedly underweight 2= underweight 3= normal 4= overweight 5=markedly overweight
6. Your 20's	1= markedly underweight 2= underweight 3= normal 4= overweight 5=markedly overweight

7. At present	1= markedly underweight 2= underweight 3= normal 4= overweight 5=markedly overweight
8. Your child during the first year of life	1= markedly underweight 2= underweight 3= normal 4= overweight 5=markedly overweight
9. Your child as toddler	1= markedly underweight 2= underweight 3= normal 4= overweight 5=markedly overweight
10. Your child as a preschooler	1= markedly underweight 2= underweight 3= normal 4= overweight 5=markedly overweight
11. Your child kindergartner through second grade	1= markedly underweight 2= underweight 3= normal 4= overweight 5=markedly overweight
12. You child third through fifth grade	1= markedly underweight 2= underweight 3= normal 4= overweight 5=markedly overweight
13. Your child from sixth through eight grade	1= markedly underweight 2= underweight 3= normal 4= overweight 5=markedly overweight
14. How concerned are you about your child eating to much when you are not around her?	1= unconcerned 2= a little concerned 3= concerned 4= fairly concerned 5=very concerned
15. How concerned are you about your child having to diet to maintain a desirable weight?	1= unconcerned 2= a little concerned 3= concerned 4= fairly concerned

	5=very concerned
16. How concerned are you about your child becoming overweight?	1= unconcerned 2= a little concerned 3= concerned 4= fairly concerned 5=very concerned
17. I have to be sure my child does not eat to many sweets (candy, ice-cream, cake or pastries).	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
18. I have to be sure my child does not eat to many high-fat foods.	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
19. I have to be sure my child does not eat to much of her favorite foods.	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
20. I intentionally keep some foods out of my child's reach.	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
21. I offer sweets (candy, ice-cream, cake or pastries) as a reward for good behavior.	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
22. I offer my child her favorite foods in exchange for good behavior.	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
23. If I did not guide or regulate my child's eating, she would eat to many junk foods.	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
24. If I did not guide or regulate my child's eating, she would eat too much of her favorite foods.	1= disagree 2= slightly disagree 3= neutral

	4= slightly agree 5= agree
25. My child should always eat all of the food on her plate.	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
26. I have to be especially careful to make sure my child eats enough.	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
27. If my child says, "I'm not hungry", I try to get her to eat anyway.	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
28. If I did not guide or regulate my child's eating, she would eat much less than what she should.	1= disagree 2= slightly disagree 3= neutral 4= slightly agree 5= agree
29. How much do you keep track of the sweets (candy, ice-cream, cake or pastries) that your child eats?	1= never 2= rarely 3= sometimes 4= mostly 5=always
30. How much do you keep track of the snack foods (potato chips, Doritos, cheese puffs) that your child eats?	1= never 2= rarely 3= sometimes 4= mostly 5=always
31. How much do you keep track of the high-fat foods that your child eats?	1= never 2= rarely 3= sometimes 4= mostly 5=always

Child feeding questionnaire (CFQ), Spanish

RELACIÓN ENTRE LAS PRÁCTICAS MATERNAS DE ALIMENTACIÓN INFANTIL Y EL IMC Y LAS RESTRICCIONES ALIMENTARIAS DEL NIÑO EN FAMILIAS MEXICANO-AMERICANAS DE GRAND RAPIDS.

CUESTIONARIO SOBRE LA ALIMENTACIÓN DE LOS NIÑOS

Fecha _____

Instrucciones: Encierre en un círculo el número de la respuesta en la celda de la derecha que mejor describa la declaración o la pregunta (sobre usted) a la izquierda.

Declaración/Pregunta	Respuesta (encierre el número con un círculo, sólo uno)
1. Cuando su hijo/a está en su hogar, ¿qué tan a menudo es usted responsable de su alimentación?	1 = nunca 2 = a veces 3 = la mitad de las veces 4 = la mayoría de las veces 5 = siempre
2. ¿Qué tan a menudo tiene usted la responsabilidad de decidir el tamaño de las porciones de su hijo/a?	1 = nunca 2 = a veces 3 = la mitad de las veces 4 = la mayoría de las veces 5 = siempre
3. ¿Qué tan a menudo es usted responsable de decidir si su hijo/a está comiendo el tipo correcto de alimentos?	1 = nunca 2 = a veces 3 = la mitad de las veces 4 = la mayoría de las veces 5 = siempre
4. Su infancia (5 a 10 años)	1 = peso notablemente bajo 2 = bajo peso 3 = normal 4 = sobrepeso 5 = sobrepeso notable
5. Su adolescencia	1 = peso notablemente bajo 2 = bajo peso 3 = normal 4 = sobrepeso 5 = sobrepeso notable
6. A los 20 años	1 = peso notablemente bajo 2 = bajo peso 3 = normal 4 = sobrepeso 5 = sobrepeso notable

7. Actualmente	1 = peso notablemente bajo 2 = bajo peso 3 = normal 4 = sobrepeso 5 = sobrepeso notable
8. Su hijo/a durante el primer año de vida	1 = peso notablemente bajo 2 = bajo peso 3 = normal 4 = sobrepeso 5 = sobrepeso notable
9. Su hijo/a cuando era un/a niño/a pequeño/a	1 = peso notablemente bajo 2 = bajo peso 3 = normal 4 = sobrepeso 5 = sobrepeso notable
10. Su hijo/a cuando iba al preescolar	1 = peso notablemente bajo 2 = bajo peso 3 = normal 4 = sobrepeso 5 = sobrepeso notable
11. Su hijo/a desde el jardín de infantes al segundo grado	1 = peso notablemente bajo 2 = bajo peso 3 = normal 4 = sobrepeso 5 = sobrepeso notable
12. Su hijo/a del tercer al quito grado	1 = peso notablemente bajo 2 = bajo peso 3 = normal 4 = sobrepeso 5 = sobrepeso notable
13. Su hijo/a del sexto al octavo grado	1 = peso notablemente bajo 2 = bajo peso 3 = normal 4 = sobrepeso 5 = sobrepeso notable
14. ¿Qué tanto le preocupa que su hijo/a coma demasiado cuando usted no está presente?	1 = no le preocupa 2 = le preocupa un poco 3 = le preocupa 4 = le preocupa bastante 5 = le preocupa mucho
15. ¿Qué tanto le preocupa que su hijo/a deba realizar una dieta para mantener un peso deseable?	1 = no le preocupa 2 = le preocupa un poco 3 = le preocupa 4 = le preocupa bastante

	5 = le preocupa mucho
16. ¿Qué tanto le preocupa que su hijo/a tenga sobrepeso?	1 = no le preocupa 2 = le preocupa un poco 3 = le preocupa 4 = le preocupa bastante 5 = le preocupa mucho
17. Debo asegurarme de que mi hijo/a no coma demasiados dulces (caramelos, helado, pastel o pastelillos).	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
18. Debo asegurarme de que mi hijo/a no coma demasiados alimentos ricos en grasa.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
19. Debo asegurarme de que mi hijo/a no coma demasiado de sus comidas favoritas.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
20. Mantengo algunos alimentos fuera del alcance de mi hijo/a intencionalmente.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
21. Le ofrezco dulces (caramelos, helado, pastel o pastelillos) como premio por un buen comportamiento.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
22. Le ofrezco a mi hijo/a sus alimentos favoritos a cambio de un buen comportamiento.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
23. Si no guiara o regulara la alimentación de mi hijo/a, comería demasiada comida chatarra.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
24. Si no guiara o regulara la alimentación de mi hijo/a, comería demasiado de sus comidas favoritas.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral

	4 = algo de acuerdo 5 = de acuerdo
25. Mi hijo/a siempre debe comer toda la comida que tiene en su plato.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
26. Debo tener especial cuidado para asegurarme de que mi hijo/a coma lo suficiente.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
27. Si mi hijo/a dice "no tengo hambre", intento que coma de todas formas.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
28. Si no guiara o regulara la alimentación de mi hijo/a, comería mucho menos de lo que debería.	1= en desacuerdo 2 = algo en desacuerdo 3 = neutral 4 = algo de acuerdo 5 = de acuerdo
29. ¿Qué tanto se fija en los dulces (caramelos, helado, pastel o pastelillos) que come su hijo/a?	1 = nunca 2= rara vez 3 = a veces 4 = la mayoría del tiempo 5 = siempre
30. ¿Qué tanto se fija en los bocadillos (papas fritas, Doritos, bocaditos de queso) que come su hijo/a?	1 = nunca 2= rara vez 3 = a veces 4 = la mayoría del tiempo 5 = siempre
31. ¿Qué tanto se fija en los alimentos ricos en grasa que come su hijo/a?	1 = nunca 2= rara vez 3 = a veces 4 = la mayoría del tiempo 5 = siempre

Child Feeding Questionnaire (CFQ): Subscales and corresponding items

1. Perceived responsibility for feeding: 1,2, and 3
2. Perceived parent weight: 4, 5, 6, and 7
3. Perceived child weight: 8, 9, 10, 11, 12, and 13
4. Concern about child's weight: 14, 15, and 16
5. Restriction: 17, 18, 19, 20, 21, 22, 23, and 24
6. Pressure to eat: 25, 26, 27, and 28
7. Monitoring of food intake 29, 30, and 31

Schematic drawings, English

THE RELATIONSHIP BETWEEN MATERNAL CHILD FEEDING PRACTICES AND CHILD'S BMI AND DIETARY RESTRAINT IN MEXICAN-AMERICAN FAMILIES OF GRAND RAPIDS

SCHEMATIC DRAWINGS

Instructions: Please circle the female figure AND the male figure that best represents the figure of an overweight child

Version &Date: 03 11/24/2010

Schematic drawings, Spanish

RELACIÓN ENTRE LAS PRÁCTICAS MATERNAS DE ALIMENTACIÓN INFANTIL Y EL IMC Y LAS RESTRICCIONES ALIMENTARIAS DEL NIÑO EN FAMILIAS MEXICANO-AMERICANAS DE GRAND RAPIDS.

DIBUJOS ESQUEMÁTICOS

Instrucciones: Favor encierre en círculo la figura femenina y la figura masculina que mejor representa la figura de un(a) niño(a) en sobrepeso.

Versión & Fecha: 03 24/11/2010

Three Factor Eating Questionnaire (TFEQ-R21), English

RELATIONSHIP BETWEEN MATERNAL CHILD FEEDING PRACTICES AND CHILD'S BMI AND DIETARY RESTRAINT IN MEXICAN-AMERICAN FAMILIES OF GRAND RAPIDS.

THREE-FACTOR EATING QUESTIONNAIRE-REVISED 21-ITEM

Date _____

Instructions: Please circle the number with the answer in the cell on the right that best describes the statement or question (about yourself) on the left.

Statement /Question (about yourself)	Answer (circle the number, only one)
1. When I smell a sizzling steak or juicy piece of meat, I find it very difficult to keep from eating, even if I have just finished a meal.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
2. I deliberately take small helpings as a means of controlling my weight.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
3. When I feel anxious, I find myself eating.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
4. Sometimes when I start eating, I just can't seem to stop.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
5. Being with someone who is eating often makes me hungry enough to eat also.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
6. When I feel blue, I often overeat.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
7. When I see a real delicacy, I often get so hungry that I have to eat right away.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
8. I get so hungry that my stomach often seems like a bottomless pit.	4= definitely true 3= mostly true

	2= mostly false 1= definitely false
9. I am always hungry so it is hard for me to stop eating before I finish the food on my plate.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
10. When I feel lonely, I console myself by eating.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
11. I consciously hold back at meals in order not to gain weight.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
12. I do not eat some foods because they make me fat.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
13. I am always hungry enough to eat at any time.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
14. How often do you feel hungry?	4= almost always 3= often between meals 2= sometimes between meals 1= only at meal times
15. How frequently do you avoid "stocking up" on tempting foods?	4= almost always 3= usually 2= seldom 1= almost never
16. How likely are you to consciously eat less than you want?	4= very likely 3= moderately likely 2= slightly likely 1= unlikely
17. Do you go on eating binges though you are not hungry?	4= at least once a week 3= sometimes 2= rarely 1= never
18. When I feel tense or wound up, I often feel I need to eat.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
19. When I feel depressed, I want to eat.	4= definitely true 3= mostly true

	2= mostly false 1= definitely false
20. If I feel nervous, I try to calm down by eating.	4= definitely true 3= mostly true 2= mostly false 1= definitely false
21. On a scale of 1 to 8, where 1 means no restraint in eating (eating whatever you want whenever you want it), and 8 means total restraint (constantly limiting food intake and never "giving in"), what number would you give yourself? Mark the number that best applies to you:	 1 2 3 4 5 6 7 8

Three Factor Eating Questionnaire (TFEQ-R21), Spanish

RELACIÓN ENTRE LAS PRÁCTICAS MATERNAS DE ALIMENTACIÓN INFANTIL Y EL IMC Y LAS RESTRICCIONES ALIMENTARIAS DEL NIÑO EN FAMILIAS MEXICANO-AMERICANAS DE GRAND RAPIDS.

CUESTIONARIO SOBRE ALIMENTACIÓN DE TRES FACTORES – 21 PUNTOS REVISADOS

Fecha _____

Instrucciones: Encierre en un círculo el número de la respuesta en la celda de la derecha que mejor describa la declaración o la pregunta (sobre usted) a la izquierda.

Declaración/pregunta (sobre usted)	Respuesta (encierre el número con un círculo, sólo uno)
1. Cuando huelo un bistec friéndose o un jugoso trozo de carne, es muy difícil para mí evitar comer, incluso si acabo de comer.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
2. Como porciones pequeñas deliberadamente como método para controlar mi peso.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
3. Cuando me siento ansioso/a, como.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
4. A veces cuando comienzo a comer, no puedo parar.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
5. Estar con alguien que está comiendo a menudo hace que me dé hambre suficiente como para también comer.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
6. Cuando estoy triste, a menudo como de más.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
7. Cuando veo un verdadero manjar, a menudo me da tanta hambre que debo comer de inmediato.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso

8. Me da tanta hambre que mi estómago a menudo parece un pozo sin fondo.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
9. Siempre tengo hambre, por lo que es difícil para mí dejar de comer antes de terminar la comida que tengo en el plato.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
10. Cuando me siento solo/a, me consuelo comiendo.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
11. Conscientemente me limito en las comidas para no aumentar de peso.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
12. No como algunas comidas porque me hacen engordar.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
13. Siempre tengo el hambre suficiente para comer en cualquier momento.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
14. ¿Qué tan a menudo siente hambre?	4= casi siempre 3= a menudo entre comidas 2= a veces entre comidas 1 = sólo a la hora de la comida
15. ¿Con qué frecuencia evita acumular comida tentadora?	4= casi siempre 3 = generalmente 2 = a veces 1 = casi nunca
16. ¿Qué tan probable es que considere comer menos de lo que quiere?	4 = muy probable 3 = moderadamente probable 2 = algo probable 1 = improbable
17. ¿A veces come en exceso aunque no tenga hambre?	4 = por lo menos una vez a la semana 3 = a veces 2= rara vez 1 = nunca
18. Cuando me siento tenso/a o agotado/a, a menudo siento que necesito comer.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso

19. Cuando me siento deprimido/a, quiero comer.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
20. Cuando me siento nervioso/a, intento calmarme comiendo.	4 = definitivamente verdadero 3 = mayormente verdadero 2 = mayormente falso 1 = definitivamente falso
21. En una escala del 1 al 8, en donde 1 significa sin limitaciones para comer (comer lo que quiere cuando quiere) y 8 significa una limitación total (limitar la ingesta de comida constantemente y nunca "ceder"), ¿qué número se asignaría? Encierre el número que mejor se aplique a usted:	1 2 3 4 5 6 7 8

Three Factor Eating Questionnaire Revised with 21 ITEMS (TFEQ-R21): Subscales and corresponding items

1. Cognitive restrain: 2, 11, 12, 15, 16, and 18
2. Uncontrolled eating: 1, 4, 5, 7, 8, 13, 14, and 17
3. Emotional eating: 3, 6, and 10

Definition of Terms

Body mass index (BMI) is an index of weight for height used to classify weight status, calculated by dividing the weight in kilograms by the square of the height in meters $(kg/m^2)^2$. The World Health Organization (WHO), as well as the National Institutes of Health (NIH) and the Centers for Disease Control (CDC) use it in the definition and classification of overweight. BMI is considered to provide a useful measure of obesity and associated risks.

Overweight is defined in general terms as "the condition of abnormal or excessive accumulation of body fat to the extend that health may be impaired" (World Heath Organization, 2000). ***Obesity*** is a more severe form of overweight.

The WHO classifies overweight and obesity based on BMI and its associations with mortality in adults as follows (Table 1): overweight is defined as a body mass index of 25 and over; within this group, those with a BMI of <26-29.99> are considered pre-obese, and those with a BMI of 30 and over are considered obese. Within the obese group, those with a BMI of <30-34.99> are considered obese class I (moderate); BMI of <35-39.99>, obese class II (severe); and BMI of 40 and over, obese class III (very severe). The values are age independent and the same for both genders (World Heath Organization, 2000).

In children and adolescents the classification of weight status is complicated by the continuous changes in body composition that take place at different times, rates and ages. Because of this, BMI values are best used when plotted in gender specific BMI-for-age growth charts, which gives a percentile ranking (relative position among same age/gender children).

[2] If measurements are made in pounds and inches the formula BMI={weight (lbs.)/[height (in)]^2} x 703

Table 1. Classification of adult weight status*

Weight status	BMI	Risk
Underweight	< 18.50	Low for co-morbidities, high risk other clinical problems.
Healthy weight	18.50-24.99	Average
Overweight	≥ 25.00	
Pre-obese	25.00-29.99	Increased
Obese class I	30.00-34.99	Moderate
Obese class II	35.00-39.99	Severe
Obese class III	≥ 40.00	Very severe

(*) According to the WHO

In children and adolescents the classification of weight status is complicated by the continuous changes in body composition that take place at different times, rates and ages. Because of this, BMI values are best used when plotted in gender specific BMI-for-age growth charts, which gives a percentile ranking (relative position among same age/gender children). The CDC categorizes children at or above the 95th percentile of gender-specific growth charts as overweight (Francis, Birch, 2005; Barlow & the Expert Committee, 2007). The American Academy of Pediatrics (AAP) defines overweight and obesity based on child's BMI as follows (Table 2): "a BMI at or above the 85th percentile and lower than the 95th percentile for children of the same age and sex" is considered overweight; obesity is defined as "a BMI at or above the 95th percentile for children of the same age and sex" (National Center for Chronic Disease Prevention and Health Promotion).

Table 2. Classification of child weight status**

Weight status	BMI
Underweight	<5th percentile
Healthy weight	5th -84.99th percentile
Overweight	85th -94.99th percentile
Obesity	≥95th percentile

(**) From AAP Report[38.5, 38.6]

Hispanic is defined by the Merriam Webster dictionary as "of/or relating to the people, speech, or culture of Spain or of Spain and Portugal (*Hispania*, Iberian Peninsula) and, therefore, includes people form Spain, Portugal and Latin America (Latinos) (Merriam Webster's Online). A similar definition can be found in Wikipedia.

In the U.S. census, the terms *Hispanic* and *Latino* are used interchangeably to denote the people with origins in countries formerly ruled by Spain with majority speaking Spanish. These include Mexico, most Central and South America and most of the Greater Antilles (Grieco, Cassidy, 2001).

The Office of Management and Budget (OMB) defines Hispanic or Latino as "a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race" (Grieco & Cassidy, 2001) excluding peoples of Brazilian and Portuguese

origin which are included, however, in definitions of *Hispanics* by the U.S. Department of Transportation and the Small Business Administration. The U.S. Equal Employment Opportunity Commission and the U.S. Department of labor-Office of Federal Compliance Programs, as defined by the OMB, encourage the self-identification, and is the one used in this document.

Hispanics can, therefore, be of any race and from many distinct National origins: Spain (Europe); Mexico (North America); Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica, Panama (Central America); Colombia, Venezuela, Ecuador, Peru, Bolivia, Chile, Argentina, Paraguay, Uruguay; Cuba, Dominican Republic, Puerto Rico (Caribbean Islands); Equatorial Guinea (Africa); Guam, Philippines, North Mariana Islands, Federal States of Micronesia and Palau (Asia/Oceania) (Grieco & Cassidy, 2001).

According to the 2000 U.S. Census data, 12.5 percent of the total U.S. population was of Hispanic origin; of these, Mexicans represented 7.3 percent; Puerto Ricans, 1.2 percent, and Cuban, 0.4 percent (with 3.6 percent categorized as "other Hispanics"); making the Mexican population the biggest group of Hispanic origin in the U.S. A similar distribution is found at the state and local levels.

Social class can be defined as a group of peoples within a society that possess similar socioeconomic and cultural circumstances (Encyclopaedia Britannica online). Many models of social classification have been proposed, in this study I used a model that groups social classes into five social strata determined by the *Hollingshead 2-factor index* (Haug, Sussman, 1971)
Four-year college graduates (BA, BS, BM)

Acculturation is defined as the cultural modification that an individual experiences in order to function and develop a common life with a host society, by adapting or borrowing elements from it (Merriam Webster's Online Dictionary). Over time, researchers have proposed different models of acculturation, moving from a linear (one-dimensional) model to a bilinear (multidimensional) model. The one-dimensional model assumes the acculturation experience to occur along a linear continuum from no acculturation to complete acculturation. The bi-dimensional model of acculturation proposes that acquiring or adhering to a new dominant culture is independent of maintaining the original culture (Cabassa, L., 2003; Lara, Gamboa, Iya, Morales, & Hayes, 2005; Wardle, Carnell, & Cooke, 2005).

Different acculturation measures attempt to quantify dimensions of culture, which may reflect cultural change. These include language proficiency and preference, media preferences, length of time in the host culture, behaviors and attitudes towards original and host societies (Wardle, Carnell, & Cooke, 2005).

Maternal feeding practices include the type and level of control that mothers exercise over child feeding. These comprise restriction of foods, pressure to eat, and monitoring intake (Spruijt-Metz, Li, Birch, Fisher, & Goran, 2002). Restriction translates the extent to which parents restrict their child's access to certain foods; pressure to eat refers to the parent's tendency to pressure their children to eat more and/or certain types of food, typically at meal times; and monitoring constitutes the extent to which parents oversee their child's eating.

Food-related behavior is defined as “the way in which individuals or groups of individuals, in response to social and cultural pressures, select, consume, and utilize portions of the available food supply” (Axelson, 2006). Issues that have been related to *eating behaviors* are restrained eating, uncontrolled eating and emotional eating. Restrained eating is defined as the conscious restriction of food intake in order to control body weight or promote weight loss; uncontrolled eating constitutes the tendency to eat more than usual due to a loss of control over food accompanied by subjective feelings of hunger; and emotional eating is considered as the inability to resist emotional cues (de Lauzon-Guillain, Romon, Deschamps, Lafay, Borys, Karlsson, … &Ville, 2004).