

PERCEPTIONS OF BODY SIZE AND DESIRE TO BE THINNER AMONG
HISPANICE MOTHER-DAUGHTER DYADS

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Dedication

My entire higher education career is dedicated to my family. My children Mac, Tanner and Riley for the time that I took away from them to attend classes and work on assignments. Without their encouragement and support, I would not only have started but would have never finished. To my husband Craig for never batting an eye over tuition fees or time away from the family. He has always supported me with my endeavors and encouraged me to go for it. For my parents Chester and Linda who believe that I still can do whatever I set my mind to. A day does not go by that they do not express how proud they are of me and how very much I am loved. Family supersedes everything and I am so fortunate to have a close and loving family that loves me unconditionally.

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Abstract

Background: Overweight/obesity is a major health problem among children and adolescents in the United States. Hispanic girls are more likely to be overweight compared to their Caucasian counterparts, with 26% Hispanic girls versus 14% Caucasian girls being classified as overweight (Centers for Disease Control and Prevention [CDCP], 2018). Among adolescents, an association between obesity and body size disturbances has been identified (Evans et al., 2013). Maternal attitudes about their own body size and that of their daughters may play an important role in the development of daughters' body image (Duchin et al., 2016). Yet, few studies have investigated the relationship between Hispanic mothers perceived-ideal body size including the moderation effect of maternal acculturation. **Purpose:** This study aimed to assess: 1) comparisons between Hispanic mothers' and daughters' perceived and ideal body size; 2) comparisons between Hispanic mothers' desire to be thinner for themselves, mothers' desire for their daughters to be thinner, and daughters' self-desire to be thinner; and 3) assess the moderation role of acculturation in predicting daughters' desire to be thinner. The following hypotheses were proposed: 1) Hispanic daughters will endorse smaller figure sizes as ideal compared to their mother's selection of ideal figures for their daughters; 2) Hispanic daughters' desire to be thinner will be positively associated with maternal desire to be thinner; 3) Hispanic daughters acculturation will moderate the association between maternal acculturation and daughters' desire to be thinner; 4) Hispanic maternal acculturation will be moderating the association between daughters' acculturation and daughter's desire to be thinner. **Method:** The sample consisted of archival data collected at baseline from different cohorts of Hispanic mother-daughter pairs (N=112 pairs) who participated in a healthy lifestyle summer intervention known as BOUNCE (Behavior Opportunities Uniting Nutrition, Counseling, and Exercise). Data collection occurred during the summers of 2009, 2010, 2012 and 2017. Analysis

consisted of a paired samples t-test to assess the relationship between mother's and daughter's ideal views on body size. A Pearson's correlation analysis was conducted to test whether or not there was a significant relationship between mothers and daughters desire to be thinner. Finally, a blocked logistic regression analysis with moderation was conducted to assess the relationship between acculturation and mother and daughters desire to be thinner. **Results:** A paired samples t-test revealed that daughters selected a significantly smaller ideal body size figure than their mothers selected for their daughters $t(111) = 3.81, p = .000$. No significant relationship between daughters desire to be thinner and mother's desire to be thinner for their daughters was found $r(111) = -0.047, p = .62$. Though daughter's acculturation was found not to be a significant predictor of daughter's desire to be thinner, $\beta = -.56, p = .39$, daughter's adiposity (BMI) was associated with the daughter's desire to be thinner, $\beta = .288, p = .001$. Mother's acculturation was not a significant predictor ($\beta = -.53, p = .251$) of the of the daughter's desire to be thinner. Similarly, a blocked logistic regression determined that mother's desire to be thinner was not significant $\beta = -.459, p = .296$ nor was mother's acculturation $\beta = .302, p = .649$ with daughter's desire to be thinner. **Conclusion:** Overall, findings from this study revealed that daughters selected a significantly smaller figure for themselves than their mother's selected for them. No relationship was observed between acculturation and desire to be thinner.

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Chapter 1 Introduction

Prevalence of Obesity in Children and Hispanic Children and Adolescents

Childhood obesity has emerged as one of the most serious health concerns in communities across the nation (Segal et al., 2016). Because obesity often begins in childhood and can be preventable, many governmental agencies have been charged to address this issue. This concern has resulted in regulations to address obesity trends by the US Department of Agriculture, the Centers for Disease Control and Prevention and numerous recommendations by the Institute of Medicine (Board & Committee on Evaluating Progress of Obesity Prevent Efforts, 2013). Despite these recommendations to address childhood obesity, this condition affects a large percentage of youth, with 18.5% or 13.7 million children and adolescents (ages 2-19 years old) or one in every six children being considered obese (CDCP, 2018; Segal et al., 2016). Overweight rates (Body Mass Index [BMI] 85th \geq 94th percentile) are also of great concern, with 32-38% of children or one out of three children (ages 2-19 years old) being classified as overweight (Skinner et al., 2018).

The odds of being obese or overweight increases as children age, with 13%-25% of 6 to 8-year old's being classified as obese compared to 16%-26% of children between the ages of 12 to 15 years. A similar increase in overweight trends are observed, with 27% -39% children between the ages of 6 to 8 years being found to be overweight, compared to 33-45% adolescents between the ages of 12 to 15 years (Skinner et al., 2018). Likewise, Kann et al., (2014) surveyed 13,583 teens in grades 9-12 as part of the

Youth Risk Behavior Surveillance conducted during 1999-2013 and found a significant linear increase in overweight (14.1%-16.6%) and obese (10.6%-13.7%) conditions.

A meta-analysis examining 15 cohorts measuring obesity in children, teens and young adults found a strong association between childhood obesity (body mass index $\geq 95^{\text{th}}$ percentile) and obesity in adults (age ≥ 20 years) (Simmonds et al., 2016). Children with obesity were five times more likely to become obese as an adult compared to normal weight children (Simmonds et al., 2016). Furthermore, adolescents with obesity were 80% more likely to become obese as adults, with 70% still obese after age 30 (Simmonds et al., 2016). These findings indicate the need to understand the factors that might influence the persistence of obesity from childhood to adolescence and into adulthood.

Though the prevalence of obesity is significant across children of all ethnic groups, minority children are at a greater risk to be obese. That is, 22% non-Hispanic Black children and 26% Hispanic children were reported to be obese compared with 14% non-Hispanic white children (CDCP, 2018; Ogden et al., 2014; Pan et al., 2012). Though both Hispanic and African American children have high rates of obesity (CDCP, 2018), Hispanic children had the highest rates of obesity with 26% in boys and 23% among girls (Robbins et al., 2015). Even after controlling for demographic factors, minority children were more likely to be overweight/obese than their non-Hispanic white counterparts. The Youth Risk Behavior Surveillance reported that minority girls were more likely to be both overweight (Black 23%, Hispanic 19%) and obese (Black 17%, Hispanic 11%), compared to non-Hispanic white girls (overweight 14%, obese 9%) (Kann et al., 2014). Ethnic differences in obesity among boys were similar to that of girls. That is, significant differences in obesity rates were observed between Hispanic boys (28%) and non-

Hispanic Black boys (19%) compared to non-Hispanic white boys (14.6%) (CDCP, 2018). In sum, research indicates that minority children, particularly, minority girls might be at an increased risk for overweight/obesity.

Obesity Health-Related Consequences in Children

Childhood obesity is associated with numerous health risks and comorbidities including metabolic syndrome, elevated blood pressure, nutritional deficiencies, type 2 diabetes, adult obesity, premature mortality, and behavioral/psychological problem (CDCP, 2018; Kelly et al., 2013; Skinner et al., 2015). Metabolic syndrome is defined as a cluster of conditions that increases an individual's risk for heart disease, stroke and diabetes. A large three-year longitudinal study examining over 100,000 subjects 3 to 17 years of age found that children and adolescents who were obese were twice as likely to develop hypertension as their healthy weight counterparts (Parker et al., 2016). Obesity is also linked to prediabetes, type 2 diabetes, and cancer. Generally linked to caloric and fat intake, specific nutritional deficiencies such as increased sugar intake associated with soft drinks, increased portion sizes, and excessive in snacking contribute to obesity (Sahoo et al., 2015). High levels of sugar intake result in a glucose intolerance and insulin resistant state for many adolescents leading to prediabetes or eventual diagnosis of type 2 diabetes (Xu & Xue, 2016) and an increased risk for certain cancers (Gallagher & LeRoith, 2015). Obesity also contributes to early mortality. A systematic review of the literature on obesity and mortality has shown a significantly increased risk of premature mortality among children/adolescents with overweight or obesity (Reilly & Kelly, 2011). In addition, the National Association of School Nurses (NASN) contends that children and adolescents that are obese tend to have increased behavioral problems including more

school absenteeism resulting in poor academic performance than their non-overweight counterparts (National Association of Nurses [NSN], 2013; Segal et al., 2017).

Psychological consequences experienced as a result of childhood obesity include low self-esteem, risk of depression, anxiety, poor body image, social isolation and an increased risk to commit suicide (Graf & Schweiger, 2016). Furthermore, overweight and obese adolescents are more likely to be a victim of bullying and teasing compared to their normal weight peers (Fox & Farrow, 2009; Puhl et al., 2011; Puhl, et al., 2013). In fact, weight-related teasing (including verbal comments about physical body size) has been identified as the most common form of teasing in schools (Puhl et al., 2011). One study on weight-based victimization (N=1,555) found that 84% of high school students reported witnessing overweight students being teased and 65%-77% of the students reported that overweight and obese peers were being avoided, ignored, and excluded from social activities (Puhl et al., 2011). Another study examined 130 adolescents (12-20 years of age) and found that 19% reported never being teased about their weight, however, 33% reported weight teasing by either peers and family and 48% reported weight teasing by both peers and family (Libbey et al., 2008). Negative feelings associated to one's weight often leads to social isolation. Children and adolescents with obesity are more likely to not leave the home, to engage in sedentary activities like video gaming and television, to binge eat and to overeat high caloric foods (Graf & Schweiger, 2016). Such behaviors only increase the risk of sustaining and rising obesity prevalence. These negative consequences of childhood obesity often transfer into adulthood with increased mortality in adults with a childhood history of obesity (Balistreri & Van Hook, 2011; Raghuveer, 2010). In sum, overweight and obesity on children not only impacts

the physical and mental health of a child and adolescent, but families, communities and society at large (NASN, 2013).

Obesity and Body Image

Body image is defined as one's personal opinion or belief regarding their physical attributes and attractiveness (Alexander et al., 2014). A negative self-evaluation of body size is typically experienced as a result of internalizing a thin body size as an ideal and the failure to achieve desired thin body size. This negative self-evaluation of body size starts early in life with children (ages 3-5) attributing negative characteristics to larger figures compared to smaller figures (Spiel et al., 2012). In particular, among girls (ages 3-5, 51% Caucasian, 35% Hispanic and 14% other), negative adjectives were associated with heavier figures and positive adjectives with thinner figures (Harriger et al., 2010). Body size dissatisfaction continues to be an issue as children age with 32% of reporting children ages 8 to 11 (N=424, 46% Hispanic, 40% white) being dissatisfied with their body size (Montoya et al., 2016). Obesity is also linked to increased body dissatisfaction. A 10-year longitudinal study that examined 1,902 male and female adolescents (49% white, 19% African American and 6% Hispanic) through young adulthood revealed that as participants aged from middle school to high school and into young adulthood, their body dissatisfaction increased as their body mass index (BMI) increased (Bucchianeri et al., 2013).

Gender differences in body dissatisfaction are also well-documented.

Approximately, 50% of girls reported weight concerns and body dissatisfaction by childhood and early adolescence (Bucchianeri et al., 2013, Friend et al., 2012; Lam & McHale, 2012). For instance, a study that examined 127 Caucasian girls ages 7-11 found

that 65% of participants selected at least one size smaller than their perceived body size on the body dissatisfaction scale (Evans et al., 2013). Differences between genders can also be seen during teen years and young adulthood (Mäkinen et al., 2012). Body size dissatisfaction rates are higher among adolescent girls, with 80.8% reported being dissatisfied with their body size compared to 54.8% of adolescent boys in a white sample (Lawler & Nixon, 2011). Similar results were found in other studies (Almeida et al., 2012; Petroski et al., 2012). The Youth Risk Behavior Surveillance reported that 63% high school girls (63% white, 55% Black and 67% Hispanic) reported being dissatisfied with their body size compared to 33% (31% white, 26% Black and 42% Hispanic) of their male counterparts (Kann et al., 2014). Ceballos and colleagues (2010) compared Hispanic/Latino adolescents to European American adolescents (N=416) ages 12-15 and reported that females exhibited greater body dissatisfaction than males. Furthermore, those exhibiting an unhealthy BMI reported greater body dissatisfaction compared to individuals with a healthy BMI.

Studies comparing body size dissatisfaction prevalence between minority youth and their white counterparts revealed conflicting results. For instance, some studies have shown Hispanic youth reporting the highest level of body size dissatisfaction (George & Franko, 2010). In contrast, other studies observed Caucasian/European American females reporting the highest body dissatisfaction scores, followed by Hispanic/Latino females, European American males, and Hispanic/Latino males (Ceballos & Czyzewska, 2010; Kimber et al., 2014; Xanthopoulos et al., 2011). Most studies suggest that African American children and adolescents report significantly less body size dissatisfaction than their white or Hispanic counterparts (Kimber et al., 2014; Xanthopoulos et al., 2011).

Research assessing body size dissatisfaction in adulthood indicate that as individual's age and BMI increases, both men and women experience greater body size dissatisfaction (Mintem et al., 2015) and engage in unhealthy weight control behaviors (Runfola, et al., 2013; Slevic & Tiggemann, 2011). One longitudinal study that examined BMI z-scores on individuals between 4 and 23 years of age found that individuals who exhibited increased BMI z-scores reported a higher level of body dissatisfaction by age 23 (Mintem et al., 2015). Another study examining 4,100 subjects reported that 64% of men and women between the ages of 22 and 23 years exhibited body size dissatisfaction (Mintem et al., 2015). A large study that examined 966 males and 1,031 female adults found increasing levels of body dissatisfaction associated with poor mental and physical health (including an increased BMI) (Griffiths et al, 2016).

As with children and adolescents, female adults regardless of their ethnicity are more likely to report body size dissatisfaction than males (Bardone-Cone et al., 2008; Lawler & Nixon, 2011; Mäkinen et al., 2012). A large study examining 5,868 women between the ages of 25-89 found that 91% of the women interviewed preferred a body size thinner than their current size (Runfola et al., 2013). Despite a consensus that women experience more body disturbance than men, some studies have reported that males' body size dissatisfaction is of growing concern. A study examining 405 college-aged men found that 80% reported body dissatisfaction (Dakanalis et al., 2015). Comparatively in a study that surveyed 2,099 participants (966 males and 1,031 females) found that 70.6% of the full sample reported some level of body size dissatisfaction (60.4% males, 80% females) (Griffiths et al., 2016). Taken together, these findings suggest that body size dissatisfaction is a major condition affecting females and males, but predominately

females. Gender differences in body size dissatisfaction are attributed to dissimilarities in perceived ideal body size between females and males. Females are more likely to desire a thin body size as an ideal body size; whereas males desire a more muscular physique as an ideal body size (Dakanalis et al., 2015).

The beliefs about ideal body size are often shaped by mainstream society standards, family attitudes, peers, and individual experiences (Alexander et al., 2014). Mainstream media tends to promote images of females who are either severely underweight or images that have been digitally altered to portray ultra-thin females (Alexander et al., 2014). These media images send the message that a female's body size satisfaction level depends on her attainment of a thin body size (Alexander et al., 2014). At the same time obesity rates are continuing to increase among US youth and adult populations. These mixed messages can lead to increased body size dissatisfaction, particularly, among girls and females with obesity. Several studies have documented that girls and women with obesity are more likely to be dissatisfied with their body size than their non-overweight counterparts (Costa et al., 2016; Weinberger et al., 2016; Xanthopoulos et al., 2011).

The study of factors associated with body size dissatisfaction among girls and women (particularly those with obesity) is relevant given that greater body size dissatisfaction leads to the engagement of unhealthy control behaviors to modify weight status. This, in turn, leads to overeating and persistent obesity (Ferreiro et al., 2011). Furthermore, body size dissatisfaction increases the risk for eating disorders, depression and low self-esteem (Alexander et al., 2014; Ferreiro et al., 2011).

Body Size Dissatisfaction among Hispanic Girls and Females

Hispanic girls are not immune to perceived body size dissatisfaction (Romo et al., 2016). With pressure to achieve the American societal beauty value on being thin, and failure to achieve this ideal thin body size, Hispanic girls may feel dissatisfied with their body size (Ayala et al., 2007; Javier et al., 2016; Olvera et al., 2005; Romo et al., 2016). Some studies have reported greater prevalence of body dissatisfaction in Hispanic girls compared to other ethnically diverse girls. The Youth Risk Behavior Surveillance (n=13,583) found that among adolescent girls in grades 9-12, 40.3% Hispanic adolescent girls described themselves as being overweight and wishing to be thinner more than their Black (33.4%) or Caucasian (35.8%) counterparts (Kann et al., 2014). Similar trends were reported when adolescent females were asked if they were actively trying to lose weight, with 66.9% Hispanic, 54.9% Black, and 63.1% Caucasian reporting trying to do so (Kann et al., 2014). Other studies have shown that Hispanic girls (ages 14-16 and 8-12) preferred thin figures as their body size ideals (Romo et al., 2016; Olvera et al., 2005).

Hispanic girls are also often raised with cultural Hispanic norms about ideal body size which view heavy and curvy physiques as not only acceptable, but often desired (Chaparro et al., 2011; Rosas et al., 2010). Historically, these cultural norms have been linked to protecting Hispanic females against internalization of an idealized thin body size (Chaparro et al., 2011; Rosas et al., 2010). One study examining young girls ages 14 to 16 reported that Hispanics preferred or even celebrated individuals who were slightly overweight or deemed “plump” (Romo et al., 2016). Such acceptance of large body size often reduces the social pressure to lose weight to achieve an idealized thin figure (Romo et al., 2016). Cultural norms differing from mainstream societal norms where ideal body

size is concerned can lead to body size dissatisfaction among Hispanic adolescent girls (Olvera et al., 2016). Conversely, with obesity affecting more Hispanic children than their Caucasian counterparts, understanding the ramifications of how obesity influences body image in this population is important. Another study found that Hispanic women struggle with appreciating a curvier body type while simultaneously striving for thinness (Viladrich et al., 2009).

Like Hispanic girls, Hispanic women struggle with body size dissatisfaction. One study focusing on Hispanic and African American women (n=410) found that the majority of Hispanic women either wanted to be a normal weight or smaller than their current size or shape. In contrast, African American women desired a larger body size regardless of their obesity (Mama et al., 2011). Furthermore, most Hispanic women misperceived themselves to be a larger size compared to African American women who mostly misperceived themselves to be smaller (Mama et al., 2011). Regardless of their body size perception, both groups were highly dissatisfied with their body size with 70% of the Hispanic women and 48% of the African American women desiring to be smaller regardless of their actual BMI (Mama et al., 2011).

Socio-Cultural Framework to Study Factors Influencing Body Dissatisfaction among Youth

A sociocultural model helps explain how society and more specifically culture contributes to an individual's development of body size. Stice and Agras (1998) contend that the sociocultural model explains that body size dissatisfaction is the result of the internalization of a thin ideal body size. Failure to achieve this thin ideal body size may result in body size dissatisfaction. Tiggemann (2011) further explains that within each

culture, there are societal ideals of body size. These ideals are expressed through sociocultural means that are in turn internalized by individuals who are either satisfied or dissatisfied with their body image (Tiggemann, 2011). In many instances, societal norms deviate greatly from cultural norms of ethnically diverse groups leading to a conflict of achievable ideal body size. An example of unrealistic social norms is the use of models who have an average BMI of 16.3 to represent an ideal body size (Tiggemann, 2011). In contrast the average female has a BMI of 28.7 (Flegal et al., 2012). These unrealistic body size standards may lead to an internal depiction of ideal thinness that can result in increased body size dissatisfaction and engagement in poor health choices such as disordered eating behaviors (Ribeiro-Silva et al., 2018). Interestingly enough, even when warning labels are used to bring awareness to digital manipulation of photos to make models appear thinner than they really are, women still reported a higher level of body dissatisfaction after viewing the altered photos (Tiggemann et al., 2013). Body disturbances development is not only influenced by mainstream societal norms, but also by family and peer beliefs about body size (Franko et al., 2012).

Maternal Influences on Hispanic Girls' Views of Body Size

Research suggests that Hispanic culture views curvier female figures more attractive than thin physiques (Viladrich et al., 2009). As a result, some researchers contend that Latinas are less likely to desire to achieve the thin standards prevalent in the U.S. society (Romo et al., 2015). One qualitative study of 27 Mexican American adolescent girls between the ages of 14 and 16 reported that most of them (24 out of 27) believed that Latino women preferred a curvy shape over a thin shape (Romo et al., 2015). Conversely, other studies indicate that Latina adolescents report that they are just

as critical of their body size and exhibit the same level of body dissatisfaction as Caucasian girls (Nishina et al., 2006).

Culture and family seem to shape a young girl's perceptions of their ideal and perceived body size. Within the sociocultural model, a daughter's ideal and perceived body size is greatly influenced by her mother (Mirza et al., 2011; Olvera et al., 2005). A mother's ideal body size for not only herself but for her daughter may place the child at risk for experiencing body size dissatisfaction.

Research has investigated how minority mothers' view of ideal body size for her child may be influenced by their child's weight. Killon and colleagues (2006) reported that two-thirds of minority mothers with overweight preschool children either wanted their child to stay their current size or wished that they were heavier. In another study using four focus groups involving 41 Hispanic mothers of elementary aged children revealed that mothers considered "chubby" as healthy and "skinny" children as malnourished (Martinez et al., 2017). However, these studies included young children. Regarding older children, Ceballos and Czyzewska (2010) examined 416 adolescents and found that the heavier the adolescents (ages 12-15 years) were, the more likely their Hispanic parent wanted them to lose weight.

In other studies, Hispanic mothers were unable to correctly depict their child's weight status. One study that examined 3,000 children and their parent's perception of weight status found that nearly one out of three parents underestimated the weight status of their child (Black et al., 2015). Rosas and colleagues (2010) found that the Hispanic mothers from California (CA) wanted their 5-year old children to be smaller and the Mexican (MX) mothers wanted their children to be larger. Despite similar overweight

status of mothers from both CA and MX (38% and 34%), children from CA were significantly more likely to be overweight (15% vs. 8%) or obese (42% vs. 7%) compared to children from MX. When asked why MX mothers preferred a larger ideal body size for their child, they reported that the figure looked healthier (Rosas et. al., 2010). Less acculturated Mexican American parents perceive heavier children to be healthier (Guendelman et al., 2010). Unfortunately, this maternal misperception of child weight status is often transmitted to their children resulting in the child's inability to accurately reflect their own weight. Lepper and colleagues (2017) assessed children's self-perception of approximately 499 overweight/obese children aged 9 to 10 years old and found that 83% of them perceived themselves to be less heavy than they were. Still, 79.2% of these children had a desire to be thinner (Lepper et al., 2017). Similarly, among mothers with obesity (N=253, 208 self-classified as Hispanic), 71.4% selected merely normal-weight or overweight silhouettes to represent their current body size (Paul et al., 2015). In selecting the represented silhouette for their teen (ages 15-17), 80% of these mothers with an overweight teen and 23.1% with an obese teen selected the normal silhouette when describing their teen's current weight (Paul et al., 2015). This misconception about the teen's weight might also serve as a protective factor against body size dissatisfaction in Hispanic youth.

A few studies have examined how parents talk with their child regarding his/her weight can directly influence their child's body size dissatisfaction and engagement in poor weight control strategies (Ling, 2018). A meta-analysis review found that parents' encouragement for their child to lose weight and criticism over their child's weight was directly associated with the child's body dissatisfaction and the adoption of poor dieting

habits resulting in weight gain (Ling, 2018). Parental conversations with their child around weight, body size and dieting has been linked to weight-related problems and depression among adolescent girls (Bauer et al., 2013; Harriger, & Thompson, 2012; Perloff, 2014; Rohde et al., 2015). A study examining 218 mother-daughter dyads (24% African-American, 30% white, 10% Hispanic and 25% Asian) indicated that only 31% of mothers reported that they or their significant other never comment on their daughter's weight compared to the 69% who rarely, sometimes or very often comment about their daughters weight (18% overweight and 32% obese) (Bauer et al., 2013). The study also examined the relationship between mother's frequency of talk about her own weight, shape and size and daughter's feeling of self-worth. Findings from this study suggest that exposure to such talk lowered the daughter's feeling of self-worth (Voelker et al., 2015). Romo and colleagues (2016) studied Latina mothers and daughters and found that when the mother felt good about her body, she was more likely to give body esteem-enhancing messages to her daughter. Conversely, mothers who felt bad about their bodies were more likely to be critical of their daughter's body size (Romo et al., 2016).

A systematic review of studies regarding parental assessment on body image disturbances confirm that adolescents tend to see parents' as a role model regarding eating and body shape (Rodgers & Chabrol, 2009). Helfert and Warshburger (2011) examined 236 girls and 193 boys (ages 11-16) and found that parental encouragement to control weight and shape was strongly correlated with body size concerns for both genders. Similarly, Neumark-Sztainer and colleagues (2010) studied 356 girls (mean age 15.8) with 18% overweight and 28% obese who reported that half of their mothers encouraged them to diet and two-thirds reported that their mother actively dieted. The

mother's dieting behavior and talk of her own weight issues was positively associated with the daughter's use of unhealthy and extreme weight control behaviors. In addition, mother's encouragement for her daughter to diet was also positively associated with the daughter's use of unhealthy and extreme weight control behaviors and binge eating (Neumark-Sztainer et al., 2010). Children of overweight parents often experience accelerated weight gain in obesogenic household (Davison & Birch, 2002). Other factors such as weight-related teasing by family members is also associated with problematic weight outcomes like increased BMI, greater body dissatisfaction, engagement in extreme weight control measures and binge eating among 356 adolescent girls from 12 predominately minority serving high schools (Neumark-Sztainer et al., 2010). In sum, these studies provide evidence regarding the major role that mothers play in the development of children and adolescents' body size disturbances.

The Role of Acculturation on Obesity and Body Dissatisfaction

Hispanics are the largest minority group in the United States (US) comprising 17.8% (57,470 million) of the population (United States Census Bureau, 2017). In addition, Hispanics have the highest immigration rate to the US, making up roughly 44% of all US immigrants (Migration Policy Institute, 2019). Upon migrating to the US, there is a cultural transition phase to adapt to the mainstream society and this adaptation varies from person to person. The term to describe this cultural process is called acculturation, which is often defined as an immigrant's adoption process of the host countries beliefs, values, attitudes and customs (Barry, 2001; Echeverria et al., 2013).

Acculturation has been associated with obesity. A study examining 16,415 self-identified Hispanic individuals (9,747 females) reported that those participants who

migrated to the US prior to the age of 14 were more likely to have moderate (OR=1.5; 95% CI 1.1, 1.9) and extreme obesity (OR=2.2; 95% CI 1.4, 3.5) than individuals who migrated at an older age (Isasi et al., 2015). A systemic review of nine studies of obesity prevalence among Hispanic adults revealed that six studies reported a positive relationship between higher acculturation and BMI for both men and women while three of the studies found significance between higher acculturation and lower BMI for women (Delavari et al., 2013). Another study reported that less acculturated Hispanic adults (recently immigrated) were less likely to be obese than more acculturated Hispanics (Quandt et al., 2014). Other studies have reported that children of immigrants are more susceptible to the risk of overweight than native children (Balistreri & Van Hook, 2011; Hernández -Valero et al., 2012). A large study that examined 1,717 adolescents (age 5-18) that were born and raised in Mexico, born in Mexico but immigrated to the US or Mexican-Americans who were born and raised in the US found that 50% of the Mexican-Americans and 43.2% of the Mexican immigrants ranked in the 85th BMI percentile compared to only 29.3% of their Mexican counterparts (Hernández -Valero et al., 2012). The same study also revealed that 48.8% of Mexican Americans and 43.2% of Mexican immigrant children/adolescents who lived in the US were classified as either overweight or obese compared to the National US average of 34% (Hernández -Valero et al., 2012). Overall, many of the studies indicate that acculturation is directly and positively linked to obesity.

Acculturation also seems to moderate body image disturbances. Menon and Harter (2012) suggested that body image disturbances among Hispanics were associated with the pressure to acculturate to a thinner US body ideal. They also concluded that

social support by family and peers was a protective factor against body image disturbances. Schooler and Daniels (2014) found that a strong ethnic identity among Latina adolescents helped to buffer the negative effects of white media images. This protection is thought to diminish as an individual and her social support becomes more acculturated (Stokes et al., 2016). Schooler and Daniels (2014) also found that young women who self-identified as Latinas were more likely to describe their body size in positive terms compared to Latina women who did not mention their ethnic identity. They contended that in addition to using ethnicity as a buffer on body image, these women were more likely to compare themselves to individuals more like themselves.

Hispanic children and adolescents, in particular girls, are often exposed to two contrasting views of ideal body. Hispanic girls may be influenced by both their traditional Hispanic curvier figure and American cultural views (thinner physique) of an idealized body size (Kumanyika, 2008; Mirza et al., 2011; Olvera et al., 2005; Power et al., 2015, Romo et al., 2015). Numerous studies contend that more acculturated Hispanic girls often exhibit greater body dissatisfaction than their less acculturated counterparts (Stokes et al., 2016). Those who are less acculturated may experience acculturation stress as they begin to learn social norms of the new society and realize how different they are from their own (Kwan et al., 2018). Similar stress is felt by more acculturated girls as they internalize unrealistic thin ideals making them feel more dissatisfied about their own body (Opara & Santos, 2019). Olvera and colleagues (2005) examined ideal body size perceptions in Hispanic girls and boys (ages 6-12) and found that compared to less acculturated counterparts, more acculturated Hispanic girls viewed thinner physiques

as more attractive. Among Hispanic boys no moderation effects of acculturation was found in their selection of figures as attractive as a function of body size.

Acculturation is also directly linked to body size dissatisfaction among Hispanic women. Feelings of body dissatisfaction, common among US women, are also reported among Hispanic women (Poloskov & Tracey, 2013). Similar to their white counterparts, Hispanic women may feel the mainstream society pressure of being thin despite their traditional cultural expectations of curvier ideal body size. Through media, friends, family and community interactions, Hispanic women are exposed to American social norms of thin body size as an ideal. Poloskov and Tracey (2013) examined body image disturbances among 211 Mexican and Mexican American women. This study revealed that the more the Mexican American females internalized US thin body size standards for female beauty, the more likely they would be dissatisfied with their own body size. Another study found that among self-reported highly acculturated Hispanic females, 92% wanted to lose weight and 62% had attempted to lose weight in the past 12 months (Ahluwali et al., 2007). Examining the relationship between body image, eating disorder and acculturation among white, Latina and Black college women (N=276), researchers found that the discrepancy between perceived body shape and perceived body shape ideal for Latina's was predictive of body dissatisfaction (Gordon et al., 2010). White women and Latina women selected slimmer body shape ideals for their ethnic group than Black women (Gordon et al., 2010). Warren et al., (2010) reported that Mexican American women who were more acculturated to the American culture were more likely to consider a thin physique as ideal. In sum, these studies indicate that there is a strong link between acculturation and body dissatisfaction among Hispanic women with more acculturated

Hispanic women endorsing thinner figures compared to their less acculturated counterparts.

Though several studies have shown a link between Hispanic mother and daughter's attitudes toward their body size dissatisfaction level, limited research has been conducted examining the moderating effect of maternal acculturation and daughter's body size dissatisfaction (Mirza et al., 2011; Olvera et al. 2005). Warren and colleagues (2010) found that Mexican American women's acculturation served as a moderator between awareness and the desire for a thin physique. Conversely, Mirza and colleagues' study (2011) reported a negative association between maternal acculturation and daughters' body size dissatisfaction in a sample of Hispanic girls and boys (ages 7-15 years) with obesity. They found a positive association between maternal body size dissatisfaction and their daughters' body size dissatisfaction. That is, mothers who were dissatisfied with their own body size were more likely to have daughters who were dissatisfied with their body size (Mirza et al., 2011). Finally, a study examining surveys conducted by 201 individuals (65% female, 75% Hispanic with a mean age of 16.5 years) found that participants with immigrant mothers versus US-born mothers were significantly more likely to report being very dissatisfied with their bodies (Su & Soren, 2015). This same group reported that their immigrant mothers were more likely to encourage these Hispanic teens to diet than those with US born mothers (54% vs 31%, $p=0.01$) (Su & Soren, 2015). Additional research needs to be conducted concerning maternal acculturation and links to early adolescent daughter's perceived body size and body dissatisfaction to help understand the role of family on body size disturbances.

Gaps in Research

Though previous research highlights the maternal influence on adolescent girls' body image for the general population, there is limited research on this area among Hispanic mother-adolescent daughter dyads. In particular, there is a dearth of research on examining maternal and daughters' demographic, cultural, and ideal/perceived body size variables associated with daughters' desire to be thinner.

Purpose of the Study

The current study will expand our understanding about the role of maternal characteristics (e.g., ideal body for herself and daughter, acculturation level) on daughters' ideal body size and desire to be thinner in a sample of Hispanic adolescent girls with obesity by: a) assessing maternal views of perceived and ideal body size, healthiest body size and desire for daughter to be thinner; b) assessing maternal and daughters' views of perceived and ideal body size, and desire to be thinner for themselves; c) comparing maternal and daughters' perceived and ideal body size, desire to be thinner, and d) the role of maternal and daughters' acculturation on ideal body size or desire to be thinner. Research hypotheses for the current study are as follows:

- 1) Hispanic daughters will endorse smaller figure sizes as ideal compared to their mothers' selection of ideal figures for their daughters;
- 2) Hispanic daughters' desire to be thinner will be positively associated with maternal desire to be thinner;
- 3) Hispanic daughters' acculturation will be moderating the association between maternal acculturation and daughters' desire to be thinner;
- 4) Hispanic maternal acculturation will be moderating the association between maternal and daughters' desire to be thinner.

Chapter 2 Method

Participants

The sample consisted of archival data collected at baseline from different cohorts of Hispanic mother-daughter pairs (N=112 pairs) who participated in a healthy lifestyle summer intervention known as BOUNCE (Behavior Opportunities Uniting Nutrition, Counseling, and Exercise). Mother-daughter pairs were eligible to participate in this study if they met the following criteria: 1) mother and daughter were of Hispanic or African American descent (for this study only Hispanic mother-daughter pairs' data were analyzed); 2) mother and daughter were free of physical conditions that could restrict their physical activity level; 3) daughter was between the ages of 9 and 14 years; and 4) daughter must be overweight (BMI percentile between 85th to 94th) or obese (BMI percentile $\geq 95^{\text{th}}$). Mother weight status could be normal weight (BMI ≤ 24.9) or overweight (BMI $\geq 25-29.9$) or obese (BMI ≥ 30); 5) agreement that mother and daughter will participate during the entire length of program; and 6) that mother and daughter reside in same household. Participating Hispanic mother– daughter dyads were recruited through referrals from social services agencies, clinics, and school nurses. The university's institutional review board approved this study's research protocol.

Procedures

Data collection. Data collection occurred during the summers of 2009, 2010, 2012 and 2017. Prior to the data collection, mother-daughter dyads attended a 30-minute orientation in a university classroom where they received detailed information about the study requirements, timelines, pre-and post-assessments and their expected involvement. In addition, during this orientation, mothers and daughters had opportunity to ask

questions and seek clarification of study expectations. If mothers and daughters met eligibility criteria and agreed to participate in the study, they signed consent and assent forms respectively.

At the end of the orientation, consented mothers and daughters participated in a 90-minute measurement session. Orientation and measurement sessions took place in a university classroom setting and gymnasium. During the first part of the measurement session, groups of mother-daughter pairs received a clasped envelope containing surveys (e.g., demographic, acculturation, and body size perception) in their preferred language. They were instructed to complete their respective surveys independently and to direct any question they might have to one out of three bilingual research assistants available in the room. As participants completed surveys, they were instructed to go to a gymnasium where stations staffed by research assistants measured independently mothers' and daughters' body height, body weight, abdominal adiposity (e.g., waist circumference) and hip circumference (mother only).

Measures

Demographics (mother and daughter). Both mother and daughter independently completed a short demographic survey consisting of questions regarding age, date and place of birth, educational status, and self-described ethnicity. For mothers, additional questions regarding income, family size, and occupation were asked.

Bidimensional Acculturation Scale (BAS (mother)). The BAS was developed by Marin and Gamba (1996) and assesses adult language use (i.e., "How often do you speak or think in English or Spanish?"), electronic media usage (i.e., "How often do you watch television or listen to music in English or Spanish?"), and linguistic proficiency (i.e., How

well do you speak, read, or write English or Spanish?). In adherence to the Marin and Gamba (1996) scoring instructions, each mother was assigned two scores: a) the average of 12 items representing the Hispanic domain, and b) the average of 12 items comprising the more acculturated domain. Items asked were rated on a four-point Likert-scale ranging from 1 (almost never) to 4 (almost always). Each cultural domain was comprised of a possible average score ranging from 1 to 4. An average cut off score of 2.5 was used to indicate whether the participant was either a low or high level of acculturation. In the current study, the reliability was excellent for both the high (Cronbach's $\alpha = 0.96$) and low (Cronbach's $\alpha = 0.92$) acculturation subscales.

Short Acculturation Scale for Hispanic Youth (SASH-Y) (daughter). The SASH-Y was developed by Barona and Miller's (1994) and consisted of 12 items that assessed: 1) language use/proficiency (9 items; e.g., "What language do your parents speak to you in?"), and 2) social relations (3 items; e.g., "You like going to parties at which there are..."). Daughters responded to the language items on a 5-point Likert type scale ranging from 1 (Only Spanish) to 5 (Only English); the social items were also scored on a 5-point Likert type scale ranging from 1 (All Hispanic) to 5 (All Non-Hispanic). Summary scores were calculated by summing all 12 items; participants were either categorized as Americanized orientation/high acculturation (sum score ≥ 30) or Hispanic orientation/low acculturation (sum score < 30). The internal consistency of this scale was good (Cronbach's $\alpha = .83$).

Body Figure Rating Scale– Adult Version. The Figure Rating Scale developed by Collins (1991) was used to assess maternal perceived body size, ideal body size, and desire to be thinner for herself and daughter. This scale utilizes seven gender-specific

adult and girl (child) figure drawings, including figures ranging from very thin to obese. Mothers were asked to answer a series of six questions corresponding to a set of child figures and a set of adult figures. The questions corresponding to the girl figures included: (1) “Which figure looks the most like your daughter?”; (2) “Which figure shows the way you would like your daughter to look?”; (3) “Which figure represents the healthiest weight for your daughter?”; and (4) “What figure represents the most realistic weight your daughter will be when she grows up?”. Questions about the adult female figures included: (5) “Which figure looks most like you?”, and (6) “Which figure represents the way you would like to look?” In the current study, the Figure Rating Scale was utilized to assess maternal perceived body size (for both herself [Question 5] and for her daughter [Question 1]). This instrument also assessed maternal ideal body size (for both herself [Question 6] and for her daughter [Question 2]), perceived healthiest weight for daughter [Question 3], and maternal view of realistic body size for daughter when she grows up [Question 4]. In addition, maternal desire to be thinner for herself and for daughter was assessed. Maternal desire to be thinner was estimated by subtracting her perceived body size [Question 5] from her ideal body size [Question 6]; higher positive scores indicate a greater desire to be thinner. Maternal desire for daughter to be thinner was estimated by subtracting maternal perceived body size for her daughter [Question 1] from maternal ideal body size for her daughter [Question 2]. Higher scores were indicative of a greater maternal desire for daughters to be thinner.

Body Figure Rating Scale- Child Version. Daughters answered 3 questions corresponding to both the adult and child figures from the Body Figure Rating Scale developed by Collins (1991). Daughters were presented with seven girl figure drawings

followed by seven adult figure drawing and asked: Question 1 “Which picture looks the most like you?” which assessed daughter’s perceived body size. Question 2: “Which picture shows the way you would like to look?” which assessed daughter’s ideal body size. In addition, daughters were asked to answer the following questions regarding the adult figures: Question 3: “Which picture shows the way you want to look when you grow up?” Daughters’ desire to be thinner was estimated by subtracting daughters’ perceived body size [Question 1] from their selected ideal body size [Question 2]. Higher positive scores were indicative of a greater desire to be thinner.

Adiposity and obesity status (mother and daughter). Mothers’ and daughters’ abdominal fat was assessed by utilizing the waist circumference (WC) following the guidelines from the World Health Organization (World Health Organization, 2015). In addition, maternal waist to hip ratio (WHR) was calculated by dividing the mothers’ WC (in cm) into the HC (in cm), waist to hip ratio (WHR). The World Health Organization (WHO) defines a preferred waist to hip ratio to be below 0.85. Trained bilingual research assistants measured each mother’s and daughter’s body weight (in kilograms) and height (in centimeters) while wearing clothes using a scale (Tanita TBF 310) and a stadiometer (Seca 213), respectively. Body mass index was calculated by standard formula ($\text{weight}/\text{height}^2$), and BMI values were then used to identify the age- and gender-specific percentile for each daughter using the Centers for Disease Control and Prevention growth charts (CDCP, 2018). Based on these percentiles, each daughter was classified as either overweight ($\geq 85^{\text{th}}\text{--}94^{\text{th}}$ percentile) or obese ($\geq 95^{\text{th}}$ percentile). By using the World Health Organization (WHO) obesity classification, mothers with a BMI $\leq 24.9 \text{ kg}/\text{m}^2$ were classified normal weight; those with a BMI between $25.0 \text{ kg}/\text{m}^2$ and $29.9 \text{ kg}/\text{m}^2$

were classified as overweight; and mothers with a BMI ≥ 30 kg/m² were classified as obese.

Data Analysis

All analyses were conducted using SPSS, 23.0. Cases with missing data were excluded from the analysis. Demographics and descriptive statistics on all study variables were calculated and reported. Demographics include age, place of birth, educational status, self-described ethnicity, family income, family size, and occupation. Means and standard deviations were reported for the, adiposity, BMI, acculturation and desire to be thinner for both mothers and daughters.

Hypothesis 1 stated that Hispanic daughters would endorse smaller silhouette sizes as ideal compared to their mothers' selected ideal silhouette for their daughter. To address hypothesis 1, a paired samples t-test has been conducted. The paired samples t-test employed an a priori alpha level of .05.

Hypothesis 2 states that Hispanic daughter's desire to be thinner will be positively associated with maternal desire to be thinner. A Pearson's correlation analysis was conducted with desire to be thinner scores testing whether or not there is a significant relationship between mothers and daughters' desire to be thinner. The correlation employed an a priori alpha level of .05.

Hypothesis 3 states that Hispanic daughter's acculturation will moderate the association between maternal acculturation and daughter's desire to be thinner. A blocked logistic regression analysis with moderation was conducted. Daughter's and mother's acculturation score served as the independent variables for the model.

Daughters' acculturation scores were grouped into more U.S. acculturated and less U.S.

acculturated categories using the mean value as a cut-point to test the moderating effect of daughter's acculturation on the relationship between mother's acculturation and daughter's desire to be thinner. Degree of desire to be thinner served as the binary dependent variable where 0=no desire/ desire to be moderate thinner and 1=desire to be much thinner. Daughter's age, household income and daughter's weight served as control variables in the model. In block 1, all demographics (e.g., age, household income and adiposity) were added to the model. Significant demographics related to desire to be thinner were retained in the model, and all others dropped from further examination. In block 2, daughter's acculturation was added to the model. Lastly, block 3 included the interaction of daughter's acculturation level with mother's acculturation to investigate whether daughter's acculturation level moderates the relationship between mother's acculturation and daughter's desire to be thinner. An interaction term [daughter's acculturation group (i.e. more U.S. acculturated and less U.S. acculturated) X mother's acculturation] was entered into the model. The model employed an a priori alpha level of .05.

To address Hypothesis 4: Hispanic mother's acculturation moderated the relationship between mother's desire to be thinner and daughter's desire to be thinner, a blocked logistic regression with moderation was conducted. Mother's desire to be thinner served as the independent variable for the model. Degree of desire to be thinner served as the binary dependent variable where 0=no desire/ desire to be moderate thinner and 1=desire to be much thinner. Mother's acculturation level (high vs. low –as defined by the BAS cut-points) served as the moderator. Daughter's age, household income and daughter's weight served as control variables in the model. In block 1, all demographics

were added to the model. Significant demographics related to desire to be thinner were retained in the model, and all others dropped from further examination. In block 2, mother's desire to be thinner was added to the model. Lastly, in block 3, an interaction term of mother's desire to be thinner X mother's acculturation was added to the model. The model employed a priori alpha level of .05.

Chapter 3 Results

Sample Descriptive Characteristics

As presented in Table 1, descriptive analyses showed that the study included 112 mother-daughter dyads. The mean age of mothers was 39.4 years, SD=6.6 years, and daughters' mean age was 11.3 years, SD=1.6 years. Most of the mothers were foreign-born (74% of mothers were born in Mexico and 11% were born in Central America), and only 14% of mothers were born in United States. In contrast, a large percentage of daughters (90%) reported their birthplace to be the United States, 9% reported their birthplace to be Mexico and 1% Central America. Half (n=56) of the mothers reported acculturation levels categorized as high acculturation level and the other half of mothers reported low acculturation. Conversely, most of the daughters were highly acculturated, with 88% reporting high acculturation and 12% reporting low acculturation. Over half of the mothers (57%) reported an annual family income of \$30,000 or less with 24% reporting greater than \$30,000 and 19% reporting not sure or not reported. Regarding mothers weight status, 12% of mothers were classified as healthy weight, 31% of mothers were classified as overweight, and 57% of mothers were classified as obese. Consistent with eligibility criteria, daughters were either overweight (20%) or obese (80%).

Hispanic Mother and Daughter Perceived and Ideal Body

Using the Body Figure Rating Scale, 41% of the daughters selected silhouettes 5 and 41% selected silhouette 6, 11% of the daughters selected silhouette 7, 7% of the daughters selected silhouette 4, and .8% selected silhouette 3 as their perceived body size. The thinnest figures 1 and 2 were not selected for perceived body size by daughters. Almost half of the mothers (52%) selected silhouette 6 followed by silhouette 5 (33%), silhouette 7 (9%), silhouette 4 (5%) and silhouette 3 (.8%) for mothers' perceived body size for daughters (see Figure 1). In terms of ideal body size selection, the majority of the daughters (62%) endorsed silhouette 4 and 20% selected silhouette 3 as body size ideal. Silhouette 4 is more in line with what a healthy weighted child for this age group should be. Daughters endorsed silhouette 1 and 2 last as their ideal body size and daughters did not select heaviest silhouettes 6 and 7 as ideal body size. Regarding ideal body size selection for daughters, over half of the mothers (53%) selected silhouette 4, followed by silhouette 5 (26%) and silhouette 3 (19%) as the ideal body size for their daughters. One mother selected the larger silhouette 6 and one selected silhouette 7 as ideal figures for their daughter. No mother selected the silhouette 1 and 2 as an ideal body size for daughters (see Figure 2). A paired samples t-test was used to test the null hypothesis 1 that daughters ($M=3.67$, $SD=.76$) and mothers ($M=4.07$, $SD=.75$) would not differ significantly regarding endorsement of ideal silhouette for daughter. Using an alpha level of .05, the t-test was significant $t(111) = 3.81$, $p = .000$ resulting in the rejection of the null hypothesis of equal resilience means. The 95% confidence interval for the difference of means ranged from .19 to .60. Thus, the conclusion was that daughters selected a significantly smaller ideal body size silhouette than their mothers selected for their daughters (Table 2).

Hispanic Mother-Daughter Desire to be Thinner

Regarding desire to be thinner, 62% of the daughters reported a desire to be thinner by 2 or more smaller body size silhouettes, 36% of daughters desired to be thinner by .5 – 1.5 smaller body size silhouettes and only 1.5% of the daughters were satisfied with their current body size. No daughter reported the desire to gain weight. In terms of maternal desire to be thinner, 43% of the mothers desired to be thinner by 2 or more smaller body size silhouettes and 39% of mothers desired to be thinner by .5 – 1.5 smaller body size silhouettes. Only 15% of the mothers were satisfied with their current body size. Similarly, in regards to mothers' desire for her daughter to be thinner, 39% of mothers reported a desire for their daughters to be thinner by 2 or more body size silhouettes and 47% of mothers desired their daughters to be thinner by .5 – 1.5 smaller body size silhouettes. Only 3% of mothers were satisfied with their daughters' current body size (see Figure 3). To assess if there was a relationship between the mother's desire to be thinner and the daughter's desire to be thinner, a Person's Correlation was conducted. The null hypothesis was that the correlation between mother's desire to be thinner and daughter's desire to be thinner is zero and the alternative hypothesis was there is a no significant relationship between mother's desire to be thinner and daughter's desire to be thinner. Using an alpha level of .05, the correlation was not significant $r(111)=0.047, p=.62$ (Table 3). Though mothers had a lower desire to be thinner ($M=1.32, SD=1.14$), compared to daughters' desire to be thinner ($M=1.86, SD=.86$), the difference was not statistically significant. Therefore, the decision was to accept the null hypothesis and to conclude that the relationship between mother's desire to be thinner and daughter's desire to be thinner was non-significant.

Moderation Role of Acculturation on Daughter Desire to be Thinner

Hypothesis 3 states that Hispanic daughter's acculturation will moderate the association between mother's acculturation and daughter's desire to be thinner. Daughters reported a predominantly high acculturation (88%) compared to those who reported low acculturation (12%). Daughters also reported a greater percentage wanting to be thinner by 2 body size silhouettes (62%) or by .5 or 1.5 body size silhouettes (36%) compared to those who wanted to stay the same size (1.5%). A blocked logistic regression analysis with moderation was conducted. Daughter's acculturation was tested a priori to verify there was no violation of the assumption of the linearity of the logistic regression. Daughter's age, family income, and adiposity (BMI) served as control variables in the model. These variables which are linked with a desire to be thinner have been controlled to clearly identify the relationship between acculturation and desire to be thinner. In block 1, all demographics (e.g., daughter's age, family income and adiposity) were entered in the model. Neither age nor family income was significantly associated with daughters' desire to be thinner. However, daughter's adiposity (BMI) was associated with daughter's desire to be thinner, $\beta=.228$, $p=.001$. The results indicated that daughters who had a higher BMI were 1.18 times more likely to desire to be thinner (95% CI, 1.10-1.43). Daughter's acculturation, entered into the Block 2 of the model, was found not to be a significant predictor of daughter's desire to be thinner, $\beta =-.56$, $p=.39$. Mother's acculturation was entered into the model as a moderator by creating a cross-product variable of mother's acculturation and daughter's acculturation. The regression equation was not significant at the .05 level, $\beta =-.53$, $p=.251$. Maternal acculturation was not a predictor of the daughter's desire to be thinner (Table 4).

Hypothesis 4 states that Hispanic mother's acculturation will moderate the association between mother's desire to be thinner and daughter's desire to be thinner. A blocked logistic regression analysis with maternal moderation was conducted. Daughter's acculturation was tested a priori to verify there was no violation of the assumption of the linearity of the logistic regression. Daughter's age, family income and adiposity (BMI) served as control variables in the model. In Block 1, all demographics (e.g., age, family income and adiposity) were entered in the model. Neither age nor family income was significantly associated with daughters' desire to be thinner. However, daughter's adiposity (BMI) was associated with daughter's desire to be thinner, $\beta = .228$, $p = .001$. In Block 2 mother's desire to be thinner was added to the model and was found not to be significant $\beta = -.459$, $p = .296$. Finally, in Block 3, mother's acculturation was entered into the model as a moderator by creating a cross-product variable of mother's acculturation and mother's desire to be thinner and was found to be not significant, $\beta = .302$, $p = .649$. Results from the blocked logistic regression analysis was not significant suggesting that there was no relationship between daughter's acculturation and mother and daughter's desire to be thinner when using mother's acculturation and mother's desire to be thinner as a moderator.

Chapter 4 Discussion

Among Hispanic mother and daughter dyads, the present study aimed to assess: 1) maternal views of perceived and ideal body size, and desire for daughter to be thinner; 2) maternal and daughters' views of perceived and ideal body size, and desire to be thinner for themselves; 3) comparing maternal and daughters' perceived and ideal body size,

desire to be thinner, and 4) the role of maternal and daughters' acculturation on ideal body size or desire to be thinner. The sample consisted of primarily low-income Hispanic mothers and daughters who were either overweight or obese. Most of the Hispanic daughters were born in the United States and were highly acculturated. In contrast, the majority of Hispanic mothers were born in Mexico or Central American and were evenly low and highly acculturated.

Regarding adolescent girls and their ability to reflect actual body size compared to ideal body size, studies lean more towards girls selecting a larger silhouette as actual compared to the desired ideal smaller silhouette where normal weighted girls are concerned. In our study, 85% of daughters selected either silhouette 5 or 6 (overweight or obese silhouettes) somewhat resembling the sizes of the daughters in the study. A large study involving 1,688 adolescents out of Porto, Portugal found that 57% of the girls presented a discrepancy between selecting a larger silhouette to depict current body size and selecting a considerably smaller silhouette depicting their ideal body size (Almeida et al., 2012). These findings are consistent with our study. Inconsistent with our study because all participants were classified with overweight/obese, Almeida and colleagues (2012) found that during their study, girls perceived themselves as being overweight despite being measured as normal weight. Regardless of actual body size, most adolescent girls report a smaller ideal body size than actual body size. A study that surveyed 127 adolescent girls between 7 to 11 years of age with elevated adiposity reported that on average, participants selected an ideal body figure at least one size smaller than their perceived body figure on the body dissatisfaction scale (Evans et al, 2013). Similarly, 62% of our participants selected silhouettes 2 or more sizes smaller

than perceived and 36% selected silhouettes .5-1.5 sizes smaller than perceived. Only 1.5% of daughters selected the same ideal size as their perceived size. Evans and colleagues (2012) found in a study involving 7 to 11 year old Caucasian girls that the level of body dissatisfaction was not exclusively as a result of being overweight or obese but more in line with an ideal body shape that was reflected by an extremely slender silhouette (Evans, 2012). Understanding the motivating factors why females desire a smaller size is important.

Our study revealed several instances where the mother selected smaller figures than the daughter actually was and selected a larger ideal than is deemed healthy. With the majority of our daughters depicted by the 6 or 7 silhouette, 43% of the mothers perceive their daughters to be either a 5, 4 or 3 silhouette. Regarding ideal body size for their daughters, 53% of the mothers in our study selected silhouette 4 (deemed a healthy size for girls of this age), 26% selected silhouette 5, and 19% selected silhouette 3. One mother selected silhouette 6 as ideal and one mother selected silhouette 7 as ideal. A study out of England that looked at adolescents in the 2010-2011 school year (n=2,976) found that only 72% of the parents classified their child into the correct weight category (underweight, healthy weight, and overweight) with the majority of misreporting parents underestimating their child's weight category (Black et al., 2015). This sense of parents overlooking a child's unhealthy size is also prevalent in the literature and was also found in our study. When parents are unable to identify and appropriately address a child's accurate body size and in turn a healthy appropriate body size, the child will struggle with this messaging. Mirza and colleagues (2011) found evidence of transference of body size expectations from mother to child where the mothers' dissatisfaction with her child's

body size is also seen in her child's dissatisfaction with body size. This study included both boy and girl Latino youth. Though the direction of this dissatisfaction was not analyzed the consensus between parent and child was evident. Mothers were asked in a large study (N=3,408 children 9-10 years of age) to rate their children as underweight, normal weight or overweight/obesity and 45% of the daughters with overweight were rated by their mothers as having normal weight and 14% of the daughters with normal weight were rated as being underweight (Leppers et al., 2017). This study confirmed that when the mother misperceives her daughters' size, the probability of the daughter misperceiving her own size increases.

Similar to mothers perceiving their daughters to be smaller than they actually are, a few studies revealed that adolescents selected smaller silhouettes as perceived body size than their actual measured body size. Though not as common as selecting a larger perceived body size, 82% of daughters in our study selected either silhouette 5 or 6. These silhouettes represent daughters of their age with overweight or obesity. 11% selected silhouette 7 which is categorized as morbidly obese. Though on the surface, this might appear that daughters in our study appropriately categorized their perceived body size, a larger percentage of participants should have selected silhouette 7. One large study (N=3,408 children 9-10 years of age) using the Children's Body Image Scale found that the majority of children rated themselves of average proportions despite having elevated adiposity (Leppers et al., 2017). This could be as a result of a number of factors including transference of maternal feelings or cultural acceptance. A realistic assessment of one's body size is influential in whether or not an adolescent desires to be thinner. In the Leppers and colleagues study (2017), when children reported their body size

appropriately as overweight or obese, they also reported a desire to be thinner. Of the 499 overweight/obese children that reported themselves less heavy than they were, only 79% of these children had a desire to be thinner (Leppers et al., 2017). Accurately assessing current body size influences both the desire and effort to lose weight.

To address hypothesis 1 which states that Hispanic daughters would endorse smaller silhouette sizes as ideal compared to their mothers selected ideal silhouette for their daughter, our findings indicate that this hypothesis was supported. Daughters selected smaller body silhouettes as ideal for themselves compared to the silhouettes their mothers selected for their daughters. Although few studies have compared Hispanic mother-daughter dyads' selection of ideal body size, our findings are consistent with previous research indicating that Hispanic daughters selected smaller silhouettes as ideal compared to mother's selection of ideal silhouette for daughter (Olvera et al., 2005).

The desire to be thinner often coincides with body dissatisfaction studies. Literature supports the findings that a large percentage of females exhibit body dissatisfaction as a result of having a desire to be thinner. Having said this, some females may exhibit body dissatisfaction as a result of desiring to be larger or wishing for changes to their body that have nothing to do with a desire to be thinner. Though research is available in this area, research on how daughters and mothers feel about this topic congruently is quite scarce, with few studies comparing the daughters desire to be thinner with the mother's desire for her daughter to be thinner. A study by Mirza et al, (2011) found a strong association between Hispanic adolescents (ages 7-15) body size dissatisfaction and that of their mothers. However, our research did not find a link between mother and daughter' desire to be thinner. A possible explanation for this

discrepancy is that Mirza's study focused on body size dissatisfaction, our research emphasized desire to be thinner.

Hypothesis 2 states that Hispanic daughter's desire to be thinner will be positively associated with mother's desire to be thinner was not supported. Though our research found no association between maternal and daughter's body size dissatisfaction, previous studies have found such an association. A study by Mirza et al, (2011) found a strong association between Hispanic adolescents (ages 7-15) body size dissatisfaction and that of their mothers. A possible explanation for this discrepancy is again that Mirza's study focused on body dissatisfaction (desire to be thinner and desire to be heavier) and included sons and daughters, our research emphasized desire to be thinner and with daughter only. Given that research suggesting gender difference in body dissatisfaction, with boys wanting to be bigger and muscular and girls to be thinner (Kann et al., 2014). It seems possible that mothers and daughters discrepancy in desire to be thinner might be more obvious.

Another explanation is that other factors reflecting maternal body size dissatisfaction might have an impact on daughters' body size dissatisfaction. For instance, Olvera and colleagues (2016) found that mothers with a larger waist to hip ratio were more likely to have daughters with a desire to be thinner. This desire to be thinner was also seen when a mother with high waist to hip ratio also reported a discrepancy between perceived-ideal body size for her daughter (Olvera et al, 2016). Mothers tend to serve as role models for their daughters who will emulate eating and exercise patterns not to mention the genetic tendency for daughters to have similar body characteristics as their mothers. Bauer and colleagues (2013) examined 218 mother/daughter dyads and found

that mothers who talked frequently about their own weight, shape or size have daughters reporting lower self-worth regarding her own body size. This can also be escalated as a result of repeated physical comparisons between mother and daughter.

Hypothesis 3 states that Hispanic daughters' acculturation will be moderating the association between maternal acculturation and daughters' desire to be thinner was not supported. Similarly, hypothesis 4 which states that Hispanic maternal acculturation will be moderating the association between maternal and daughters' desire to be thinner was also not supported. These findings indicate that neither maternal or daughter's acculturation has a link with daughter's desire to be thinner. These findings are inconsistent with previous studies. Olvera et al, 2005 reported an association between higher levels of acculturation among Mexican American girls ages 8 to 12 and their selection of thinner silhouettes as being more attractive. Olvera and colleagues (2016) found a positive correlation between daughters of more acculturated mothers and the daughters desire to be thinner. Mothers who are more acculturated tend to conform to western thin ideals where their daughter's weight is concerned. It can be speculated that lower acculturated mothers are more accepting of their daughters having a larger, curvier physic due to cultural norms previously mentioned (Warren et al., 2010). The inconsistency of our results from previous research can be explained by our large percentage of daughters who reported high acculturation. Although, in our study we have a good distribution of maternal acculturation levels, we found that maternal acculturation did not moderate the relationship between maternal and daughter's desired to be thinner. Our findings were surprising since previous research has found Hispanic maternal acculturation was associated with maternal and daughter's body dissatisfaction.

Similarly, mother's acculturation has been associated with her own body dissatisfaction. Research supports that the more acculturated a female is, the greater desire she will have to conform to social or Western norms resulting in a body dissatisfaction specifically a desire to be thinner. Though some protection against body dissatisfaction has been seen in the Hispanic culture, level of acculturation is more predominately studied and linked to body dissatisfaction. Mirza et al., (2011) found that less acculturated mothers appeared to influence their children's body dissatisfaction. Other factors that influences a child's body dissatisfaction include peer influences, social media and models seen on television and in magazines. The more that children relate to these factors the greater the influence is seen on body dissatisfaction. Romo et al. (2015) interviewed 27 Latina females ages 14 to 16 and found that such celebrities as Beyoncé and Jennifer Lopez promote curvier silhouettes making such sizes not only acceptable but desired in the Latino community. Mainstream factors that typically affect the white female where body dissatisfaction is concerned may not necessarily affect the Latina female.

Research Reflection

Body dissatisfaction can reflect an actual body size discrepancy from the healthy norms of an adolescent or those perceived as a result of societal norms or cultural beliefs. This further complicates the need to promote a healthy body size in young girls and females and the need to reduce the health concerns associated with an overweight/obese status. How a mother influences her daughter can be two fold. Obvious dialogue pertaining to the mother's desire for her daughter to be thinner or larger is extremely influential. In addition to deciding which groceries come into the home influencing what the daughter eats, the mother also arranges or allows activities that the daughter engages

in for exercise further contributing to the daughter's body size. Mothers who are also influenced by social norms tend to not only have the desire to be thinner but also shares their desire to be thinner with their family which also serves as an influencer on their daughters desire to be thinner. Understanding how a mother influences her daughter where body dissatisfaction is concerned continues to be an area in need of research

Recent studies are beginning to look at acculturation stressors (being discriminated against, being a member of an undervalued group and experiencing conflict between U.S. culture and personal culture of heritage) (Gordon et al., 2010) as contributing factors where health behavior is concerned. Another interesting point to consider is the limited research on the protection against negative health behaviors as a result of strong Hispanic ethnic identity regardless of other acculturation measures. Understanding the degree of protection and the definition of strong ethnic identity could have influenced the results in the present study.

Limitations

This study has several limitations that should be noted. First, the small sample size (N=112) may limit the significance of some of the statistical comparisons that were conducted. In addition the sample is limited to Hispanic daughters with obesity seeking obesity treatments which limits the generalizability of the findings. Thus our results only apply to a specific population of treatment-seeking Latina girls with obesity.

The Body Figure Scale – Adult and Child version silhouette drawings used to measure body image preference reflect a predominately white American population and might not be culturally relevant to the Hispanic/Latino population being studied. Thus, the need to develop a more culturally relevant measure of body image in this population

is needed. Furthermore, a better understanding of how this population perceives their size compared to their desired size will help understand the psychological factors that contribute to an overwhelming increase in adolescent body dissatisfaction. Such psychological factors as eating disorders, excessive exercising, depression and low self-esteem should be examined as it relates to body dissatisfaction.

Additional limitations include the assessment method used to measure acculturation. Though both measures of acculturation used to assess mother and daughter's acculturation included several scales (Bidimensional Acculturation Scale (BAS) (mother) and Short Acculturation Scale for Hispanic Youth (SASH-Y) (daughter)), these measures rely heavily on language use and proficiency. Though language use could read acculturated for this younger group, other factors such as family expectations, traditions, beliefs and practices could contribute to a slightly less acculturated adolescent. If acculturation is defined as the assimilation process to a different/dominate culture, language cannot be the only factor considered when predominate norms are not being adopted.

Future Research Directions

As generations age especially within a host country, the influence of acculturation often has a diminished effect on body image. However, culture and the influence of family continues to be a tremendous influence that though tied to acculturation cannot be fully defined by acculturation. At some point, cultural norms becomes a greater influence than acculturation and should be further researched without being limited by acculturation measures. Additional research is needed on body image in relation to acculturation. The inconsistency of studies looking at whether acculturation contributes

to body image needs to be addressed especially where Hispanic females are concerned. Similar to how acculturation has both a positive and negative association with health, body dissatisfaction as it relates to cultural norms may also have positive implications to health outcomes where Hispanic females are concerned. Additional research should examine the level of support felt by youth in relation to body dissatisfaction and family acculturation.

Implications and Conclusion

The rapid growth of the Hispanic population throughout the U.S. requires a closer look at the health concerns facing this population. As this population grows, so should research geared to understanding and serving this population. Research needs to go beyond acknowledging medical concerns such as diabetes, cardiovascular disease and hypertension specific to the Hispanic female, but to understand the reasoning behind such ailments. It is important to articulate to this population that many known diagnoses are traced back to the state of being overweight or obese. The dilemma of understanding the negative consequences of being overweight or obese affects all ethnicities. However, understanding that all ethnic groups are not alike where barriers, motivational factors and cultural norms as related to health are important when public health programming is concerned. Successful public health programming to assist Hispanic females with weight loss could potentially reduce disease burden by having fewer diagnosis of diabetes, hypertension and cardiovascular disease.

Body dissatisfaction is greatly influenced not only by gender and culture but by family and the interaction of these factors. Though family tends to serve as a protective measure for Hispanic females where body image is concerned, more research needs to be

conducted on this understudied population to better understand socio-cultural attitudes felt by Hispanic teens and their family in an effort to reduce body dissatisfaction as well as health risks associated with obesity.

The present study was conducted with Hispanic mothers and daughters who were enrolled in the BOUNCE healthy lifestyle summer program. Pairs were targeted because they were predominately overweight and had a sedentary lifestyle and were seeking wellness opportunities for themselves and their daughters. Such a point further illustrates the need to consider cultural norms and family obligations when targeting Hispanic females. The Hispanic mother wants to take care of her family often at the expense of her own health. More family programming or opportunities to coordinate personal health with that of their family would be instrumental in behavioral change specifically when considering the mother/daughter relationship.

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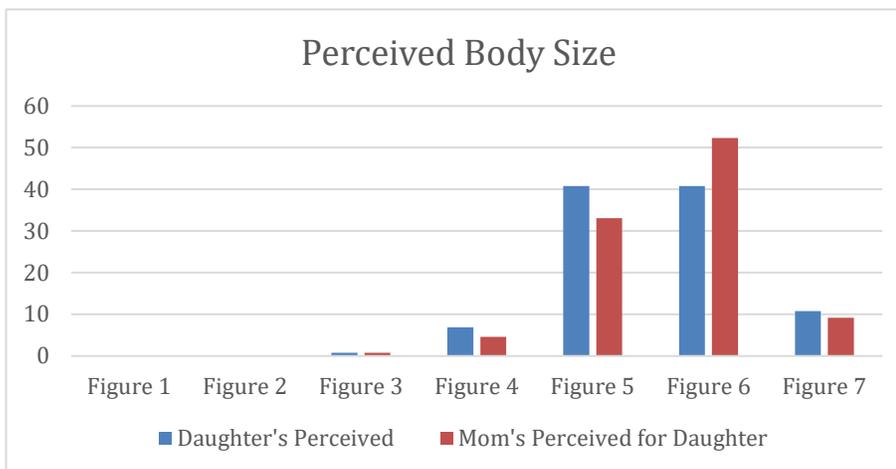


Figure 1. Perceived body size. This figure illustrates the difference in percentage of daughters perceived and mom's perceived body size based on silhouette choice.

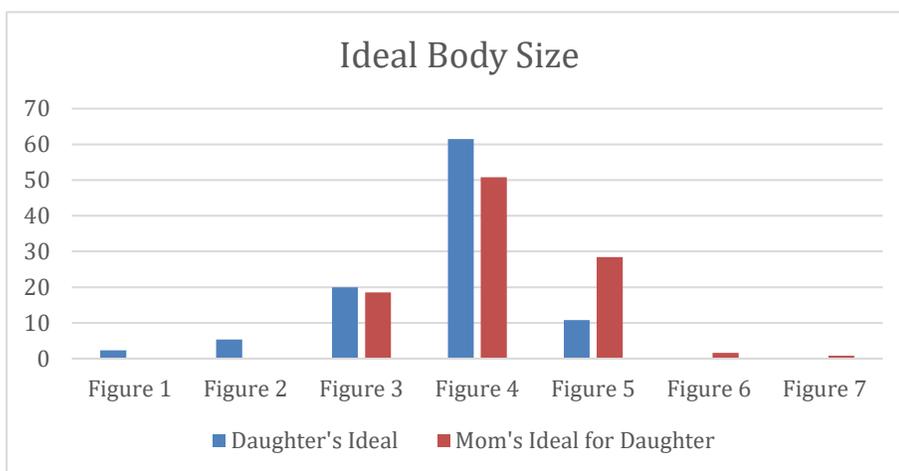


Figure 2. Ideal body size. This figure illustrates the difference in percentage of daughter's ideal and mom's ideal body size based on silhouette choice

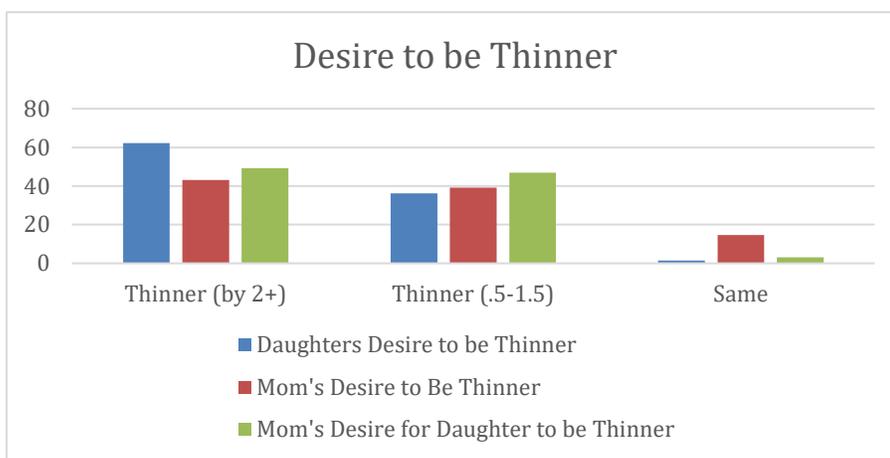


Figure 3. Body dissatisfaction. This figure illustrates the percentage of body dissatisfaction among Hispanic mothers and daughters as determined by subtracting the score for ideal body size from perceived body size. Greater values on x-axis indicate higher desire to be thinner.

Table 1*Descriptive Characteristics of Mother/Daughter Dyads* n = 112

Variables	Daughter	Mother
Age in years M (SD)	11.3 (1.6)	39.4 (6.6)
Place of Birth	% (N)	% (N)
U.S.	90 (101)	14 (11)
Mexico	9 (10)	74 (59)
Central America	1 (1)	11 (9)
Acculturation		
High	88 (98)	50 (56)
Low	12 (14)	50 (56)
Household Income		
Less than \$30,000		57 (64)
Greater than \$30,000		24 (27)
Unidentified/Not sure/Refused		19 (21)
Obesity Status		
Healthy Weight	0 (0)	12 (13)
Overweight	20 (22)	31 (35)
Obese	80 (90)	57 (64)

Table 2*Paired Sample t-test comparing daughter and mother's selection of ideal silhouette for daughter (n=112)*

	Daughters			Mothers			95% CI for Mean Difference	t	df	P
	M	SD	n	M	SD	n				
Selected Silhouette	3.67	.76	112	4.07	.79	112	.19, .60	3.81	111	.000

Table 3*Pearson Correlation Relationship between Mother and Daughters Desire to be Thinner*

	1	2	3
1. Daughter's Desire to be Thinner	-	.047	.085
2. Mother's Desire to be Thinner	.047	-	.187*
3. Mother Desire for Daughter to be Thinner	.085	.187*	-

*Correlation is significant at the 0.05 level

Table 4*Blocked Logistic Regression Predicting Daughters Desire to be Thinner (n=112)*

Predictor	β	OR	P	95% CI
Block 1				
Daughters Age	-.30	.17	.74	.54, 1.04
Family Income ^a	-.040	.13	.96	.75, 1.23
Daughters Adiposity	.228	.07	1.26**	1.10, 1.43
Block 2				
Daughter's Acculturation ^b	-.56	.65	.57	.16, 2.04
Block 3				
Daughters Acculturation ^b				
X Mothers Acculturation ^b	-.53	.46	.59	.24, 1.45
R^2 (Adjusted R^2)				.17 (.05)

a. \leq \$30,000 versus $>$ \$30,000

b. Dichotomously coded acculturation (1= low acculturation, 2= high acculturation)

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

Table 5*Blocked Logistic Regression Predicting Daughters Desire to be Thinner (n=112)*

Predictor	β	OR	P	CI
Block 1				
Daughters Age	-.30	.17	.74	.54, 1.04
Family Income ^a	-.040	.13	.96	.75, 1.23
Daughters Adiposity	.228	.07	1.26**	1.10, 1.43
Block 2				
Mothers Desire to be Thinner	-.61	.56	.54	.18, 1.61
Block 3				
Mothers Acculturation ^b X Mothers				
DBT ^c	.30	.66	1.35	.37, 4.97
R^2 (Adjusted R^2)				.18 (.05)

a. \leq \$30,000 versus $>$ \$30,000

b. Dichotomously coded acculturation (1= low acculturation, 2= high acculturation)

c. Desire to be Thinner DBT (0 = no desire to moderate desire, 1 = desire to be much thinner)

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