

Enhancing Interventions for Pediatric Obesity Among Young Latino Children:

A Mixed Methods Study

BY

Marilyn L. Sampilo, M.A.

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Chairperson Ric G. Steele, Ph.D., ABPP

Ann M. Davis, Ph.D., ABPP

Eric M. Vernberg, Ph.D., ABPP

Paula Fite, Ph.D.

Sandra Gray, Ph.D.

Date Defended: November 13, 2014

The Dissertation Committee for Marilyn L. Sampilo

certifies that this is the approved version of the following dissertation:

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Chairperson Ric G. Steele, Ph.D., ABPP

Date approved: November 14, 2014

ABSTRACT

Recent national data indicate that nearly 1/3 of US youth are overweight (BMI % \geq 85th). Of these children, a disproportionate number are Latino. This racial and ethnic disparity has been observed in young childhood and persists when considering the effectiveness of current childhood obesity interventions. Programs that have demonstrated success with other racial and ethnic groups have not translated into successful outcomes for Latino families. This may be due to inadequate attention to important cultural factors for Latinos. The goal of the present study was to describe the current state of cultural tailoring of pediatric obesity and health promotion interventions for Latinos through a systematic review of the literature (Study 1) and to delineate cultural factors which impact health behavior of Latino families with an overweight or obese child and may influence outcomes associated with involvement in pediatric obesity intervention programs (Study 2). Results from Study 1 indicated that peripheral, linguistic, constituent-involving, and socio-cultural strategies are the most commonly employed cultural tailoring strategies in existing interventions. There is, however, a range in the description of socio-cultural strategies and a lack of detail regarding underlying cultural constructs in existing interventions. Findings from focus groups revealed recurrent themes suggesting that cultural beliefs about children's body size influence parent perception of child overweight and cultural factors also influence health communication and impact parent understanding of their child's weight status. Additionally, cultural values of respeto, familismo, and pesonalismo impact family acceptance and adherence to treatment recommendations.

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Enhancing Interventions for Pediatric Obesity Among Young Latino Children: A Mixed Methods Study

Pediatric overweight and obesity continue to be significant health concerns in the US (Ogden, Carroll, Kit, & Flegal, 2012). Among 2-19 year olds, approximately 12% of youth are at or above the 97th percentile for BMI for age, nearly 17% at or above the 95th percentile, and nearly 32% at or above the 85th percentile (Ogden et al., 2012). Despite objectives to reduce obesity nationwide in past iterations of *Healthy People*, the prevalence of obesity is increasing. More specifically, no state has met the nation's *Healthy People 2010* goals to lower obesity prevalence among adults to 15% and among children to 5% (US Department of Health and Human Services, 2010). Furthermore, the number of states with obesity prevalence of 30% or more has increased from 0 states in 2000 to 12 states in 2011 (Centers for Disease Control and Prevention [CDC], 2012).

Amid the concerns regarding the current prevalence of obesity among the US population, significant attention has been given to racial and ethnic disparities. Ogden et al. (2012) found that Hispanic youth and non-Hispanic Black youth, ages 2-19, were significantly more likely than non-Hispanic White youth to have a BMI at or above the 97th, 95th, and 85th percentile cutoffs. The authors also determined that the odds of obesity over the past 12 years were highest among Mexican-American and Non-Hispanic Black male and female youth. Similarly, results from other national health surveys indicate that high BMI is observed in higher proportions among Latino youth compared to other groups (Gordon-Larsen, Adair, & Popkin, 2003; Stovitz, Schwimmer, Martinez, & Story, 2008). In 2009, the CDC found prevalence rates of obesity among low-income, preschool-aged children to be highest among American Indian/Alaska Native children (21.2%) and Hispanic children (18.5%). In another study, the prevalence of early

childhood obesity was significantly higher (nearly 50% higher) among young Hispanic preschool-aged children compared to White and Black preschool-aged children (Whitaker & Orzol, 2006).

Interventions for Pediatric Obesity

Recommendations for the effective treatment of pediatric obesity include family-based, behavioral weight management programs (Barlow, 2007). Such “lifestyle” programs have demonstrated effectiveness in achieving immediate and long-term positive health outcomes (Epstein, Paluch, Roemmich, & Beecher, 2007; Jelalian & Saelens, 1999). Typically, such programs targeting overweight and obese youth focus on parents and families as agents and models of behavior change, and target improving diet, increasing physical activity, and decreasing sedentary behavior (Jelalian & Hart, 2009).

Overall, recent meta-analyses and reviews of existing intervention programs provide support for the short-term (pre- to post) and long-term (pre- to follow-up) efficacy of these pediatric obesity interventions (Young, Northern, Lister, Drummond, & O’Brien, 2007). For example, Wilfley, Tibbs, Van Buren, Reach, and Walker (2007) compared active lifestyle intervention programs with wait list or no treatment controls and found a mean effect size (Cohen’s *d*, medium to large) of .75 at post-treatment and .60 at follow-up on weight-related outcomes (percent overweight, zBMI, BMI, or weight). Similar findings were obtained by Kitzmann et al. (2010) who found an average effect size (Cohen’s *d*, small to medium) of .41 for weight-related outcomes among treatment-control comparisons of lifestyle interventions for obesity. These authors found larger effects when interventions included parent training on behavior management strategies or parent education regarding food and meal preparation (Kitzmann et al., 2010). A second meta-analysis (McGovern et al., 2008) assessing the efficacy

of combination lifestyle interventions (physical activity and diet) revealed a small to moderate treatment effect on BMI via meta-analytic point estimates, with larger effects associated with those interventions which included parental involvement (parents were either targeted individually or with the child.)

Lifestyle interventions have also been implemented in the treatment of early childhood obesity (Campbell & Hesketh, 2007; Hesketh & Campbell, 2010). Bluford, Sherry, and Scanlon (2007) conducted a review of programs to prevent or treat pediatric obesity among preschool aged children (ages 2-6) and identified seven programs, of which only 4 were effective in producing desired weight and health behavior changes. The following program characteristics were associated with positive health gains: multicomponent design, behavioral theory driven, parental involvement, and inclusion of objective behavioral measures. Based on the relatively few studies available for review, the authors called for additional research into programs for this age group and for research evaluating the effectiveness of such programming among racial and ethnic minority groups.

Despite the success of multicomponent interventions (Kitzmann et al., 2010; Wilfley et al., 2007), existing evidence suggests that not all children benefit from these treatments. For example, Branscum and Sharma (2010) examined the effectiveness of interventions for overweight in Hispanic samples, and found effect sizes (Cohen's *f*, small) ranging from .17 to .24. Branscum and Sharma's review points to at least two important limitations in the current literature. First, the effect sizes discovered by Branscum and Sharma (2010) are smaller in scope than the effect sizes noted above (i.e., Kitzmann et al., 2010; Wilfley et al., 2007). Second, Branscum and Sharma's review (2010) highlights the relative paucity of studies of weight management interventions targeting Hispanic samples. Indeed, their search revealed only 9

studies that demonstrated improvements in weight status among Latino school-aged children, and no studies that indicated significant improvements among preschool aged children. Similar to the broader literature, successful interventions for Hispanic youth typically included a parent component, were theory-driven, and had a committed staff.

Together, Bluford et al.'s review (2007) and Branscum and Sharma's review (2010) underscore several important points about the treatment literature for pediatric overweight and obesity. They highlight the need for increased programming with minority groups, particularly Hispanics, and for increased programming targeting young children.

The Role of Latino Culture

In a policy statement by the American Academy of Pediatrics (AAP), the AAP's Committee on Pediatric Workforce stated that the needs of the pediatric patient population are increasingly influenced by culture and ethnicity (Britton, 2004). Despite this emphasis on culture, some research findings suggest that treatment programs with cultural adaptations do not result in better outcomes for ethnic minority youth (e.g., Huey & Polo, 2010; McCabe & Yeh, 2009). In contrast, other research findings suggest that treatment programs that account for cultural nuances that influence groups' beliefs, attitudes, and behavior have demonstrated some success (Wilson, 2009). For example, in a review of programs targeting health disparities in obesity among minority youth, programs that incorporated culturally tailored components were most effective, but these types of programs were lacking for Latinos (e.g., Wilson, 2009). Similarly, some research regarding evidence-based therapies for children and adolescents from underrepresented groups (more generally) has found that psychotherapy was more favorable for ethnic minority youth due to inclusion of culturally responsive treatment elements. These elements enhanced the therapeutic experience of these youth overall and helped to facilitate

better outcomes (Griner & Smith, 2006). Thus, there is some support for culturally responsive treatment components having a significant and favorable effect on Latino client or patient outcomes.

Conversely, the lack of attention to cultural factors may be related to the minimal gains associated with obesity intervention efforts among Latinos (Foreyt, 2003). For example, in one study, Latina mothers selected larger figures as representative of ideal body size in their children (Contento, Basch & Zybert, 2003). Specifically, children in the 50th to 75th BMI percentile range were considered “too thin” to be attractive. Similarly, Crawford et al. (2004) found that Latina mothers were concerned about thinness as an indicator of poorer health than overweight. Thinness was perceived as a possible indicator of malnutrition or intestinal infection and thus perceived as a greater threat to a child’s health than overweight. Results such as these may suggest less motivation in families of overweight youth to alter family health behavior (Contento et al., 2003). Consistent with these findings, Foreyt (2003) suggested that developing and applying cultural competence in the treatment of obesity among the Latino population is imperative. He recommended that culturally-relevant and culturally-sensitive programming begins with a comprehensive understanding of cultural differences that make Latinos more difficult to recruit into weight management programs, make them more likely to drop out once enrolled, and make them less likely to achieve positive health gains (Foreyt, 2003; Yancey, Ortega & Kumanyika, 2006).

Caprio et al. (2008) recommended that determining how best to appropriately deliver quality care to families with an overweight child will require more knowledge and appreciation of cultural influences and will involve altering behavioral interventions to fit an individual’s culture and environment. Consistent with this idea, cultural adaptation is necessary to optimize

the likelihood that programs developed and validated for use with one group or culture extend to others (Castro, Berrera & Martinez, 2004). For example, in an examination of the extension of a previously effective diet and physical activity intervention for young African-American children with young Latino children, results showed that the intervention was not effective in reducing BMI among young Latino children (Fitzgibbon et al., 2006). The authors concluded that further cultural tailoring was likely necessary to facilitate positive health outcomes among this group (Fitzgibbon et al., 2006).

Guidelines for Developing Culturally Tailored Interventions

In 2000, Davis, Northington, and Kolar outlined cultural considerations in the treatment of pediatric obesity. The authors suggested that health care providers be encouraged to emphasize weight management as a health concern while acknowledging that obesity is often culturally defined and some cultures exhibit a higher tolerance of weight. The authors also emphasized that providers should demonstrate an understanding of various environmental influences on health behavior (Davis et al., 2000). Although such recommendations are useful in highlighting the need to account for cultural considerations in work with ethnic minority groups, little information was provided on how to address these cultural considerations in the context of interventions.

Even in recommendations designed specifically for the Latino population, vagueness and ambiguity regarding specific cultural and social influences can be seen. The Robert Wood Johnson Foundation's *Salud America!* Latino Research Network conducted a three-stage Delphi survey to identify the first ever National Latino Childhood Obesity Research Agenda to inform research nationwide on childhood obesity (Ramirez, Chalela, Gallion, Green, & Ottoson, 2011). Survey participants included members of the *Salud America!* Network, recommendations from

the *Salud America!* National Advisory Committee (NAC), and individuals with expertise who had expressed interest in participation. The results of the Delphi survey identified research priorities in addressing pediatric obesity among Latino youth and informed researchers, key stakeholders, policy makers and communities about contexts for prevention and intervention and ranked them in order of importance: family, community, school, society and individual, respectively. Ramirez et al. (2011) is considered seminal in the field of Latino obesity research but focuses mostly on policy and systems level changes. While these broader system changes are undoubtedly important, the lack of specific guidance on cultural tailoring of individual and family interventions leaves a significant gap in the literature.

Based on the limited guidelines and available information, it is no surprise that there is some variation in how cultural tailoring is defined for health promotion programs targeting the Latino population (Rakowski, 1999). There are, however, existing frameworks that may help to organize existing cultural tailoring practices. Kreuter, Lukwago, Bucholtz, Clark, and Sanders-Thompson (2002) established a framework which classifies cultural tailoring practices into 5 categories: peripheral, evidential, linguistic, constituent-involving, and sociocultural strategies. *Peripheral strategies* are those which are employed in terms of “packaging” in order to appeal to the target group (Kreuter et al., 2002). Examples of such strategies include visual modification of health education materials to include relevant pictures or symbols or use of declarative statements regarding the target population. *Evidential strategies* are those which utilize data or statistics to communicate the relevance of a particular health issue to the target population. Examples of such strategies include use of epidemiological findings to highlight disparities or greater prevalence of illness or condition among the target population. *Linguistic strategies* encompass steps taken to provide health education materials or health communication in the

dominant or native language of the target population (Kreuter et al., 2002). Taken together, these 3 categories are considered more “surface level” strategies (Resnicow, Baranowski, Ahluwalia, & Braithwaite, 1999).

In contrast to these surface-level strategies, Resnicow et al. (1999) also identified “deep structure” strategies that address how cultural, social, psychological, environmental, and historical factors influence an individual’s health behaviors. Such deep structure changes are likely to yield better outcomes because they acknowledge differences in attitudes towards health-related issues and how cultural norms may impact health behavior. Among these deep structure strategies are constituent-involving strategies and socio-cultural strategies (Kreuter et al., 2002). *Constituent-involving strategies* are those based on the experience of those among the target population. Examples of such strategies include involvement of staff members who are members of the target population and involvement of community members in program development and decision making. *Socio-cultural strategies* are those which involve recognition and appreciation of the target population’s beliefs, values, and behaviors. Examples of such strategies include utilizing cultural conceptualization of health issues and understanding of cultural norms and their influence on health behavior (Kreuter et al., 2002).

Despite the existence of a framework that delineates surface level and deep structure approaches, the majority of existing interventions that do include elements of cultural tailoring generally rely on surface level strategies (Castro, Barrera, & Holleran Steiker, 2010). Common surface-level strategies include offering materials in Spanish, having bilingual staff, providing an exercise component that was Latin dance-related, or providing nutrition information with suggestions that were deemed culturally relevant (Mier, Ory, & Medina, 2010). These strategies, however, fall short of addressing the cultural, social and economic influences that contribute to

the perception of obesity in the Latino culture and greatly impact the desire for treatment and compliance in this population.

Furthermore, despite the existence of culturally tailored health promotion programming, there is little research into culturally tailored pediatric obesity interventions for young Latino children with published outcomes in the extant literature (Branscum & Sharma, 2010; Mier et al., 2010). Of the 18 health promotion interventions for Latinos reviewed by Mier and colleagues (2010), only 1 targeted young children. Of the 9 programs identified by Branscum and Sharma, only 2 targeted young children (Branscum & Sharma, 2010), and as noted above, neither was successful.

Need for Culturally Tailored Intervention Programs

The literature reviewed indicates that there is a need for culturally sensitive programming to address the overweight and obesity epidemic among young Latino children. Such programming begins with formative research into the cultural influences that should impact health behavior and health promotion program development (Mier et al., 2010). In terms of impacting health behavior, health care providers must acquire a broader knowledge base and skill set which will allow them to adequately recognize and address the cultural and ethnic factors that impact physician-patient collaboration. In order to do so, health care providers must have access to resources that facilitate the application of cultural competence into their practice that will enhance their abilities to make valid assessments of clinical findings and provide effective patient management (Britton, 2004). Formative research is crucial to establishing a knowledge base regarding these cultural factors; however, little is known about these factors at this time.

Additionally, health promotion programs must incorporate components which address cultural values and beliefs that influence participant outcomes. The majority of intervention efforts designed to enhance nutrition and exercise among Latinos, however, do not employ findings from formative research to inform their programs (Mier et al., 2010). This may help explain the limited success observed in Latino youth participating in pediatric obesity intervention programs.

Perhaps providing an example of formative research impacting treatment delivery and subsequent receptivity to health information, Bolling, Crosby, Boles, and Stark (2009) conducted a study examining parental perceptions of weight status among overweight and obese preschoolers. They found that White, Non-Hispanic parents preferred certain descriptors of weight status and identified certain physician recommendations as particularly challenging for them to implement. This information has been instrumental in promoting patient-provider collaboration to address overweight and obesity and may be beneficial in promoting adherence to weight management interventions. Thus, Bolling et al. (2009) serves as a model for establishing the importance of parental perceptions in addressing weight management issues. Among Latino parents, cultural factors may influence their initial understanding and response to discussions regarding weight status of young children. Furthermore, cultural factors may influence ability or willingness to implement intervention components, thereby influencing treatment outcomes.

In addition to barriers in terms of appropriate health communication, other barriers to the prevention of and treatment for pediatric obesity have been documented in the literature. Examples of these barriers include demographic factors that influence attrition rates among weight management program participants (Zeller et al., 2004) and barriers to addressing weight concerns among physicians (Jelalian, Boergers, Alday, & Frank, 2003). Barriers perceived by

parents of overweight youth have also been studied (Hesketh, Waters, Green, Salmon, & Williams, 2005). In one study, Sonnevile, La Pelle, Taveras, Gillman, and Prosser (2009) conducted focus groups with parents of overweight children ages 6-17 (n = 19). Focus groups were conducted with English speaking and Spanish speaking populations, though the number of Spanish-speaking participants was appreciably lower. Content was focused on barriers to common recommendations for the prevention of childhood obesity, including increasing physical activity, increasing participation in sports or community based activities, limiting television access, walking to school, eating less fast food and providing a healthier diet. Time and economic costs in terms of lifestyle were the primary barriers identified. Although these findings provide some preliminary information regarding perceived barriers among Latino parents, the authors identified the low number of Latino participants and the large age range of target children as limitations of their work and ability to generalize findings.

The current study addressed the above identified gaps in the current knowledge and research base and consequently advanced the field in several ways. First, because there exists some uncertainty regarding the manner in which health promotion or pediatric obesity interventions are culturally tailored for Latino youth, a systematic review of the existing literature was performed to describe current practices within the Kreuter et al. (2002) framework. The information obtained from this review outlined methods of cultural tailoring that provided a summary of the current state of this field and a context for the information obtained during the qualitative portion of the current study.

Second, because participation and engagement in interventions for pediatric obesity largely depends on parent understanding of their children's weight status, more information regarding effective health communication for parents of overweight and obese Latino young

children is necessary. The study by Bolling et al. (2009) highlights the need for information regarding parental perception of weight status in children (Bolling et al., 2009). The authors explain the importance of translating this type of research into work with ethnic minority groups. The current study addressed this need by obtaining (a) Latino families' perceptions of weight status among their identified overweight or obese children, and (b) opinions about how best to present information regarding significance of health status and associated health risks to Latino families with overweight or obese young children. Latino parents conveyed preferred terms in terms of communication regarding children's weight status and also identified health outcomes that are most salient and warrant behavior change. This information will provide medical personnel and behavioral health specialists with recommendations that will facilitate culturally appropriate delivery of quality of care concerning weight management issues, and this is consistent with a call for culturally-sensitive pediatric medical care (Britton, 2004).

Third, previous intervention work with Latino families of young children has not been effective in producing positive health gains. By obtaining qualitative information regarding participants' prior participation in a weight management program, feedback can be utilized to enhance or modify future treatment. Parents identified perceived and actual barriers to their participation and successful completion of a weight management intervention by identifying intervention components that were most relevant in terms of family and cultural context. Parents also identified intervention components that were difficult to implement or apply due to cultural values or beliefs and identified intervention components that facilitated program acceptance and participation. This information is of benefit to health care providers, and will facilitate the development of culturally-relevant interventions for Latino families with young overweight children.

General Method

This study integrated mixed methods approaches in order to facilitate cultural tailoring of existing family-based behavioral pediatric obesity interventions for young Latino children. A systematic review of culturally tailored interventions targeting health promotion behavior in Latino children (ages 2-18) was conducted with specific emphasis on methods employed for cultural tailoring of program content. Additionally, focus groups were utilized to capture (1) parental attitudes and perceptions of weight management issues among preschool aged Latino children (ages 2-6), (2) parental attitudes and perceptions regarding communication of weight status concerns for children, and (3) parental perception of barriers to and facilitators of implementing intervention components.

Study One

Method

The methods for the systematic review were carried out consistent with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA, Liberati et al., 2009). The PRISMA guidelines include a checklist for reporting the necessary components of each section of a systematic review, including the methods section.

Eligibility criteria. Studies had to meet the following criteria to be deemed eligible for inclusion in this review: (a) published in a peer-reviewed journal in English or Spanish language between 01/01/2000 and 06/30/2012; (b) included a weight management or health promotion intervention; (c) included Latino children as target of intervention; (d) included mention of cultural tailoring of program content; (e) and included a measurable outcome (i.e., anthropometric measures, quality of life). Exclusion criteria included (a) the absence of specificity regarding cultural tailoring strategies, and (b) absence of a unique weight

management or health promotion program (utilized and described in another article).

Information sources and study abstraction. Searches were performed using the following electronic databases: (a) PubMed; (b) CINAHL and (c) PsycInfo. The following search terms were used in various combinations: pediatric obesity, overweight; intervention; treatment; Latino, Hispanic; children; youth; culture. The following limits were applied: (a) publication date between 01/01/2000 and 06/30/2012, (b) age group of population included youth 2-18 years, and (c) Journal Article or Research Article as publication type. Of note, the start date of 01/01/2000 was selected based on a preliminary query using the above search terms. Results from this query, conducted prior to the systematic review process, identified 2000 as the earliest publication year for a study that would potentially meet eligibility criteria.

Data Extraction. To determine eligibility, the investigator reviewed the title and abstract of each article retrieved from the above described database searches using an initial screening form (Appendix A). A second reviewer was trained and independently reviewed the title and abstract of 15% of randomly selected articles. Disagreements between the investigator and secondary reviewer were resolved by consensus and agreed upon final data recorded. Initial inter-rater agreement was calculated using Cohen's kappa (Cohen, 1960) and was .86. The principal investigator then reviewed the full-text of all articles not initially screened out based on title or abstract.

Data collection process. Articles deemed eligible based on title and abstract or not deemed ineligible based on initial screening were obtained for full text review. These articles were reviewed by the author to assess relevance and locate other potentially germane studies by review of references. The following information was extracted from each manually retrieved article: (a) study design; (b) type of weight management or health promotion intervention; (c)

participant characteristics; (d) methods of cultural tailoring (including specific details and Kreuter et al. (2002) categorical classification); and (e) outcomes.

Results

Included studies

The original search yielded 511 articles for review of title and abstract. Of these, 77 were assigned to the secondary reviewer for reliability (15%). Thirty three articles were retrieved for full-text review resulting in 9 interventions for inclusion (see Figure 1).

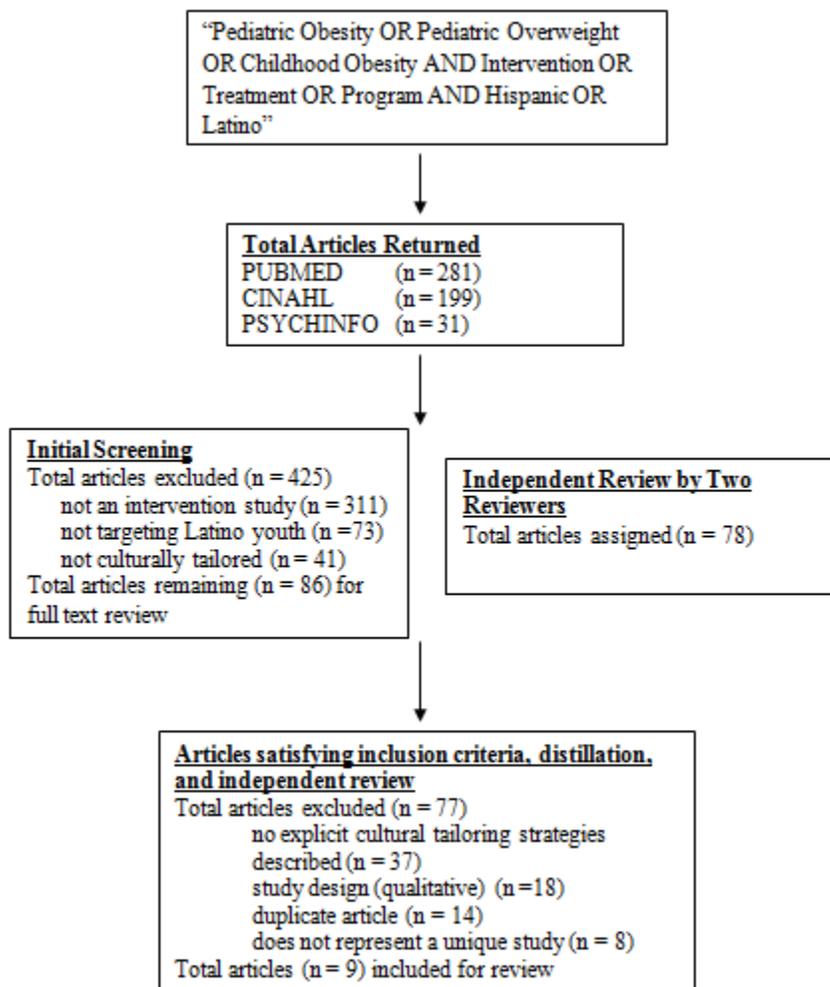


Figure 1. Summary of search.

The included interventions were summarized (see Table 1) for study characteristics, type of intervention, and study design.

Table 1. Summary of participants, interventions, and comparisons of included studies

| Authors (Year) | Program Name | Study Design | Participant Characteristics | Outcomes |
|---|---------------------------|--------------------|---|--|
| Berry, Colindres, Sanchez-Lugo, Sanchez, Neal, & Smith-Miller (2012) | NR | RCT | 56 mothers, 56 children (2-4 years) Mothers' baseline BMI: experimental group 32.0 (SD = 6.9); control group 32.0 (SD = 5.2). Baseline BMI %ile: experimental group 86.0 (SD = 7.5); control group 86% (SD = 11.1). | Primary outcomes- mothers' BMI, children's BMI percentile; Secondary outcomes- clinical/laboratory measures of mother's health, survey measures of health behavior and self-efficacy No significant differences |
| Cong, Feng, Liu, & Esperat (2012) | Transformación para Salud | Quasi-Experimental | 411 parents, 416 children (K-2 nd grades) 32% of children were overweight or obese. | Primary outcome- parent report of sedentary behavior Significant reduction in children's screen time compared to comparison group |
| Crespo, Elder, Ayala, Slymen, Campbell, Sallis, et al... Arredondo (2012) | Aventuras Para Niños | RCT | 808 schoolchildren (K-2 nd grades) and their parents Baseline BMI z-scores for Family-only condition 0.94 (SD = 1.23), Family + Community condition 0.86 (SD = 1.12); Community-only condition 0.87 (SD = 1.11), and for Control condition 1.00 (SD = 1.10) | Primary outcome- children's BMI z-score; Secondary outcome- parent report of children's diet, physical activity, and sedentary behavior No significant differences |
| Cronk, Hoffmann, Mueller, Zerpa-Uniona, Dasgupta, & Enriquez (2011) | Familias Sanas y Activas | Non-experimental | 54 children (8-11 years) and families Baseline BMI z-score 2.04 (SD = 0.37), baseline parent BMI 31.92 (SD = 5.77). | Primary outcomes- children's BMI z-score, fitness (walking test), health behavior, and quality of life Significant decrease in BMI z-score (-0.13), increase in parents' fitness ($p < .05$), increase in children's QoL ($p < .05$), decrease in parents' and children's sedentary behavior |
| Davis, Ventura, Cook, Gyllenhammer, & Gatto (2011) | LA Sprouts | Quasi-Experimental | 104 students (4 th -5 th grades) Intervention group- Baseline BMI %ile 74.5 (SD = 8.1) and z-score 0.9 (SD = 1.0). Comparison group- Baseline BMI %ile 80.1 (SD = 24.4) and z-score 1.2 (SD = 1.0). | Primary outcomes- diet and clinical measures of health Significant difference in dietary fiber intake between groups Significant difference in blood pressure, intervention group w/ 5% decrease in diastolic blood pressure, 3% decrease in controls; Significant difference in weight among overweight subsample- intervention subgroup 1% gain and 1% BMI decrease; 4% gain among, 1% BMI increase among control group |

□

| | | | | |
|--|---|-----|---|--|
| Fitzgibbon, Stolley, Schiffer, Van Hom, KauferChristoffel, & Dyer (2006) | Hip Hop to Health, Jr. | RCT | 12 Head Start Centers, 409 children (2-4 years) Baseline BMI z-score for intervention group 0.87 (SD = 1.24); for control group 1.13 (SD = 1.06). | Primary outcomes- children's BMI, BMI z-score Secondary outcomes- parent report of children's diet, physical activity No significant differences |
| Johnston, Tyler, McFarlin, Poston, Haddock, Reeves, & Foreyt (2007) | NR | RCT | 71 students (6 th -7 th grade) Baseline BMI z-score for children in intervention group 1.86 (SD = .48); 1.64 (SD = .44) in the control group. | Primary outcome- children's BMI z-score Secondary outcome- clinical and laboratory measures No significant differences |
| Slusser, Frankel, Robison, Fischer, Cumberland, & Neumann (2012) | Pediatric Overweight Prevention through Parent Training Program | RCT | 160 preschool aged children (2-4 years) and parents Intervention group- 26.2% of children and 39.3% of parents were overweight; 29.5% of children and 36.1% of parents were obese. Control group- 16.7% of children and 30.0% of parents were overweight; 21.7% of children and 40.0% of parents obese. | Primary outcome- children's BMI z-score Significant decrease in children's BMI z-score at 1-year followup compared to wait-list control |
| Trevino, Hernandez, Yin, Garcia, & Hernandez (2005) | Bienestar | RCT | 387 students (4 th grade) and their parents Baseline BMI of boys in control group 19.18 (SD = 4.14), girls 19.90 (SD = 5.42). Baseline BMI of boys in intervention group 19.23 (SD = 4.78), girls 18.92 (SD = 4.87). | Primary outcome- physical fitness (step test) Physical fitness scores (PFS) increased significantly in intervention group, decreased in control group |

Notes. RCT= Randomized controlled trial

In addition, a summary of cultural tailoring strategies is provided below (see Table 2), including identification of specific strategies and categorization based on the framework established by Kreuter et al. (2002).

Table 2. Summary of studies and cultural tailoring strategies

| Authors (Year) | Program Name | Peripheral | Evidential | Type of Strategy | | |
|---|------------------------------|--|------------|--|---|---|
| | | | | Linguistic | Constituent Involving | Sociocultural |
| Berry, Colindres, Sanchez-Lugo, Sanchez, Neal, & Smith-Miller (2012) | NR | Zumba | NR | Curriculum delivered in Spanish; materials translated | Pre-program focus groups assessing concerns of developing overweight since immigration; Community health- educator delivered program's stakeholder views (participants' feedback) | Traditions of cooking; exercise that can be done at home and walking groups to address safety concerns; low literacy materials; added child component based on feedback |
| Cong, Feng, Liu, & Esperat (2012) | Transformación para Salud | Name of program; recipe cards | NR | Bilingual school- based curriculum; bilingual home visiting protocol info sheets from school- based curriculum to parents in Spanish | Use of promotoras to deliver home visit portion of intervention | Promotoras provided individualized education and social support |
| Crespo, Elder, Ayala, Slymen, Campbell, Sallis,...Arredondo (2012) | Aventuras Para Ninos | Name of program; list of commonly visited restaurants | NR | Bilingual instruction | Use of home and community promotoras | Modifications to school, home and community environments facilitated by promotoras |
| Cronk, Hoffmann, Mueller, Zerpa- Uriona, Dasgupta, & Enriquez (2011) | Familias Sanas y Activas | Latino stoplight guide with photos for food classification | NR | Curriculum delivered in Spanish | Use of focus groups; bicultural staff | Childcare; modifying traditional favorite foods |
| Davis, Ventura, Cook, Gyllenhammer, & Gatto (2011) | LA Sprouts | NR | NR | Nutrition education & gardening curriculum in English; parent lessons in Spanish | Gardening session with Latina master gardener | Community garden; preparing foods/recipes with health substitutions; family style eating; transportation provided |
| Fitzgibbon, Stolley, Schiffer, Van Horn, KauferChristoffel, & Dyer (2006) | Hip Hop to Health, Jr. | Puppet food characters | NR | Delivered in Spanish & English | Stakeholder input; focus groups; bilingual teachers | NR |
| Johnston, Tyler, McFarlin, Poston, Haddock, Reeves, & Foreyt (2007) | NR | NR | NR | All communication presented in English and Spanish | NR | Mexican American dishes less calorically dense; involvement of extended family members |

| | | | | | | |
|--|---|--|----|---|--|---|
| Slusser, Frankel, Robison, Fischer, Cumberland, & Neumann (2012) | Pediatric Overweight Prevention through Parent Training Program | NR | NR | Intervention materials & instruction delivered in Spanish | Modules reviewed by Latino WIC dietician, Latina mother, and three faculty with specialty in health care delivery to Latino families; piloted with 8 mothers and revisions to modules based on class facilitator and mother's feedback | Discussion of cultural customs around food and discussion of culturally relevant foods; effective communication for fathers and grandparents; healthier food choices for families with WIC vouchers |
| Trevino, Hernandez, Yin, Garcia, & Hernandez (2005) | Bienestar | Name of program; incorporating images, dances, songs familiar to population; utilization of loteria and tiendita | NR | Intervention materials & instruction delivered in Spanish | NR | Instruction on modifying culturally relevant food |

Notes. NR = None reported

Study Design. Six of the nine studies were randomized controlled trials, in which study participants were randomly assigned to an intervention or a control group (Berry et al., 2011; Crespo et al., 2012; Fitzgibbon et al., 2006; Johnston et al., 2007; Slusser et al., 2012; & Trevino, Hernandez, Yin, Garcia, & Hernandez, 2005). In the Crespo et al. (2012) study, schools were randomized to one of three interventions (Family-only, Family + Community, Community- only) or to the control condition. Two of the studies utilized a quasi-experimental design where participants were not randomly assigned to groups but there was a control or comparison group (Cong, Feng, Liu, & Esperat, 2012; Davis, Ventura, Cook, Gyllenhammer, & Gatto, 2011) for reference. One of the designs was non-experimental, in which no control or comparison group was described (Cronk et al., 2011).

Type of Weight Management or Health Promotion Intervention. Four of the nine studies (44%) were school-based programs (Cong et al., 2012; Fitzgibbon et al., 2006; Johnston et al., 2007; Trevino et al., 2005), three (33%) were family-based (Berry et al., 2011; Cronk et al., 2011; Slusser et al., 2012), and two (22%) were community-based programs (Crespo et al., 2012; Davis et al., 2011). Although the Crespo et al. (2012) study was considered a community-

based program, it incorporated family-based and school-based components as well. Seventy eight percent of studies were aimed at facilitating positive health gains and/or increasing health behavior among both overweight and non-overweight youth, while 22% targeted weight loss and health behavior among overweight and obese youth (Cronk et al., 2011; Johnston et al., 2007).

Participant Characteristics. As noted in Table 1, three of the nine studies (33%) targeted preschool aged children (Berry et al., 2011; Fitzgibbon et al., 2006; Slusser et al., 2012). Two studies (22%) targeted school-aged children in grades kindergarten thru 2nd grade (Cong et al., 2012; Crespo et al., 2012), two (22%) included participants in 4th and 5th grades (Davis et al., 2011; Trevino et al., 2005) and 1 study included students in 6th thru 7th grades (Johnston et al., 2007). Participants in another study were between 8 and 11 years old (Cronk et al., 2011). Three studies (33%) targeted low-income Latino children and their families (Fitzgibbon et al., 2006; Slusser et al., 2012; Trevino et al., 2005).

Children in four of the nine studies reviewed (44%) had an average baseline BMI percentile or z-score that fell in the healthy weight range (Crespo et al., 2012; Davis et al., 2011; Fitzgibbon et al., 2006; Trevino et al., 2005). One study (11%) included participants with an average BMI percentile that fell in the overweight range (Berry et al., 2011) and youth in two of the 9 studies reviewed (22%) had an average BMI percentile or z-score that fell in the obese range (Cronk et al., 2011; Johnston et al., 2007). Two studies reviewed, which did not include baseline mean BMIz-scores or percentiles, provided total percentages of participants in the overweight or obese categories (32%- Cong et al., 2012; 38.4%, 55.7%- Slusser et al. 2012).

Baseline BMI data for parents were provided for four of the nine studies reviewed (44%). Two studies included parents with an average BMI at baseline in the obese range (Berry et al., 2011; Cronk et al., 2011). One study included parents with an average BMI at baseline in the

overweight range (Crespo et al., 2012) and one study included parents with a baseline BMI in the overweight and obese range across groups (Fitzgibbon et al., 2006). One study reviewed, which did not include baseline mean BMI, provided total percentages of parents with a BMI in the overweight (16.7, 26.2%) and obese (21.7, 29.5%) categories across study groups.

Methods of cultural tailoring.

Peripheral strategies. As identified in Table 2, each identified study reported or described the use of peripheral strategies (100%). Peripheral strategies are those that modify or enhance the observable properties of an intervention “by using certain colors, images, fonts, pictures of group members, or declarative titles that overtly convey relevance to the group” (Kreuter et al., 2002, p. 136). These strategies were utilized in recruitment efforts and descriptions of studies to attract the target population. For example, the names of the following programs, *Transformacion Para Salud*, *Aventuras Para Ninos*, *Familias Sanas y Activas*, and *Bienestar* (Cong et al., 2012; Crespo et al., 2012; Cronk et al., 2011; & Trevino et al., 2005), were used to clearly convey that Latino children and their families are the intended audience. Peripheral strategies were also noted in content descriptions. For example, Slusser et al. (2012) utilized a food list to help increase parents’ knowledge of “yes and no foods” based on dietary guidelines. The food list included culturally relevant foods as well as commercial foods that were likely to be purchased by participants given the identified popularity or familiarity of the restaurants or eateries among participants. Similarly, Davis et al. (2011) highlighted including culturally relevant food such as “cilantro, nopales, beans, corn, and squash” in their nutrition lessons and related educational materials and Cronk et al. (2011) described utilizing a “Latino Stoplight” guide with photos of culturally relevant foods to facilitate instruction on food categorization. Trevino et al. (2005) implemented a *loteria* game (American Bingo) with images

of people exercising and eating healthy in place of numbers and salsa dancing classes in order to teach children and families about healthy eating and exercise. This study also implements the use of a *tiendita* (i.e. little store) where participants who have earned *Bienestar* coupons for attendance and participation can purchase goods.

Evidential strategies. As noted in Table 1, none of the identified studies (0%) reported utilizing evidential strategies as part of the cultural tailoring process. Evidential strategies utilize epidemiological or other health data in a manner to convey the increased relevance of a particular health issue to the target population (Kreuter et al., 2002). In this context, evidential strategies would be used to convey the increased relevance of the health information shared during the course of the intervention or contained in the intervention materials. Additionally, no study reviewed included a reference to or description of an intervention component that could be categorized as involving an evidential strategy.

Linguistic strategies. As identified in Table 1, all studies (100%) identified for this review offered or delivered the culturally tailored intervention in Spanish via bilingual or bicultural facilitators/staff. This practice is consistent with the use of linguistic strategies, which are meant to alter the language used in interventions to increase comprehension (Kreuter et al., 2002). All studies also described offering intervention materials (e.g. handouts) in Spanish. One study (Davis et al., 2011) delivered the intervention in English to child participants (nutrition and gardening curriculum) but delivered an abbreviated version of these lessons to parents in Spanish. Similarly, Fitzgibbon and colleagues (2006) offered their intervention in both English and Spanish, which was consistent with the dual language format of the general curriculum in the Head Start classrooms.

Constituent-involving strategies. Four of the nine identified studies (44%) described utilizing the knowledge and experience of members with intimate knowledge or experience with the target population. Four studies either utilized focus groups in a formative manner to assist in the design of the intervention or utilized feedback from participants involved in the pilot testing of the interventions (Berry et al., 2011; Cronk et al., 2011; Fitzgibbon et al., 2006; Slusser et al., 2012). For example, Berry and colleagues (2011) asked focus group participants about changes in nutrition and physical activities since their immigration to the United States in order to inform program content. Further, two studies described obtaining input or feedback from other key stakeholders regarding the intervention (Fitzgibbon et al., 2006; Slusser et al., 2012). For example, Slusser et al. (2012) described having their program modules reviewed by a “Latino WIC dietician, a Latina mother, and three UCLA faculty who had specialty in Nutrition, Pediatrics, and health care delivery” (p. 54), although their specific feedback and how it was incorporated was unclear. Three studies involved community health educators or *promotoras* as providing direct service delivery of the intervention (Berry et al., 2011; Cong et al., 2012; Crespo et al., 2012). Two of these studies involved home visits by the community health educators or *promotoras* (Cong et al., 2012; Crespo et al., 2012).

Socio-cultural strategies. All identified studies (100%) employed the use of socio-cultural strategies to enhance the cultural relevance of their interventions. These strategies include those which identify and address a group’s cultural values, beliefs, and behaviors. Although all studies described attention to cultural values in their interventions, studies varied in their degree of description. For example, Fitzgibbon et al. (2002) described their intervention as “addressing cognitive (knowledge and attitudes) and environmental (social support, cultural attitudes, unsafe neighborhoods, conflicting responsibilities) barriers to exercise and adoption of

a low-fat, high-fiber diet that includes more fruits and vegetables,” but did not specify nor detail the barriers nor how they were adequately addressed. Other descriptions were not explicit in the cultural values addressed but alluded to some established Latino cultural values. For example, Slusser and colleagues (2012) described attention to family communication patterns in their intervention. The authors described interventionists as leading discussions regarding effective communication with fathers and grandparents about health behavior, particularly in light of how they impact mothers’ ability to implement intervention components in the home. Similarly, Johnston et al. (2007) and Cronk et al. (2011) described encouraging the involvement of additional family members to facilitate family wide change. The use of *promotoras* by Berry et al. (2011), Cong et al. (2012), and Crespo et al. (2012) was thought to help build comfort and familiarity for participants, aspects of the healthcare experience thought to be important for Latinos. For example, Cong et al. (2012) described the objective of the first home visit with a *promotora* as building rapport and comfort. In addition, the three studies also conceptualized *promotoras* as being a source of social support for families.

Additionally, although inclusions of culturally relevant food in content and material are considered peripheral strategies, program content that considers the cultural significance or meaning of food and feeding practices are categorized as sociocultural strategies. For example, Slusser et al. (2012) described addressing culturally relevant food but also cultural customs around food in program content. Similarly, other interventions (Berry et al., 2011; Crespo et al., 2012; Cronk et al., 2011; Davis et al., 2011; Fitzgibbon et al., 2006; Johnston et al., 2007; Trevino et al., 2005) described addressing cultural cooking practices by providing suggestions around healthy substitutions for traditional recipes or making other modifications to traditional recipes in order to make traditional meals less calorically dense. Berry and colleagues (2011)

noted that they altered their intervention so that “women continued traditions of cooking they learned from their sisters, mothers, and grandmothers in Mexico” (p. 188). One study (Cong et al., 2012) described individualized education targeting individual family’s perceived barriers to improved health behavior and targeting meeting of individual family’s goals.

Additionally, several studies also included descriptions of intervention components which reflected socio-cultural strategies that were not specific to Latino culture. For example, Slusser and colleagues (2012) addressed issues related to income or socioeconomic status by including instruction on making healthier food choices using WIC food vouchers. One study addressed the issue of personal safety in participants’ communities (Berry et al., 2011). The authors determined that participants’ had safety concerns regarding engaging in physical activity in their neighborhoods and provided instruction on exercises that could be completed within the confines of their homes and organized a walking group to lessen participants’ discomfort in walking outside (Berry et al., 2011). To address logistical barriers for participants, Davis and colleagues (2011) included transportation for participants to a local community garden. Other strategies utilized that were considered socio-cultural but not necessarily specific to Latino cultural beliefs, values, and behaviors were using community centers as settings for intervention and using hands-on activities to facilitate instruction and comprehension.

Outcomes. Six of the nine studies (67%) used children’s anthropometric data as primary outcome measures with one study utilizing BMI percentile (Berry et al., 2011) and 5 studies utilizing BMI z-score (Crespo et al., 2012, Fitzgibbon et al., 2006; Johnston et al., 2007; Slusser et al., 2012; Cronk et al., 2011). Two studies (22%) used parent anthropometric data as primary outcome measures (Berry et al., 2011; Cronk et al., 2011). Cronk et al., (2011) noted that in

addition to child and parent anthropometric measures, children's quality of life was also a primary outcome measure.

One study (11%) used children's physical fitness as their primary outcome measure (Trevino et al., 2005). One study measured children's sedentary behavior as their primary outcome (Cong et al., 2012) and another study examined children's dietary intake and clinical and laboratory measures of children's health status (i.e. blood pressure, cholesterol levels) as their primary outcomes (Davis et al., 2011).

One study (11%) included clinical and laboratory measures of mothers' health status and survey measures of health behavior and self-efficacy as secondary outcomes (Berry et al., 2012). One study included clinical and laboratory measures of children's health status as additional outcomes (Johnston et al., 2007). Two (22%) studies examined health behaviors, diet and physical activity, as secondary outcome measures (Crespo et al., 2012; Fitzgibbon et al., 2006).

Four of nine studies (44%) reported no significant differences between intervention and comparison groups in primary outcomes (Berry et al., 2011; Crespo et al., 2012; Fitzgibbon et al., 2006; Johnston et al., 2007). Five of nine studies (56%) demonstrated some effectiveness in producing positive health gains.

Slusser et al. (2012) found a significant decrease in children's BMI z-score at 1-year follow up compared to the wait-list control group. Trevino et al. (2005) found that change in physical fitness scores (PFS) was significantly different between intervention and control groups, with PFS increasing significantly in the intervention group and decreasing in the control group. Cong and colleagues (2012) found a reduction in children's screen time at 1-year with a diminished intervention effect after this time. Davis et al. (2011) found a significant difference in dietary fiber intake between the intervention and control groups but no other differences in diet

were noted. In terms of health outcomes, the authors found a significant difference between groups in terms of diastolic blood pressure with the intervention group demonstrating a 5% decrease in diastolic blood pressure compared to a 3% decrease in controls. Cronk et al. (2011) found a significant decrease in children's BMI z-score at 12 month follow up but no significant difference in parent BMI at 12 month follow up. The authors also found increased fitness among parents as measured by a walking test, significant improvement across all domains of children's quality of life, and a decrease in time spent engaged in sedentary behavior among parents and children (tv time, $p < .05$) at 12 month follow up.

Discussion

The objective of Study 1 was to identify culturally tailored health promotion interventions for Latino youth and describe current practices of cultural tailoring consistent with the Kreuter et al. (2002) framework. Results from this review of the extant literature detail commonly utilized cultural tailoring strategies and highlight gaps in the implementation of cultural tailoring strategies that may influence intervention efforts.

All studies that were included in this review employed the use of "surface structure" (Resnicow et al., 1999) intervention components, which include peripheral and linguistic strategies. Thus, all intervention programs included observable and audible content and tangible materials that were modified in a manner to enhance the programs relevance and familiarity for Latino children and their families. These programs were "on the surface" meant to be more appealing and fitting of their target audience. Interestingly, however, no study identified for this review was described as having used evidential strategies or described the use of evidential strategies. This is an important observation given that the prevalence of overweight and obesity is higher among Latino youth compared to their non-Hispanic youth counterparts (Ogden et al.,

2012) and that overweight or obese weight status confers additional health risk on youth, particularly young children. For example, Daniels (2006) found that physical health consequences (hypertension, type II diabetes, fatty liver) seen in overweight adults were emerging at earlier ages and placing them at greater risk for increased morbidity and mortality in later life. Thus, it would be important to determine if there is any perceived value in including evidential strategies in culturally tailored pediatric obesity interventions for Latino children. More specifically, it would be important to determine what “evidence” should be communicated to families and how best this “evidence” can be communicated to facilitate acceptance and understanding. The “evidence” necessary would include what to communicate about weight status to parents of overweight or obese Latino children and how best to communicate or present this information.

Less than half of the studies identified for this review utilized or described constituent involving strategies, including the involvement of *promotores de salud*, to inform intervention development. The importance of *promotores de salud* in the involvement in health education programs among the Latino community has long been established (Witmer, Seifer, Finocchio, Leslie, & O’Neil, 1995). *Promotores* are community health workers who serve as the connection or bridge between health consumers and providers in the Latino community. They are uniquely qualified to serve in this role given that they generally live in the community in which they work and thus have a great understanding and appreciation of the needs of their community members and barriers to having their needs met (Witmer et al., 1995). Additionally, they educate providers and enhance cultural competence in the provision and delivery of health care services (Smedley, Stith, & Nebon, 2002). Given the emphasis on formative research to guide cultural tailoring of interventions (Barrera Jr., Castro, Strycker, & Toobert, 2013), this finding is relatively

surprising. This suggests that the utilization of constituent-involving strategies as a means of informing interventions remains necessary and may serve to enhance intervention efforts.

All studies identified described (in some fashion) including socio-cultural strategies. In some instances, these socio-cultural strategies were described in depth but the underlying cultural beliefs, values, or behaviors they were intending to address were not clearly articulated. In other cases, the implementation of socio-cultural strategies was described more superficially without adequate detail or explanation of what these strategies involved or looked like. This is an important observation as the interventions that fail to provide this information cannot be replicated and the strategies, without sufficient detail, cannot be employed in other programs despite their helpfulness or utility. For example, it would be important to articulate more clearly what cultural beliefs, values, or behaviors, program content and materials are consistent and not consistent with in order to facilitate participant success.

Overall, the majority of studies employed both “surface” and “deep structure” components (Resnicow et al., 1999) in the cultural tailoring of the interventions. However, despite efforts at cultural tailoring, only approximately half of the interventions were somewhat effective in improving health status or improving health behavior among Latino participants with only two of six studies (33%) demonstrating changes in anthropometric measures, one which targeted preschool aged children. One interpretation of this finding is that there may still be cultural barriers in the forms of beliefs, values, or behaviors that are not being addressed and interfere with program success. It would be important to identify these potential barriers in order to proactively address them.

Study Two

Method

The second phase of this study involved conducting focus groups to obtain qualitative data regarding cultural beliefs, values, and behaviors that impact family-based treatment for pediatric obesity among Latino families. The data obtained were expected to inform the use of cultural tailoring strategies, and thereby expand the work described above in Study 1. The framework for obtaining this data was based on that used by Bolling et al. (2009), as this study highlighted important areas that impact treatment and are potentially influenced by cultural constructs.

Participants. Given the aims of the present study, to obtain feedback from Latino parents with an overweight or obese child, purposive sampling was used to recruit participants. Latino caregivers with children ages 2-6 who were overweight ($\geq 85^{\text{th}}$ percentile) or obese ($\geq 95^{\text{th}}$ percentile) and participating in the Spanish-speaking group of a family-based, behavioral intervention for pediatric obesity offered through the University of Kansas Medical Center (KUMC, *Healthy Hawks*) were eligible for this study. A total of six focus groups were conducted with primary caregivers ($N = 15$) of children. Fourteen participants were mothers and participated in focus groups before and after program completion. One participant was a maternal grandmother and participated solely in the focus group following program completion. Thus, the majority of participants participated in two focus groups. Of note, no parent approached declined to participate in the focus groups. Average age of participating mothers was 37 (age range 31-44), with age of grandparent excluded to preserve the descriptive mean. Average age of their preschool child was 4.42 ($SD = 1.36$). Average BMI of participating

mothers was 32.76 (SD = 4.84) and in the obese range. Average BMI z-score for children was 2.16 (SD = 0.31).

All participating focus group participants were female, self-identified as Latino, and identified Spanish as their preferred language. All participants identified Mexico as their country of origin.

Procedure. Participants provided demographic information (Appendix C) prior to participation. Three of the focus groups were held with wait-list or new participants to Healthy Hawks following their consent into the program and during their orientation session. They participated in a second focus group following the end of the 12-week program and at their graduation session. The investigator (who is bilingual), along with trained bilingual research personnel, conducted the focus groups with future and past participating families from *Healthy Hawks*. A primary facilitator utilized a pre-scripted set of questions partly based on results from the Bolling et al. (2009) study and partly based on results from Study 1 to help facilitate discussion and elicit feedback (Appendix B). A bilingual group leader or research team member provided assistance with logistics, recording and note taking during groups. Focus groups were audio recorded, transcribed verbatim in Spanish, and coded by trained research personnel. In total, six focus groups were held as saturation was noted at this point. Saturation was noted to be achieved when similar responses or similar themes were identified via thematic analysis of focus group transcripts and no new themes emerged (Morgan, 1997).

Data analysis. The computer software, NVivo, was utilized to organize, explore, and manage the qualitative data (QSR International PTY LTD, 2012). Once the transcripts from the focus groups were reviewed for accuracy by the principal investigator and bilingual team members, completed transcripts were imported into NVivo for the purposes of coding.

Focus group transcriptions were content analyzed and summarized using codes from the investigator and an independent coder. Transcriptions were initially "open coded," identifying within overall transcriptions key words and phrases related to initial categories (Kreuger, 2002). Based on the framework established by Bolling et al. (2009), initial categories included (a) *parents' perceptions of weight status and related health outcomes in their young children*, (b) *parents' perceptions of the nature and appropriateness of initial communications by healthcare professionals regarding the weight status of their young children*, and (c) *barriers to acceptance and application of intervention components and facilitators of engagement and completion of the intervention*.

Following open coding, transcripts were divided into sections based on the relationships or connections among the open codes; these sections corresponded to the established categories and reflected shifts in the topic of conversation. These sections were then reviewed and assigned preliminary codes using a coding tree (see Figure 2), which was developed with the initial categories to capture themes within the categories of responses. Disagreements about coding at this stage were resolved via consensus. This process is consistent with recommendations by Ryan and Bernard (2000). These codes were then clustered. Clusters consisted of similar codes and associated quotes that were pulled from each section of the original transcript.

1. Parental perception of children's weight status
 - 1.1 Overweight/obese
 - 1.1.1 Health concerns related to overweight
 - 1.2 Not overweight
 - 1.2.1 What health concerns bring them to treatment
 - 1.3 Other
2. Communication of weight status to parents
 - 2.1 Terms/descriptors utilized
 - 2.1.1 Meaning/understanding of terms/descriptors
 - 2.1.2 Feelings regarding terminology
 - 2.2 Preferred terms/descriptors
 - 2.2.1 Difference in meaning/understanding of message
 - 2.2.2 Advantages/benefits of preferred terminology
 - 2.3 Other
3. Barriers to treatment
 - 3.1 Knowledge barriers
 - 3.2 Skill barriers
 - 3.3 Environmental barriers
 - 3.4 Family barriers
 - 3.5 Other
4. Facilitators of treatment
 - 4.1 Relevance to Latino families (e.g. food, recipes)
 - 4.2 Evidence/education provided
 - 4.3 Language (Spanish group)
 - 4.4 Working with Latino staff
 - 4.5 Other

Figure 2. Coding Tree

From these clusters, and using deductive and inductive approaches, themes began to emerge. The themes were recurrent ideas that participants discussed in response to semi-structured questions by the group facilitator and recurrent ideas that emerged from participant driven discussions. Thus, themes were ideas that occurred most often and at greatest length. Once these themes were established, selective coding was used, whereby one systematically codes participant responses with respect to a core concept or theme. Full transcripts were reread and reviewed again for the purpose of selectively coding any data that corresponded to the identified themes. This iterative process continued until no new themes emerged, resulting in the 4 original categories, 1 new category based on participant feedback, and 9 themes. The process

of thematic analysis and interpretation was conducted consistent with qualitative research methodology outlined by Morgan (1997) and Carey and Smith (1994), in the context of the grounded theory framework (Charmaz & Belgrave, 2006; Glaser & Strauss, 1967).

Results

Focus Group Categories and Themes

Category 1: Parent perception of children's weight status.

Theme 1: Parents did not know their child was overweight. This category reflected parent perceptions of their child's weight status prior to and subsequent to physician communication about their child's weight and/or referral to treatment for pediatric obesity. In general, most parents did not perceive their child as "overweight" or "obese." They thought their child was "big" ("grande") but that their child's size was typical of other children or suggestive of good health: "*I did not think she was overweight, she looks like all the other little kids in my family and in our neighborhood and at her school*" ("No pensé que ella era sobrepeso, que se parece a todos los otros niños en mi familia y en nuestro barrio y en su escuela") and "*He is a little big but I thought it's good he's growing*" ("Él es un poco grande, pero me pareció que es bueno, está creciendo"). Parents believed smaller children were actually less healthy, suggesting they were not eating enough or developing appropriately: "*Yes, I thought he was eating better than other kids and I hear them [parents] say their children are picky eaters, but I was happy because my son eats everything*" (Sí, pensé que estaba comiendo mejor que otros niños y oigo [los padres] que dicen sus hijos son comedores quisquillosos, pero yo estaba feliz porque mi hijo come todo"). Parents also stated that they did not perceive their child's weight was an issue because no one in their families, at their child's daycare or school, or at the doctors' offices was communicating any concern to them.

Category 2: Communication about children's weight status.

Theme 1: Doctors had not explained to parents their child was overweight. Generally speaking, parents reported that their child's health care providers had not spoken to them about their child's weight status. In fact, several parents (85.7%) did not realize they were being referred by their child's provider for a weight management intervention and were surprised when they spoke to a Healthy Hawks team member and learned about the nature of the program: "*I did not know what the program was until I talked to [staff member]. The doctor did not tell me what Healthy Hawks was, he just told me to call*" ("No sabía que era este programa hasta que hablé con [empleado]. El pediatra no me dijo lo que es Healthy Hawks, el sólo me dijo que tengo que llamar") and "*I don't know why they told me to call this place, but they just gave me the name and number*" ("No sé porque me dijeron que llamar a este lugar, pero simplemente me dio el nombre y número").

Theme 2: Parents came for treatment because their child's doctor told them to (Respeto). When queried further regarding why they called Healthy Hawks with limited knowledge regarding the program, parents uniformly responded that they called because their child's physician or nurse simply told them to. "*I call because the doctor said to and, well, then it is important*" ("Llamo porque el doctor me dijo y, pues, entonces es importante"). Parents attributed physicians' lack of communication about their children's weight status to language and responsibility; parents indicated that communication between themselves and their child's physician was at times limited because of the English/Spanish barrier and that physicians seemed to think the Healthy Hawks team would talk with them about weight concerns.

Theme 3: Parents need different information to understand their child's weight problem. For the few parents who described discussions with their children's physicians

regarding weight management, communication was characterized as inadequate. Parents described not understanding the messages being conveyed by their child's physician as a result of the chosen method of communication and the wording used. For example, BMI charts were not described as useful by some parents. *"They show me he is high on that picture and I think it's good, he is doing better than the other kids"* ("Me muestran que es alto en ese gráfico y pensé que es bueno, lo está haciendo mejor que los otros niños") and *"Like at school, you want them to be higher because 90, 95 is good, so he does good on that chart"* ("Como en la escuela, usted quisiera que sus niños fueran más altos porque noventa, noventa cinco es bueno, entonces él hace bien en el gráfico"). Additionally, parents did not find the terms *"overweight"* ("sobrepeso") or *"obese"* ("obeso") helpful in understanding their child's weight status. The terms were not descriptive enough in communicating that their child's weight constituted a health risk: *"Being overweight, I don't think that tells me what the problem is"* ("Sobrepeso, no creo que eso me dicen cual es la problema"), *"Obese, to me, just meant he was big, and he is, he is a little fat, but I already knew that"* ("Obeso, para mí, solo me dice que era grande y el es, es gordito, pero ya sabía eso").

Parents preferred the term *"not a healthy weight"* ("no un peso saludable") and believed it communicates a stronger message about their child's weight status. From their perspective, *"not a healthy weight"* would mean their child's weight can be associated with negative health consequences and necessitates attention and treatment. They stated that this term would be scary to hear but would also indicate the "danger" of being overweight and would motivate them to make changes: *"To me, it means, ok it is not healthy what you are doing and you have to change something"* ("Para mí, eso significa que, ok no es saludable lo que estás haciendo, y tienes que cambiar algo"). Similarly: *"If I hear something is not healthy, I am going to not do that so if you*

tell me my child is not healthy or his weight is not healthy, I am going to do something” (“Si oigo que algo no es saludable, no voy a hacer eso, entonces si usted me dice que mi hijo no es saludable o su peso no es saludable, voy a hacer algo”).

Parents also expressed a desire to more explicitly be told what health consequences are associated with overweight and obesity. Parents agreed that knowing how their child’s health is at risk would be important in terms of seeking treatment: *“It is important to say that, because of their weight, they are at risk for medical problems like diabetes or high cholesterol. They are so young you don’t think they can get sick like that but they can and I think parents need to know that”* (“Es importante decir que, porque a su peso, ellos tienen mayor riesgo de desarrollar problemas médicos como diabetes tipo 2, y el colesterol alto. Ellos son tan jóvenes que no creo que se puede enfermar de esa manera, pero pueden y creo que los padres necesitan saber eso”).

Category 3: Barriers to treatment

Theme 1: Family is a problem (Familismo). Parents identified family factors as a barrier to treatment. Specifically, parents reported that changing eating and physical activity habits to improve their young child’s health would be a source of conflict between them and other family members. For example, parents stated that there was or would be disagreement about the need to alter family health behavior between mother and fathers: *“The problem will be his dad, he does not think his weight is a problem. He thinks he’s just big like him when he was a boy. He does not think we need to come here”* (“El problema va a ser su padre, no piensa que su peso es un problema. Él piensa que es sólo grande como él cuando era un niño. Él no cree que necesitamos venir aquí”). Parents also described child age as a barrier to treatment: *“For me, it will be hard because the older children, they do what they want to do. They want a coca cola, they just buy it and bring it home. They will drink in front of her and she will ask for it. If they do it, she will*

want to do it too” (“Para mí, va a ser difícil porque los niños mayores, ellos hacen lo que quieren hacer. Quieren una coca cola, lo van a comprar y llevar a casa. Beberán delante de ella y ella le pide. Si lo hacen, ella querrá hacerlo también”). Furthermore, “*It was hard because of his older sister. She did not want to follow the rules so then we would fight and argue and it was too much*” (“Era difícil porque su hermana mayor. Ella no quería obedecer las reglas así entonces tendríamos pelear y discutir y que era demasiado”).

The role of extended family members, who often had caretaking responsibilities, was also discussed as a barrier to treatment: “*I believe we have to change what we eat but my mother, she stays at home with the kids, and she isn’t going to change*” (“Creo que tenemos que cambiar lo que comemos, pero mi mamá, ella se queda en casa con los niños, y ella no va a cambiar”). Similarly, “*It would be hard for me to tell my mom to do this or don’t do that. It would be hard to tell her she is wrong because I always ask her what to do [with the kids]*” (“Será difícil para mí a decirle a mi mamá que hacer esto o no lo hago eso. Sería difícil decirle que está equivocado porque yo siempre le pregunte lo que tenemos que hacer [con los niños]”) and “*It will be hard with my mom, she came to this country to help me with the kids and I want her to cook what she likes. The kids they like it too*” (“Va a ser difícil con mi mamá, ella vino a este país para que me ayude con los niños y yo quería que cocinar lo que le gusta. Los niños les gusta también”).

Theme 2: Changing food is changing more than just food. Relatedly, parents believed that modifying their cooking habits or cultural customs around food was difficult. They described their cooking traditions as being part of their cultural identity, having been taught to them by their parents and grandparents. As such, they expressed some reluctance and regret in doing so: “*I know our food is not healthy, like tortillas and rice, but it is what I know. I bring that from Mexico. It is how I cook and I like my children to learn it too*” (“Sé que nuestra comida no

es saludable, como tortillas y arroz, pero es lo que sé. Traigo de México. Es como yo cocino y me gusta que mis hijos lo aprendan también”) and “*It is not easy to tell someone they have to change that when they have to change so many other things to live in this country*” (“No es fácil decirle a alguien que tiene que cambiar eso cuando tienen que cambiar muchas otras cosas para vivir en este país”). They also were concerned about their children’s reception to modified food: “*I changed the meat and cheese like you said but the kids did not like it. They wanted how we always cook it*” (“He cambiado la carne y el queso como usted ha dicho, pero los niños no le gusta. Querían cómo siempre lo cocinamos”). As a result of these barriers, they preferred that the program target increasing family engagement in physical activity over changing eating patterns: “*Maybe put more attention to exercise. I think of all the things you ask us to do, it was the easy one to do*” (“Tal vez ponga más atención al ejercicio. Creo que de todas las cosas que nos pide que hacer, era la más fácil de hacer”).

Additionally, parents reported that there were logistical barriers to making healthier food choices. Parents discussed the availability and cost of fresh fruits and vegetables as difficult barriers to overcome. For example, “*There is no good place to get fruits and vegetables. In our market, the fruit and vegetables don’t look very good. They look old and look like they will go bad*” (“No hay buen lugar para conseguir frutas y verduras. En nuestro mercado las frutas y las verduras no son muy buenos. Ellos parecen viejos y parece que van a ir mal”) and “*We don’t even live near a grocery store but we live near a McDonalds and Burger King and Wendy’s*” (“No vivimos cerca de un supermercado, pero vivimos cerca de un McDonalds y Burger King y Wendys”). Moreover, “*Sometimes those [fruit and vegetables] are more expensive than other food*” and “*If I buy fruits and vegetables, the children don’t eat them and they go bad then I*

waste money” (A veces las [frutas y verduras] son más caros que otra comida. Si compro las frutas y verduras, los niños no comen ellos y ellos van mal, entonces pierdo dinero”).

Theme 3: Children’s behavior is a problem. Young children’s behavior was also an identified behavior to treatment success. Parents reported feeling ill equipped to manage their children’s disruptive behavior in response to their attempts to engage them in health promoting behavior. For example, parents noted that children would throw temper tantrums if denied sugar sweetened beverages or junk food and would become upset when denied screen time: “*It is not easy to make them want healthy things. They cry and get mad. Sometimes it is more easy to just give them what they want*” (“No es fácil hacer que los niños quieren cosas saludables. Lloran y se enoja. A veces es más fácil simplemente darles lo que quieren”). Parents also thought it was difficult to limit sedentary activities, particularly screen time: “*Everything today is electronic, with the computer and the ipad and the phone. He wants to play with those things*” (“Hoy día todo es electrónico, con computadora y el ipad y el celular. Él quiere jugar con esas cosas”). Parents, however, also found it unnecessary to limit screen time, believing their children were already active: “*I don’t think he watches tv too much. He runs around all the time. Never is he sitting. He moves alot and for me, it’s fine he watches tv*” (“Yo no creo que él ve la tele demasiado. Él corre todo el tiempo. Nunca se sienta. Se mueve mucho y para mí, está bien que ve la tele”). Parents also found it difficult to limit screen time because of pressure following immigration to provide their children with access to electronic media, which was perceived as the social norm.

Category 4: Facilitators of Treatment.

Theme 1: Familiar content was helpful. Parents thought that attempts to make the environment more comfortable and material more familiar facilitated treatment. They recognized

and appreciated efforts to make the program more specific to Latino families: “*These pages, I like that you put things we use to cook and food we eat*” (“Estas páginas aquí me gusta que pongas las cosas que usamos para cocinar y la comida que comimos”).

Theme 2: Feeling comfortable is important (Personalismo). Parents reported enjoying working with Latino/a staff members. They discussed the importance of working with someone who not only spoke Spanish but understood their background and culture: “*I liked being able to talk about our food or the things that are hard to do in this program to [employee] and she would understand what I was talking about*” (“Me gustó hablar con [empleado] sobre de nuestra comida y lo que es difícil de hacer en este programa y ella entendería lo que estaba hablando”). “*I like [staff member]. He talks to you about his life then it is more comfortable and not formal*” (“Me gusta [staff member]. El se habla sobre su vida entonces es mas cómodo y no es formal”).

Category 5: Improving Program.

Theme 1: Parents want more education. Overall, parents thought the program (Healthy Hawks) was helpful in addressing their children’s weight management problems but offered several suggestions for improvement. First, parents believed that more education at the beginning of the program regarding why their child’s weight is a problem and, consequently, why it is important to change their behavior would be helpful: “*You have to give more information at the beginning to explain the problem because many of us did not know. We didn’t even know why we come here*” (“Usted tiene que dar más información al principio para explicar cuál es el problema, porque nosotros no sabíamos. Nosotros ni siquiera sabíamos porque venimos aquí”). Second, parents described wanting more information regarding how health promoting behaviors would help their child in other ways besides weight loss or weight management: “*I want to know why I should change things at home, not just about his weight, but will he sleep better or be better in*

school? Will he be happier?” (“Quiero saber por qué tengo que cambiar las cosas en la casa, no sólo por su peso, pero si el van a dormir bien o ser mejor en la escuela? ¿Va a ser más feliz?”).

Third, parents described wanting more instruction on how to effectively manage family issues around health behavior: *“It is easy for me to come here and say we can change things for my child but when we get home and other people do what they want to do, it’s hard. They need to want to change to and we need to talk more about that”* (“Es fácil para mí venir aquí y decir que podemos cambiar las cosas para mi hijo, pero cuando lleguemos a casa y otras personas hacen lo que quieren hacer, es difícil. Tienen que querer cambiar y tenemos que hablar más sobre eso”).

Discussion

Various themes emerged from focus group transcriptions that provide valuable information regarding cultural beliefs, values, and behaviors, which may influence the participation of Latino families in pediatric obesity intervention programs and parental adherence to treatment recommendations. While previous research has shown that parents often misperceive their child’s weight status (Doolen, Alpert, & Miller, 2009), studies have also demonstrated ethnic differences in perceptions of children’s weight status (Towns & D’Auria, 2009). More specifically, Latina mothers have been shown to demonstrate a preference for larger figures as representative of ideal body size for their children (Crawford et al., 2004; Ward 2008). Findings from these focus groups support this notion, as existing themes included parents’ lack of recognition of their children’s overweight status and parents’ belief that bigger was better. These themes suggests that attention to Latino cultural beliefs about ideal body size is an important factor to consider in terms of providing parents with psychoeducation around pediatric overweight and obesity.

Differences in cultural beliefs are also evident in parent preferences for communication regarding children's weight status. In contrast to the Bolling et al. (2009) study, which found that the Caucasian parents surveyed preferred the terms "overweight" and "obese" in describing their children's weight status, Latina mothers did not find these terms helpful. They believed "*not a healthy weight*" ("*no un peso saludable*") conveyed a stronger message about their children's weight status, was more descriptive of the risk associated with their child's weight, and more influential in terms of motivation for change. This finding is important in light of current practice recommendations (Krebs et al., 2007). Both Krebs and colleagues (2007) and Ogden and Flegal (2010) document the history of terminology used to communicate excess weight for children and adolescents. Terminology has changed over the last two decades with current guidelines outlining the use of the terms overweight and obesity to describe youth with excess weight. Findings from the present study suggest that while this terminology may afford clinical utility among healthcare providers, they are not sufficient in communication with Latino parents of overweight youth. Given that health concerns regarding children's weight are centered on the consequences of excess adiposity, the term "*not a healthy weight*" suggested by focus group participants may actually be more useful in communicating this and may be more appropriate for health communication with parents of overweight or obese Latino youth.

Analysis of focus group transcriptions also revealed cultural values that likely influence this group's engagement in, participation in, and adherence to treatment. Flores (2000) described certain values that are often observed in encounters with Latino patients and can shape their healthcare experience. Among the values identified were *respeto*, which assumes a hierarchy of deference to perceived authority figures, including a deference of lay people to experts, *familismo*- family-oriented, collective identity and loyalty to family and family obligation, and

personalismo- the value of warm personal interaction as opposed to formal and impersonal interactions.

In the present study, the value of *respeto* was observed in parents' descriptions of their pursuit of treatment. Caregivers reported pursuing Healthy Hawks because they were instructed to by their physician. Caregivers also reported following their physician recommendation of pursuing Healthy Hawks without clear reasons for this referral. This is important given the construct of motivation and its relationship to behavior change. Rollnick, Mason, and Butler (1999) have long established the construct of motivation and its significance in terms of health behavior change. They conceptualize motivation as an individual's readiness to change a specific behavior based on the extent to which a person feels a change is important, and a person feels confident in their ability to make the proposed change. Thus, Latino caregivers pursuing treatment out of obligation rather than perceived importance suggests that motivation at baseline is lower than expected among this group and this has implications for treatment engagement, adherence, and completion.

With regard to barriers to program success, parents highlighted the role of other family members in caretaking responsibilities and how this interferes with the ability to implement recommendations. Parents cited the lack of involvement or buy in from other family members as potential and real challenges to implementing recommendations. Given the value of *familismo* among Latinos, it is not surprising that the presence and involvement of extended family members would need to be taken into account when designing a culturally tailored intervention for this population.

Parents also noted that their relationship with the "teacher" and the group was important. They highlighted interpersonal interactions consistent with *personalismo* that seemed to foster a

positive treatment environment. Parents described the importance of feeling comfortable with everyone and feeling confident that the “teacher” understood their experiences and circumstances.

General Discussion

Pediatric overweight and obesity disproportionately affects some groups of youth with current estimates indicating a higher prevalence of overweight and obesity among Latino youth compared to White-Non Hispanic and Asian youth (Ogden et al., 2012; Wang, 2011). Given that pediatric overweight and obesity are associated with increased health and psychosocial risk (Daniels, 2006; Wyatt, Winters, & Dubbert, 2006) there is not only an increased need for obesity interventions or treatment programs and health promotion programs that target Latino children and their families, there is also an increased need for programs to address the unique cultural factors that may impact the health behavior of this group. Thus, the purpose of Study 1 was to understand and describe the current state of cultural tailoring efforts for weight management and health promotion interventions for Latino youth.

Results from Study 1 indicate that the number of interventions that specifically target Latino children has grown over the last decade. This coincides with increasing attention to health disparities in pediatric overweight and obesity and factors that contribute to disparities during childhood (Taveras, Gillman, Kleinman, Rich-Edwards, & Rifas-Shiman, 2010; Wang 2011). Although this suggests that greater attention is being paid to this at-risk group, the number of studies included in this review ($n = 9$) suggests that there remains significant work to be done in the development, implementation, and dissemination of culturally tailored weight management interventions for Latino youth and their families. Furthermore, of the interventions identified for the review, nearly half of the interventions did not result in any significant changes in primary

outcomes. This finding is consistent with previous research documenting smaller effect sizes for interventions among Latino youth and suggests that intervention efforts need to be examined and modified to “better fit” this population to optimize possible effectiveness (Branscum & Sharma, 2010).

One way of improving “fit” is through cultural tailoring. There are, however, degrees or levels of cultural tailoring (Kreuter et al., 2002). All of the interventions identified involved cultural tailoring strategies that targeted both “surface” and “deep structure” content (Resnicow et al., 1999), but the details regarding the specific strategies were at times lacking or noticeably absent altogether. While some additional details regarding the strategies employed could be inferred given the information provided, the details regarding the use of socio-cultural strategies in the interventions described were in need of explicit description. The identification of the cultural beliefs, values, and behaviors addressed via the socio-cultural strategies and how they were specifically addressed are necessary for future interventions to adequately address these cultural factors. A clearer delineation of these cultural constructs, which influence behaviors related to pediatric obesity, will help inform future health promotion efforts more broadly in the Latino population. Additionally, a clearer description of the strategies employed to address these cultural constructs can serve as models for future culturally tailored intervention efforts. Thus, the purpose of Study 2 was to extend the findings of Study 1 by providing additional information regarding the cultural constructs that should inform cultural tailoring efforts and to extend the findings of previous research assessing parent perceptions of barriers to and facilitators of program success (Bolling et al., 2009). From conducting focus groups, additional information regarding how cultural beliefs, values, and behaviors emerge in the context of pediatric obesity and impact treatment was obtained. Additionally, the information obtained provides guidance

regarding important targets of cultural tailoring strategies, particularly socio-cultural strategies, in order to enhance parent engagement in, participation in, and response to treatment.

Parents found surface strategies useful in facilitating treatment. More specifically, both peripheral and linguistic strategies used to modify the program to include content that was more salient for this group were appreciated. The themes and references that emerged when discussing facilitators of treatment indicated that increased familiarity fostered by these strategies was helpful for parents. For example, parents commented on references to cultural food and practices that fostered comfort and familiarity. Parents were also appreciative of the opportunity to receive the program in their native language. For example, they noted increased comfort in having a Spanish speaker group leader and a group leader who could identify with and understand their cultural background. Given that both peripheral and linguistic strategies are commonly employed in existing culturally tailored interventions for this population (100% of studies in Study 1), these qualitative findings regarding the reception and acceptance of these strategies reinforces the importance of these surface level strategies by offering insight regarding how they are viewed as helpful by Latino families.

Parents also described cultural beliefs and values that influenced treatment and are targets for deeper socio-cultural strategies. With respect to treatment engagement, parent perception of their child's weight status is important and feedback from participants indicated that cultural perspectives on ideal body size influence how parents view their child's weight status. Many caregivers reported that they were unconcerned about their child's weight prior to referral to the Healthy Hawks program. They also reported initial confusion regarding the concern expressed for their child's weight. Parents' confusion stemmed from beliefs that their child being "big" was a sign of strength or good health. This is consistent with previous literature suggesting that

Latinos identify heavier figures as representations of the ideal body size for both adults and children (Crawford et al., 2004; Jimenez-Cruz, Bacardi-Gascon, Castellon-Zaragoza, Garcia-Gallardo, & Hovell, 2007). Thus, Latino caregivers are less likely to perceive their child's weight as a problem given this cultural context.

Other cultural values also impact how Latino parents engage in treatment. Given that Latino parents may be less likely to recognize that their child has a weight management issue, it is important to understand the factors that influence them to seek treatment. Findings from the present study suggest that deference to physicians or medical providers influences treatment seeking behavior. This behavior reflects the Latino cultural value of *respeto*, which has been shown to be an influential factor in help-seeking behavior among Latinos (Andres-Hyman, Ortiz, Anez, Paris, & Davidson, 2006), particularly less acculturated immigrants from Latin American countries. In this case, Latino parents perceived their child's physician as the "expert" and followed physician recommendations despite a lack of agreement or even understanding. This finding is particularly important given the role of parents in family-based treatment for pediatric overweight and obesity. In family-based treatment for childhood obesity, treatment engagement and adherence is less a reflection of child participation and more so a reflection of parental motivation for participation (Gunnarsdottir, Njardvik, Olafsdottir, Craighead, & Bjarnason, 2011). As such, parental characteristics are hypothesized to be important. For example, Braet, Jeannin, Mels, Moens, and Van Winckel (2010) examined family characteristics as predictors of program dropout. They found that baseline parental motivation for treatment was higher among parents who completed treatment compared to those who did not complete treatment. This finding remained even after controlling for other family and patient factors. Thus, findings from the present study suggest that parent motivation may be low at the start of treatment given that

their pursuit of treatment may be a function of providers' professional status (Andres-Hyman et al., 2006) rather than parents' perception of the need for treatment.

A lack of adequate communication from providers contributed to parents' lack of understanding regarding their child's weight status. From the perspective of parents, physicians were reluctant to speak with them about their child's weight status and/or relied on the referrals to discuss weight management issues with parents. This is consistent with previous research that has identified various barriers to physician communication about children's weight status (Jelalian et al., 2003). Additionally, language was a barrier to communication about children's weight status with some parents describing misunderstandings or miscommunications between themselves and their child's health care provider.

From the parents' perspectives, communication about weight status is also limited by the terminology used by physicians. The terms "*overweight*" and "*obese*" do not adequately describe the weight status of their child nor convey the significance of their weight issue, rather "*not a healthy weight*" ("no un peso saludable") was the preferred language. Parents also reported wanting more information regarding the health risk associated with "*not a healthy weight*" ("no un peso saludable") in order to more clearly understand and appreciate the significance of their child's weight problem. Parents felt that if they knew their child was at-risk for chronic conditions such as diabetes and heart disease, they would be more likely to make changes in their family's health behavior. This is an important finding given that the existing culturally-tailored interventions identified in this investigation do not describe using evidential strategies in the design or implementation of their interventions. Out of the 9 studies reviewed for Study 1, no studies described or alluded to using this specific type of cultural tailoring strategy. Using epidemiological data to convey increased health risk associated with overweight and obesity,

such as increasing rates of diabetes among Latino children (Dabelea, Pettitt, Jones, Arslanian, 1999; Flores et al., 2000), may be a critical component that is missing from treatment programs. Evidential strategies may be necessary to get “buy in” or increased motivation from parents, particularly if parents are uncertain that their child’s weight is a problem.

Relatedly, when queried about what could be done to improve the program, one recurring theme that emerged was parents wanted additional education regarding other benefits of treatment. Specifically, parents wanted to know how treatment may help improve children’s functioning in other domains of life. This is consistent with current literature that has established health-related quality of life (QOL) as an important measure in the assessment and treatment of pediatric obesity (Eisenmann, 2011; Klesges, Dzewaltowski, & Glasgow, 2008; Tsiros et al., 2009). QOL is a comprehensive construct consisting of physical, emotional, social, and school functioning and overweight youth have been shown to demonstrate lower QOL when compared to normal weight peers (Schwimmer, Burwinkle, & Varni, 2003). Given that BMI or other anthropometric measures may be less likely to reflect immediate change (McGovern et al., 2008), communicating to families about expectations for improvements in children’s quality of life may be particularly salient for these parents, given their perspectives on health, and thereby increase their motivation. Interestingly, this was consistent with responses to the “ice breaker” at the beginning of the focus groups where parents were asked what it means for their child to be healthy. All parents reported that their child being happy was a component of being healthy and the majority of parents referenced doing well academically and socially as indicators of health.

Given the importance of family in the context of *familismo* (Andres-Hyman et al., 2006; Flores, 2000), one would anticipate that greater attention to the role of extended family members would be critical in the design of a culturally tailored weight management intervention for Latino

families. Findings from the focus groups support this, in that parents described the role of other family members in caretaking and decision-making as a potential barrier to treatment. Although important, only three of the nine studies identified for this review made reference to the role of the extended family. Two studies (Cronk et al., 2011; Johnston et al., 2007) explicitly encouraged the involvement of extended family members in the intervention and one study discussed the importance of communication between family members in terms of adopting new health habits (Slusser et al., 2012). Consistent with Slusser and colleagues (2012), parents in the focus groups also discussed changes in health behavior as a source of conflict between family members. Thus, communication training, an informal component of one reviewed study, may be of increased importance in the design of family-based weight management interventions in order to address challenges that may be influenced by this cultural value. Additionally, the value of *respeto* may also play a role related to grandparent involvement and their role in the family's hierarchy given mothers' references to loyalty and obligation to their parents (Andres-Hyman et al., 2006, Flores, 2000).

Parents also discussed preference for traditional foods and meals as a barrier to program success. Parents were more reluctant to change their foods and recipes citing tradition and cultural identity as reasons for their hesitance. This is interesting in light of the results from the systematic review. Several studies reported intervention content and material that emphasized modifying traditional or cultural foods (Berry et al., 2012; Crespo et al., 2012; Cronk et al., 2011; Davis et al., 2011; Johnston et al., 2007; Slusser et al., 2012; Trevino et al., 2005), however, none commented on parental acceptance of this program component. Parents also felt that altering elements of their children's diet would be more difficult than increasing their children's level of activity and thought the program may be improved by focusing more on increasing

physical activity and exercise. At the same time, parents also endorsed barriers to physical activity including beliefs that their children were already “active.” Furthermore, parents also described struggling with limiting their child’s sedentary activities because they felt pressure to provide their children with electronics. Parents felt this was a reflection of the perceived social norm and felt pressure to conform given the goal of providing a better life for their children in the US.

There are several limitations associated with this study. First, in terms of the systematic review, articles were excluded that did not specifically target Latino youth. Articles that targeted ethnic minority children, not just Latinos, may offer additional information regarding cultural tailoring efforts, though they would not be specific to Latinos. These articles may describe other socio-cultural strategies that were employed in the design of interventions that may be important in considering other cultural factors such as socioeconomic status or urban community living. Second, in terms of the focus groups, the participants represented treatment-seeking Latino families, mostly of Mexican origin. As such, results may not generalize beyond this subgroup of Latinos. Third, the age range of mothers participating in the focus groups is of note and might suggest that they have older children in addition to their preschool aged child. As such, results may not represent the perspective of caregivers with only preschool aged children.

Despite these limitations, this mixed methods study offers several unique contributions to the current literature. To the author’s knowledge, Study 1 is the first systematic review of culturally tailored health promotion programs for Latino children with an emphasis on examining methods of cultural tailoring. The compilation of studies and description of cultural tailoring strategies using the Resnicow et al. (1999) and Kreuter et al. (2002) frameworks provide a comprehensive overview of the current practices in cultural tailoring for this target population. In

doing so, this review outlines gaps in cultural tailoring methodologies that could possibly contribute to the lack of effectiveness of some programs and the small effect sizes in terms of some programs' favorable outcomes (Branscum & Sharma, 2010). The most notable of these gaps is the lack of detail provided regarding cultural tailoring strategies and the context for their use. Study 2 addressed this identified gap by examining family expectations for pediatric obesity treatment in the context of the existing literature in order to inform the use of various cultural tailoring strategies. More specifically, information from families prior to and following their participation in a weight management program provided insight into cultural beliefs, values, and behaviors that impact treatment and are important to address through socio-cultural strategies when designing a culturally tailored intervention for Latino children with pediatric obesity.

Overall, the study provides valuable information that can be used to enhance pediatric obesity interventions for young Latino children. Although participants were primarily of Mexican origin, research has shown that Mexican-American youth are particularly at risk for pediatric overweight and obesity (Ogden et al., 2012) thus it is important to further our understanding of how best to approach treatment for this vulnerable group. As such, the present studies provide specific information regarding the cultural tailoring of interventions for this population.

At minimum, the use of peripheral and linguistic strategies are necessary to foster comfort and familiarity for Latino families participating in pediatric weight management interventions, and existing culturally tailored interventions employ these strategies consistently. Evidential strategies are less common among existing interventions but are crucial in helping Latino parents understand and appreciate the health risk associated with their child's weight status. Socio-cultural strategies, though frequently utilized in existing interventions, require more

explicit description in terms of their underlying cultural constructs. The present study provided additional insight regarding these cultural constructs. Parents of overweight or obese young Latino children described beliefs about body size, beliefs about health communication, and beliefs about immigration and acculturation that impact their engagement and response to treatment. Furthermore, parents also described cultural values and behaviors that can impact aspects of treatment and should be addressed when tailoring interventions for this population.

Recommendations for future work include the development of more standardized guidelines for the documentation of cultural tailoring strategies to permit study replication. Such guidelines would facilitate the ability of clinicians and researchers to identify cultural tailoring components that may be useful or of interest for their endeavors. Recommendations for further tailoring of interventions include providing these families with additional psychoeducation regarding children's weight status and associated health risks at the beginning of treatment. This begins with the terminology used to communicate about their children's weight status. Current terminology is not adequate and as such does not convey the health risks associated with excess adiposity in children. Alternative terminology may be more effective in communicating about children's weight status and findings suggest "*not a healthy weight*" ("no un peso saludable") may be preferable. Given that many of these families may lack the expected background knowledge regarding pediatric overweight and may be seeking treatment without a clear understanding of the referral issue, increased emphasis on getting parents' "buy in" at the beginning of treatment will be necessary to increase parents' motivation. Increasing parent motivation may result in increased program adherence and program completion. Interventions should also include instruction on effective communication training and problem-solving skills

training given the emphasis on the involvement and role of immediate and extended family members in fostering or potentially hindering lifestyle changes.

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Appendix A

Data Extraction (Screening Title and Abstract) Sheet

Citation:

1. Does the article report or evaluate the results of a weight management or health promotion intervention for youth (ages 2-18)?
 - Yes
 - No **{exclusion}**
 - Can't tell **{retrieve article for further screening}**
2. Does the article target Latino children or youth?
 - Yes
 - No – targets ethnic minority children, not specific to Latinos **{possible exclusion}**
 - No – targets adults **{exclusion}**
 - Can't tell **{retrieve article for further screening}**
3. Does the article involve cultural tailoring strategy(ies)?
 - Yes – involves cultural tailoring strategy(ies)
 - No- does not specify strategy(ies) **{possible exclusion}**
 - No **{exclusion}**
 - Can't tell **{retrieve article for further screening}**

*** Only answer questions 4-5 if questions 1-3 were answered “yes” ***

4. Does the article include at least one measurable outcome?
 - Yes
 - No – includes only descriptive data **{exclusion}**
 - Can't tell **{retrieve article for further screening}**
5. What type of study design was used?
 - Randomized Control Trial (RCT)
 - Quasi-RCT
 - CBA (requires contemporaneous observation periods for control and intervention groups AND judgment that control represents a comparable group or setting)
 - ITS (requires statement of well-defined time period for interventions implementation AND data measurement for at least three time point before and after intervention)
 - Cohort study; before-after or time series (not CBA or ITS)
 - Observational (e.g., cross-section, case-control)
 - Systematic review of meta-analysis **{exclusion}**
 - Non-research (commentary, review, news) **{exclusion}**
 - Qualitative research (e.g., focus groups) **{exclusion}**
 - Guideline or consensus statement **{exclusion}**
 - Can't tell **{retrieve article for further screening}**

Note: At this stage of triage, err on the side of inclusion/caution if there is a reasonable chance the study meets criteria. Further screening will assess for eligibility.

Appendix B

Sample Focus Group Protocol (Past Participants)

| | |
|---|---|
| <p>Group Discussion 5 minutes</p> | <p><u>Introduction Questions</u> <i>The first thing I'd like for you to discuss is what you think about your children's health. What does it mean for your child to be healthy?</i></p> |
| <p>Group Discussion- Topic 1 20 minutes</p> | <p><u>Topic 1: Health Communication</u> <i>Next, I'd like for you to discuss your experience speaking with doctors, nurses, and other healthcare professionals about your child's weight. To begin, tell us about how the doctors, nurses, or other healthcare professionals explained your child's weight to you.</i></p> <ul style="list-style-type: none"> • <i>Probe 1: What kinds of words did they use to describe your child's weight?</i> • <i>Probe 2: How does it feel to have your child described as "overweight", "obese", [insert other terms mentioned by group]?</i> • <i>Probe 3: Do you consider these terms motivating, offensive or neutral?</i> |
| <p>Group Discussion- Topic 2 20 min</p> | <p><u>Topic 2: Health Risks</u> <i>Now, I'd like for you to discuss your perceptions your child's weight status and its impact on their health. How do you see your child's weight impacting his or her health?</i></p> <ul style="list-style-type: none"> • <i>Probe 1: What concerns do you have about your child's weight and his or her health?</i> • <i>Probe 2: What concerns do you have about your child's future health?</i> • <i>Probe 3: What worries or concerns would motivate you to change how you manage your child's weight?</i> |
| <p>Group Discussion- Topic 3</p> | <p><u>Topic 3: Barriers</u> <i>Finally, I'd like for you to discuss your experience in Healthy Hawks. Please think back to your participation in these programs. In what ways were these programs helpful to you?</i></p> <ul style="list-style-type: none"> • <i>Probe 1: What components are difficult for you to implement to keep healthy in terms of your lifestyle or culture?</i> |

| | |
|--|---|
| | <ul style="list-style-type: none"> • <i>Probe 2: Is there something different or special in terms of culture that you wish the program had addressed?</i> • <i>Probe 3: How can a program like ours better serve other Latinos?</i> |
| Group Discussion- Wrap Up 5 minutes | <p><u>Wrap Up</u> To end today's discussion we'd like for you to tell us of all the things discussed today, what to you is the most important?</p> |

Sample Focus Group Protocol (Future Participants)

| | |
|---|--|
| Group Discussion 5 minutes | <p><u>Introduction Questions</u> The first thing I'd like for you to discuss is what you think about your children's health. What does it mean for your child to be healthy?</p> |
| Group Discussion- Topic 1 20 minutes | <p><u>Topic 1: Health Communication</u> Next, I'd like for you to discuss your experience speaking with doctors, nurses, and other healthcare professionals about your child's weight. To begin, tell us about how the doctors, nurses, or other healthcare professionals explained your child's weight to you.</p> <ul style="list-style-type: none"> • <i>Probe 1: What kinds of words did they use to describe your child's weight?</i> • <i>Probe 2: How does it feel to have your child described as "overweight", "obese", [insert other terms mentioned by group]?</i> • <i>Probe 3: Do you consider these terms motivating, offensive or neutral?</i> |
| Group Discussion- Topic 2 20 min | <p><u>Topic 2: Health Risks</u> Now, I'd like for you to discuss your perceptions your child's weight status and its impact on their health. How do you see your child's weight impacting his or her health?</p> <ul style="list-style-type: none"> • <i>Probe 1: What concerns do you have about your child's weight and his or her health?</i> • <i>Probe 2: What concerns do you have about your child's future health?</i> • <i>Probe 3: What worries or concerns would motivate you to change how you manage your child's weight?</i> |
| Group Discussion- Topic 3 | <u>Topic 3: Barriers</u> |

| | |
|--|--|
| | <p><i>Finally, I'd like for you to discuss your future experience in Healthy Hawks.</i></p> <p><i>In what ways are you hoping this program will be helpful to you?</i></p> <ul style="list-style-type: none"> • <i>Probe 1: What concerns do you have about participating in a program like Healthy Hawks?</i> • <i>Probe 2: What difficulties do you think might come up in terms of completing the program?</i> • <i>Probe 3: What are the barriers for you to change your child's diet?</i> • <i>Probe 4: What are the barriers for you to limit your child's screen time?</i> • <i>Probe 5: What are the barriers for you to increase your child's physical activity?</i> |
| <p>Group Discussion- Wrap Up 5 minutes</p> | <p><u><i>Wrap Up</i></u> <i>To end today's discussion we'd like for you to tell us of all the things discussed today, what to you is the most important?</i></p> |

Appendix C

Fecha: _____

Su edad: _____

Sexo: Masculino Femenino

Su Raza

Indio americano o Nativo de Alaska

Hawaiano Nativo o Isleño Pacífico

Asiático

Blanco o Caucasiano

Negro o Africano-americano

Su Etnicidad (Identificación de Origen):

Hispano o Latino No Hispano o Latino

¿Cual es su relación con el niño(a) ? _____

Lugar de Nacimiento? _____

Número de años viviendo en los Estados Unidos: _____

Educación: Primaria (Grado) _____ Preparatoria (años) _____ Universidad (años) _____

Casado _____ Divorciado _____ Separado _____ Soltero _____

Salario anual aproximado: _____

Edad del niño(a): _____

Fecha de Nacimiento: _____

Genero del niño(a): Masculino Femenino

Raza del Niño/Niña:

Indio americano o Nativo de Alaska

Hawaiano Nativo o Isleño Pacífico

Asiático

Blanco o Caucasiano

Negro o Africano-americano

Etnicidad del Niño/Niña (Identificación de Origen):

Hispano o Latino No Hispano o Latino

Otras personas viviendo en la casa:

| Edad del otra persona | Genero |
|-----------------------|--------|
| | |
| | |
| | |