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**Objective:** To assess the impact of a healthy choices and activities intervention program utilizing goal coaches to guide adolescents as positive change agents for Latino parental/caregiver family food decisions

**Study Design, Setting, and Participants:** Research design included two phases: (1) a developmental phase with youth and goal-coach curriculum development and testing, and (2) an implementation phase with a 6-week healthy choices and physical activities intervention pilot program. Participants in the developmental and pilot phase of the study include both children (10-14 years) and their Spanish speaking primary caretakers who attend a church youth group program in central North Carolina. Goal coaches include youth mentors between the ages of 18 to 24, recruited from a local college in central North Carolina.

**Outcome, Measures and Analysis:** 1) Content analysis of focus groups with youth and goal coaches were conducted to determine ease of use and compliance with study methodology, including photo journaling and family goal setting, as well as message appropriateness for youth and goal coaches. 2) During implementation and one month follow up the following were assessed: pre/post testing of parent/caregiver food behaviors, fruit and vegetable intake, and physical activity behaviors; youth nutrition, physical activity habits and BMI; and adherence to established family goals.

**Results:** 21 youth and 5 goal coaches were recruited to participate. All materials were developed utilizing constructs from the Social Cognitive Theory, and translated. 1) During the focus groups, goal coaches reported that they learned from the youth that parents are a barrier to influencing healthy family behaviors. Youth also reported that they were non-compliant with the use of the photo journal. 2) Youth were able to successfully set family-based nutrition and physical activity goals with 82% family compliance overall. Parents reported increased physical activity and healthy food behaviors pre- and post-intervention, including increased nutrient-dense food purchasing one-month post-intervention. One-month follow-up surveys reported an increase in healthy nutrition and physical activities in homes.

**Conclusions and Implications:** This innovative approach is a promising strategy for reducing the adverse health effects associated with dietary acculturation among Latino families. It builds upon the inherent value of familism as well as the strengths of adolescents as carriers of nutrition and health information. Future research is needed to expand upon these strategies to better tailor nutrition education messaging for Latino immigrant families.

UTILIZING CHILDREN AS CHANGE AGENTS TO PROMOTE HEALTHY FAMILY  
LIFESTYLE BEHAVIORS

by

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Approved by

Dr. Lauren Haldeman  
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To Hailey, Kaitlyn, Alex, Greg, Ashlie, and Sara:  
Thank you for being my tribe. Thank you for answering the phone when I called.  
Your love, support, meals, visits, and laughter are what I look forward to the most.  
I could not have done this without you.

APPROVAL PAGE

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## **CHAPTER I**

### **INTRODUCTION**

Non-communicable diseases (NCD) such as diabetes, cancer, cardiovascular disease, and chronic respiratory disease are responsible for 63% of global mortality (1). There is an undeniable association between childhood and adolescent obesity and comorbidities since the excess weight carried in childhood and adolescence continues to track into adulthood the vast majority of the time (2). With a global increase in deaths related to NCDs, especially diabetes which has almost doubled in the past 20 years, for adolescents, the risks for NCD in adulthood are rapidly increasing (3).

There is significant prevalence of obesity in minority youth and adults in the United States (2). According to results from the 2013-2014 National Health and Nutrition Examination Survey (NHANES), Hispanics have the highest rates of overweight and obesity in both children/adolescents and adults when compared to White and Black Americans (4). Currently, Hispanics are the fastest growing ethnic group in the U.S., estimated to grow from 12% of the population to 25% of the population by the year 2045 (5) and with the obesity epidemic as a public health crisis now, the risk that NCD rates will continue to grow is highly likely if health disparities within the Hispanic population are not addressed.



Unfortunately, little has been done to address overweight and obesity in the Hispanic population. Prominent gaps in the literature include the identification of factors that influence parent and caregiver food decisions, specifically the use of children as agents of change to promote healthy lifestyle behaviors. The complexity of the obesity epidemic has presented challenges as to where the research might focus. Some researchers believe the food and eating environments, including disparities in food access among different income groups, whereas others have concentrated on individual factors such as skills, motivation, and knowledge (6). Regarding the childhood obesity epidemic, there is a strong consensus that the childhood obesity epidemic is that the “largest contributors...are environmental: patterns of obesogenic eating (overeating, eating unhealthy food) and/or low activity, and the factors that contribute to those patterns” (7). The home food environment is extremely influential on how a child grows, develops, eats, and behaves (8).

For low-income populations where health disparities are higher and access to programs for any health or weight management interventions are scarce to non-existent, there is a need to develop low-cost interventions that can help close the health need gap. In this country, Hispanics make up a substantial portion of low income families. With most Hispanic parents expecting healthcare providers to approach weight issues with adolescents (9), and 61% of Latino immigrants lacking a regular healthcare provider (10), the need for alternative strategies to deliver health information is clear. Because of the uniqueness of Latino immigrant families,

a potential strategy for healthy lifestyle modifications is the utilization of children as agents of change.

### **Long-term Goals**

Our nation is struggling to find effective and efficient means to prevent and treat the overweight and obesity epidemic. A racial and ethnic disparity in healthcare, along with significant language barriers for immigrant populations make the development of culturally appropriate nutrition education strategies and tools need to be a major priority in public health. The goal of this dissertation project is to develop a healthy lifestyle intervention program for the newly arrived immigrant family of Hispanic/Latino descent. Latino immigrant families are at risk of developing nutrition-related chronic disease as a consequence to the acculturation to the typical U.S. diet of high fat, high calorie foods and portions, low fiber foods such as fruits and vegetables, and poor lifestyle choices that include increased screen time and decreased physical activity.

### **Specific Aims**

1. **Develop and test curriculum for a healthy choices and activities intervention program.**

**Approach:** The developmental phase includes testing the Eat Healthy, Be Active Community Workshop Program (US DHHS, 2012) curriculum with the adolescents, as well as the development of family-based goals and compliance with photo journaling.

2. **Develop and test orientation and training curriculum for goal-coaches.**

**Approach:** The developmental phase includes the testing of orientation materials and curriculum comprehension.

3. **Pilot healthy choices and activities intervention program.**

**Approach:** The implementation phase has children utilizing weekly family-based goal development with the goal-coaches, as well as maintaining a photo journal to document family activities to provide a thorough analysis of the effectiveness of the healthy choices and activity curriculum messages.

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## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

#### **Health and Dietary Risk in Latino Immigrants**

The obesity epidemic in the United States continues to be a serious public health issue. The United States (U.S.) is the world's leader in the prevalence of overweight and obesity, with Mexico being the second highest in the childhood overweight and obesity epidemic (1). The National Health and Nutrition Examination Survey (NHANES) data in 2013-2014 reported that 38% of U.S. adults are obese, with 8% of the adult population being classified in the extreme obesity category, based on a body mass index (2). In 2011-2014 NHANES revealed that 17% of U.S. children and adolescents were obese, with 5.8% of those individuals in the extreme obesity category, based on body mass index (3). The rates of obesity have decreased or leveled off in children aged 2-11 years as of the most recent NHANES data, with the exception of the adolescent population ages 12-19 years, who have had an increase in rates of obesity and extreme obesity (4). Evidence shows that overweight and obesity prevention strategies need to be a major priority in combating this health epidemic, since preventing the unhealthy weight gain is both easier and more effective than reversing it later (5).

Creating successful prevention and intervention strategies also includes identifying those who are at the highest risk of encountering challenges to adequate

options for healthy eating and physical activity. There is significant prevalence of obesity in minority youth and adults in the United States (3). When compared to White (38.2%) adults, adult obesity rates were higher for Latinos (46.9%) and Black (48.4%) (2). Rates of obesity were found to be higher in youth ages 2-19 who are Latino (21.4%) and Black (19.5%), when compared to White (14.7%) youth (2). With childhood obesity being a risk factor for adult obesity, the comorbidities of obesity such as high blood pressure and irregular blood glucose levels, also follow children and adolescents into adulthood (4, 6). Evaluating the factors that affect the population's ability to achieve or maintain a healthy weight continue to be a top priority in public health research.

Increased acculturation amongst new immigrants has been associated with an increased risk of obesity through an increase in fat and calorie intake, decreased fiber intake, decreased physical activity, and barriers with food availability, accessibility, and affordability (7). Hispanic parents are often frustrated when their children develop a preference for "American foods" over traditional foods from their home countries because they consider traditional foods as being healthier (8). Spanish-speaking families tend to eat out fewer times a week and cook more family meals when compared to English-speaking parent dyads, which is a positive influence on the home food environment since family meals are associated with healthy behavior (9). McArthur, et al. (10) found that in North Carolina, the more acculturated the Hispanic immigrants are, the more fried and other high fat foods they consume, while overall decreasing their consumption of fruits and vegetables.

While less acculturated Latino adolescents report increased support and intentions to eat healthy, as they increase in grade level they engage in negative dietary behaviors more in frequency (7).

In addition to acculturation level, previous research shows that health literacy is a factor that affects Latino health (11). According to Harrington and Valerio (12), more than a third of the adults in the United States have inadequate health literacy, which is “the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions”. Many Latino immigrants experience poor health and depression as a result of immigration-related risk factors and may lack the health literacy to skills to access the complex United States health care system. In fact, it is estimated that 62% of Latino immigrants have low-health literacy/marginal health literacy even when tested in Spanish (11).

The food and eating environment includes disparities in food access among different income and ethnic groups (13). Food insecurity and chronic disease are both important health topics that need urgent attention in the United States. Food insecurity is defined as the “limited availability of adequate and safe food” and the “uncertain ability to obtain adequately acceptable foods” (14). The individuals, who live in food deserts, without adequate access to a supermarket within a mile of their home, are often left with the choice of hunger or the consumption of low-nutrient and high calorie convenience foods (Guilford County Health Department, 2013). Food insecurity is significantly more prevalent among Latinos 26.2% versus the US



population as a whole at 14.7%, and possibly higher amongst Latino immigrant households(8). The struggles with food insecurity, either by over-consumption of low-density, high calorie convenience and fast foods, or the inability to obtain frequent meal rations have both lead to malnutrition and nutrient deficiencies that feed chronic disease. Some researchers believe the food and eating environments, including disparities in food access among different income groups, are more important than the individual factors of skills, motivation, and knowledge, when determining where the research focus should be regarding the obesity epidemic (13). Food insecurity is also connected to low socioeconomic status, which is another risk factor for overweight/obesity.

Latinos have a significantly higher prevalence of poverty 26.6% than the US population as a whole 15.1% (8). Children and adolescents growing up in low-income families are at elevated risk for negative outcomes such as lower cognitive abilities and school achievement, health and developmental problems, lower rates of high school graduation (15). Low-income minority groups have also been identified as having lower fruit and vegetable intake when compare to white people from higher-incomes (16). Fruit and vegetable consumption is helpful for weight management and should be considered an important strategy for the prevention of childhood obesity (16). Many immigrant families struggle with maintaining their native eating habits and are even at risk of food safety issues, due to changes in food preparation, availability, and storage (10).

One in every five high school students in the public school system in the United States is from an immigrant-headed household (43). Latino male and female adolescents experience a higher prevalence of obesity and overweight/obesity combined than any other race and ethnicity, according to the 2011-2014 NHANES report (3, 4). Most of the research in childhood and adolescent overweight and obesity research, as well as research into the home food environment have focused on parents as the agent of change, as they ultimately make most of the food decisions in the home. Therefore, it is not surprising that weight loss interventions focused on changing the parents' behavior are more effective than the traditional approaches focused exclusively on children's diet and physical activity (17). In the next section, parental influences in the home food environment will be discussed.

### **Parental Influences in the Home Food Environment**

It is important to understand how to best utilize children as agents of change, it is also important to understand parental influences in the home food environment to create effective overweight and obesity prevention and treatment programs. Many existing obesity prevention programs consider family-based interventions to be essential, since children and adolescents have little control over how they purchase food, how they make food, their schedule for physical activity, and other facets of parent involvement that aid in the creation of an environment for overall health. Due to complexities in many family situations, the definition of "family-based interventions" must take into consideration the single, blended, and multi-generational family situations (18). A study of 38 multiethnic parents of middle

school students in the greater Los Angeles area found that the parents were less likely to be motivated to participate in obesity prevention programs to increase the health of themselves and their children, rather to feel better about themselves as parents (19). Parental influence in obesity prevention is found in areas such as breakfast consumption where adolescents are more likely to consume breakfast if at least one parent is present in the home in the morning (20). Additionally, it has been found that fruit and vegetable intake among children is associated with “parental intake, knowledge related to, and attitudes and beliefs toward fruits and vegetables” (16). Berge et al. found that positive parental support and modeling of healthy nutrition and physical activity behaviors in the home resulted in increased fruit and vegetable intake, as well as physical activity from the children (21).

Different parenting styles may have an influence on the development of emotional eating behaviors, however this has not been widely studied, rather much research on parenting practices themselves has been done revealing “that children whose parents with neglectful parenting styles tend to have a reactive emotional personality and have difficulty regulating their emotions, which can lead to the use of escape tactics as a way to manage emotional distress (17). A parent’s weight is one of the strongest correlates to a child’s weight (22). Berge et al. have found that parents of Hispanic/Latino and Hmong/Asian youth of lower socioeconomic status have more conversations about weight and size with their sons and daughters when compared to parents of other race/ethnicities (23). Parental encouragement to diet or lose weight has been associated with negative outcomes such as excessive worry

about weight, binge eating, chronic diet, in addition to a higher BMI and children of the Hispanic/Latino and Hmong/Asian minorities have been shown to experience more teasing about their weight status versus other race/ethnicities which places the youth at risk of future disordered eating behaviors (23).

Gender expectations are another factor that can influence the parent/caregiver in making food decisions. Blake et al. looked at employed, low to moderate income, urban US Black, White, and Latino mothers and fathers and found that both mothers and fathers reported being tired, stressed, or busy due to competing work and family demands (24). Even with both males and females having employment outside of the home, gender-role expectations that reinforce gender inequality and power relationships between men and women are still common with the females taking the responsibility for planning, cooking, and serving meals (25). These roles reflect traditional cultural gender orientations with mothers responsible for the food and meals and fathers for financial support, even though now both parents are working to provide financial support. Diaz et al. looked at the influence on healthy dietary outcomes for Latino adolescents and found that mothers influence healthy dietary behaviors in both females and males, more than twice as strong for female adolescents which suggests looking further into the influence of gender expectations and roles in the home food environment (7). There have been many examples of how parents can influence food decisions, but there are also many examples of successful programs that have utilized children as agents of change to influence positive health behaviors.

### **Children as Agents of Change**

Children have been utilized as agents of change in the areas of health promotion and prevention all over the world and although there still seems to be a stigma associated with people of wisdom also being of older age in many cultures, children have proven to be powerful health messengers (26). An example of a successful program that used seventh, eighth, and ninth grade students to act as health educators in their communities was in Sri Lanka where students were educated on mosquito control in response to the epidemic and endemic of the Dengue fever (27). School children in Magu, Tanzania were also utilized as health agents to promote community health through educational lessons in the school setting (26). In both of the examples in Sri Lanka and Magu, Tanzania, the parents of the children who were communicating health information described a positive attitude towards their child's role in acting as a change agent and an increased respect in their knowledge gained at school (26).

In the rural Appalachia area, several science clubs were developed by the Health Sciences and Technology Academy (HSTA) for disadvantaged high school students to conduct a community-based participatory research (CBPR) study on the prevalence of obesity and Type II diabetes in their community (28). They chose adolescents to conduct the CBPR since they were an active part of the community, with knowledge of the existing culture, language, and attitudes of the area. The authors emphasize that "this is of immense importance in underprivileged communities based on economic, social, ethnic, or geographic based disparities

where distrust of “outsiders” is prevalent” (28). The adolescents were given education on how diabetes is a preventable disease and they began to share the information with their friends and family members in their community. There are strong indications that adolescents are important vehicles of influence for the communication of health information to their friends, family members, and other community members and could facilitate obesity management and diabetes prevention by changing “local cultural perceptions that were derived from and promoted from within families in the local community” (28). This is an important study since inadequate health literacy is associated with poor diabetes control, increased hospitalizations, and decreased preventative care, particularly in vulnerable populations (12).

Findings from a pilot obesity prevention intervention (OPREVENT) trial for American Indian households on two reservations in the Upper Midwestern United States also provided an example of children serving as agents of health change (29). This study described “the processes by which American Indian children acting as change agents influence adult food and physical activity behaviors on an Ojibwa and a Potawatomi reservation” (29). They interviewed 168 community members, including 25 children between 6 and 13 years of age and used adult in-depth and paired-child interviews, household group interviews, focus groups, and community workshops to gather information. The results revealed that six American Indian children between the ages of 10-13 years served as change agents by motivating their family members to make healthy lifestyle choices, including home food

decisions and healthy food and physical activity modeling, indicating support for future development of a child as change agent theoretical framework for adult health behavior change. Children have been successful in the roles of active agents of change in their communities as leaders and activists in community based projects and campaigns, as community researchers, peer educators in health promotion, and as community educators (30). There is great promise that children as agents of change within their family unit have the potential to be as successful.

### **Hispanic Children as Agents of Change**

The Hispanic family is unique in that children often have more power in their households due to their language and knowledge skills. These children are being underutilized as child interventionists in the family. The use of children as agents of change is innovative in that the intervention aims to educate a vulnerable population, the Latino immigrant family, on healthy lifestyle strategies by strengthening the focus on family communication and participation. There are many reasons to support the use of children as change agents in the Hispanic population.

These reasons include the facts that children are often more acculturated than parents and caregivers, putting them in the position to communicate new information and often acting as language brokers for their home (31). Children are also valued and supported in the Latino immigrant households, where they have influence in family decision-making due to their role in household chores and caring for their siblings (31). There is a considerable body of literature that discusses how factors associated with acculturation can lead to problems within Hispanic families,

often resulting in communication problems and a decline in the overall importance of family (32). It is proposed that the concepts of healthy communication and strength in familism are strengthened through a healthy choices and activities intervention program that utilizes adolescents as change agents in new immigrant families.

Children and adolescents are often more acculturated than parents and caregivers, putting them in the position to communicate new information and often acting as language brokers for their home (31, 33). Corona et al. found that many youth who are engaged as language brokers find difficulty in translating and interpreting in healthcare settings (33). Some states such as California have tried to pass legislation to prohibit the use of youth for language brokering in healthcare environments, citing that translating serious diagnoses to family members may traumatize younger family members and that children are not equipped with the vocabulary to translate information properly (34). Leaving medical translation to family members is risky business since the family member might understand the language and culture, but not everyone can understand medical terminology. But, finding medical interpreters who are knowledgeable in both the language and the culture is also a barrier to effective healthcare communication. Language brokering is often an act of family survival and children to provide translation in a country that has an overall shortfall of available bilingual services (31, 35, 36). Some youth have been noted to be “active advocates” for their parents’ rights, learning about the U.S. legal system and taking an active part in educating their parents on their rights (37).



Children are an influence in parental food decisions and may be the key to initiating the change needed to improve healthy lifestyle behaviors and modifications in the home food environment. Haroldson et al. conducted research in North Carolina in 2012-2013 that included 149 household interviews of low-income Hispanic and non-Hispanic mother/child dyads and found that on average the children made 5.16 food requests on the most recent weekday, most recent weekend day, and grocery store trip and the mothers complied with 80.8% of those requests(38). Additionally, in 2012, 135 parents of children who were between the ages of 10-14 were asked questions regarding their child's influence on food decisions and physical activity and the results were that 90% of those parents reported the children as having a great deal of influence on family food decisions and physical activity (39). 53% of the parent respondents to the child influence questions identified themselves as Hispanic (39).

The preferred approach is family-focused, community-level programs for obesity prevention, versus individual programs. Cowgill, et al. (19) suggested marketing to families to gain interest in obesity prevention programs by mentioning the idea of being a better parent by participating. The idea of parental involvement being an essential component in healthy lifestyle programs has been suggested by many other researchers working with the Latino population. Ramirez et al. suggested that in the development of a national Latino childhood obesity agenda, the family needs to be the main ecological level to prevent Latino childhood obesity, followed by community (40).

Adolescents often exhibit a wealth of energy and enthusiasm once they are motivated to participate in activities that capture their interest (28). The use of mentors can further engage adolescents to use their motivation through engaging the youth in “enjoyable, yet challenging tasks”, creating a sense of accomplishment and increased self-efficacy (47). Mentor to mentee relationships have demonstrated positive effects in both academic success and healthy behaviors in low-income, at-risk Latino elementary and middle school students in previous research (48). Mentorship is another useful strategy in developing health programs that include educating adolescents.

### **Mentorship**

Research shows that the earlier that an intervention program is able to promote an environment that supports the healthy growth and development of a child; the more likely it will sustain long-term benefits (49). Mentoring involves an older individual who provides “support, guidance, and opportunities for social and academic development” with the mentoring being a “professional behavior that contributes to the career success and development of leaders” with both the mentor and mentee benefiting from the experience (50). Mentors act as role models for adolescents by providing advice, skills, challenges, and the provision of information (50). A health promotion mentoring program between nursing students and middle school adolescents in Korea discussed that the adolescents “felt more intimate with the nursing students than teachers or parents” since they were similar in age to the adolescents and “peer counselors who are 2-4 years older than program

participants have been shown to be effective in transmitting information and counseling younger adolescents” (50). There is now a need to address both the behavioral modifications relevant to weight management, as well as a need to address the psychosocial outcomes, which is why many programs are “beginning to infuse mentoring into their activities. The inclusion of mentoring to curricula has led to direct improvements for children in skill development and a sense of self-worth” (51).

This literature review establishes the need to proactively educate Latino immigrant families on the negative risk associated with acculturating to the American lifestyle. There are challenges for the immigrant populations to receiving adequate nutrition and physical activities education, such as access to healthcare, health literacy, limited English proficiency, and educational level. However, the Latino immigrant family has a great strength in familism that makes them unique and the youth have access to information that allows them to be communicators of health information to their families. Utilizing Latino youth as agents of change in the immigrant family may reduce the negative risks associated with acculturating to the American lifestyle.

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## **CHAPTER III**

### **UTILIZING LATINO ADOLESCENTS AS CHANGE AGENTS TO PROMOTE HEALTHY FAMILY LIFESTYLE BEHAVIORS: A REVIEW OF THE LITERATURE**

#### **Introduction**

The obesity epidemic in the United States continues to be a serious public health issue. The United States (US) is the world's leader in the prevalence of overweight and obesity, with Mexico leading second in the childhood overweight and obesity epidemic (1). The National Health and Nutrition Examination Survey (NHANES) data in 2013-2014 reported that 38% of US adults are obese, with 8% of the adult population being classified in the extreme obesity category, based on a body mass index (2). In 2011-2014 NHANES revealed that 17% of US children and adolescents were obese, with 5.8% of those individuals in the extreme obesity category, based on body mass index (3). The rates of obesity have decreased or leveled off in children aged 2-11 years as of the most recent NHANES data, with the exception of the adolescent population ages 12-19 years, who have had an increase in rates of obesity and extreme obesity (4). Evidence shows that overweight and obesity prevention strategies need to be a major priority in combating this health epidemic, since preventing the unhealthy weight gain is both easier and more effective than reversing it later (5).

Creating successful prevention and intervention strategies also includes identifying those who are at the highest risk of encountering challenges to adequate options for healthy eating and physical activity. There is significant prevalence of obesity in minority youth and adults in the United States (3). When compared to White (38.2%) adults, adult obesity rates were higher for Latinos (46.9%) and Black (48.4%) (2). Rates of obesity were found to be higher in youth ages 2-19 who are Latino (21.4%) and Black (19.5%), when compared to White (14.7%) youth (2). With childhood obesity being a risk factor for adult obesity, the comorbidities of obesity such as high blood pressure and irregular blood glucose levels, also follow children and adolescents into adulthood (4, 6). Identifying the determinants of obesity in populations, such as the Latino adults and youth, are essential for addressing the challenges associated with increased health disparities.

### **Determinants of Obesity**

Some of the key factors contributing to high rates of obesity among populations that struggle with health disparities include food security, socioeconomic status, and access to healthcare and healthcare-related education. Evaluating the factors that affect the population's ability to achieve or maintain a healthy weight continue to be a top priority in public health research. Many Hispanic/Latino (hereafter referred to as Latino) immigrant families struggle with food insecurity, either by over-consumption of low-density, high calorie convenience and fast foods, or the inability to obtain regular meals, all of which can lead to malnutrition and nutrient deficiencies that feed chronic disease (7). Food

insecurity is significantly more prevalent among Latinos 26.2% versus the US population as a whole at 14.7%, and possibly higher among Latino immigrant households (8). Food insecurity is also connected to low socioeconomic status, which is another risk factor for overweight/obesity. Latinos have a significantly higher prevalence of poverty, 26.6% when compared to the US population as a whole at 15.1% (8). Lower-income neighborhoods have less access to supermarkets and stores with fresh fruits and vegetables for purchase, with a heavier marketing focus on processed and fast foods (5). There is evidence that Latino neighborhoods have one-third the number of both supermarkets and farmers markets as non-Latino neighborhoods and up to nine times the regularity of fast food and sugar sweetened beverage outdoor advertisements than high-income White neighborhoods (9).

There are significant barriers in healthcare related to language, literacy, and medical interpretation, especially for the immigrant and limited English proficiency population. Previous research shows that health literacy is a major factor that affects Latino health (10, 11). In fact, it is estimated that 62% of Latino immigrants have low-health literacy/marginal health literacy even when tested in Spanish (10). Many persons with limited English proficiency end up making multiple trips to the emergency room, the most expensive service point in the hospital, simply because they did not understand medication instructions (12). Health literacy affects obesity prevention if people are unable to effectively navigate the healthcare or food systems. Cortéz et al. highlighted that low-income, Spanish-speaking individuals

could benefit from nutrition education materials that address food literacy through the use of visual and multimedia resources, such as photographs (13). Nutrition education programs for Latino immigrant families have been successful at reducing the negative health behaviors associated with increased risk of developing type II diabetes, cardiovascular disease, and improving knowledge of healthy food choices, preparation and budgeting (14-16). Improving quality of communication by addressing cultural and linguistic barriers in healthcare and healthcare-related education, such as providing nutrition education programs, can significantly improve overall quality of care (11, 12, 17, 18).

Immigrants come to the United States for many reasons and the longer they stay, the higher the likelihood that they will develop diet related chronic diseases, including increased rates of cancer, diabetes, and obesity (19). Sussner et al. describes how obesity is a process in the “immigrant health paradox” in that for many Latino immigrants, health is considered better than the overall US born population (20, 21). However, as acculturation and time spent in the US increases, trends in overweight and obesity increase (3, 4, 6, 7, 20). Increased acculturation among new immigrants has been associated with an increased risk of obesity through increased fat and calorie intake, decreased fiber intake, decreased physical activity, and difficulty with adequate food availability, accessibility, and affordability, which affects their overall food security (22, 23). Himmelgreen et al. examined diet and lifestyle behaviors in newly arrived Latino adults who had been in the United States for less than 2.5 years and found that weight gain and lack of

physical activity, in addition to increased television viewing time, increased fast food, processed food, soda, and artificial juice consumption, were the main contributors to unhealthy lifestyle patterns between pre- and post-migration (24). Increased acculturation and food insecurity have been found to be two main factors preventing Latino children from consuming adequate daily fruit and vegetable intake, indicating they have the lowest fruit and vegetable intake of any other race or ethnicity (25, 26).

Roshania et al. analyzed data on 6,421 adults who were admitted to the legal permanent residence program as immigrants to the United States between May and November of 2003 (27). They reported that immigrants who arrived in the United States at younger than age 20, who had lived in the United States for greater than or equal to 15 years, were 11 times more likely to be overweight or obese than immigrants of the same age who had lived in the United States for equal to or less than one year. These changes are more likely to occur in children and adolescents who receive their schooling in the United States and are exposed to the Western culture, as well as those who are of Latin American and Caribbean descent, when compared to immigrants from other regions of origin (27). If immigration to the US is a risk factor for obesity-related behaviors, it is plausible that the earlier the nutrition and physical activity education can occur, the more likely positive health outcomes can be maintained or achieved. Identifying the characteristics of newly arrived Latino immigrant families provides insight on the strengths and challenges



that help to explain why even with the best intentions, they are often left to struggle with poor health outcomes.

### **Characteristics of Newly Arrived Latino Families**

Familism is a term that describes a strong commitment to family, loyalty to family, and expectation that the family will be the vital source of all support (28). The family as the central source of support creates a relationship of strength between the parents and children of reciprocity and mutual caring (29, 30). Maintaining a strong ethnic identity has been a protective mediator of positive health outcomes during acculturation, according to some studies (31). Food habits are deeply rooted in a culture's religious, mythological, and health beliefs and the cultural foods of the Latino immigrant families are very diverse (32). Maintenance of ethnic cuisine can be dependent on the availability of native ingredients and foods and Latino immigrant families consistently state how important it is to continue to expose their family and children to traditional ethnic foods (7, 32). Less acculturated Spanish-speaking families tend to eat out fewer times a week and cook more family meals when compared to English-speaking parent dyads. This is significant as family meals are associated with healthy behavior (33). Latino parents are often frustrated when their children develop a preference for "American foods" over traditional foods from their home countries because they consider traditional foods as being healthier (8). The literature supports the contention that the traditional diet seems to provide a protection or buffering against the unhealthy dietary patterns in the U.S. (25).

Newly arrived Latino families often have poor financial resources and low socioeconomic status, for which it is documented that 23% of Latino families in the U.S. are already living in poverty and the newly arrived Latino families are adding to that percentage (9, 34). Recent growth of Latino immigrants in the rural areas of the Southern and Midwestern parts of the US have been associated with an increased need for low-wage and low-skilled workers (17). These low-wage positions often do not come with healthcare coverage and often contribute to poor health outcomes due to low socioeconomic status, including food insecurity (17, 34). Newly arrived Latino families also have no English language knowledge or limited English proficiency, which can limit their ability to effectively receive and communicate information related to health, transportation, food purchasing, and nutrition advice and resources (7, 11, 30). Lopez et al. analyzed data from the U.S. 2000 National Health Interview Survey to determine differences in physician-provided dietary and physical activity advice to obese Hispanics who suffered from diabetes or cardiovascular disease by level of English proficiency (35). They reported that only one-third of the 1,186 people in the sample received physician advice on diet or physical activity habits, and only one-fifth of the people in the sample received information on both topics. The English-proficient Hispanics were 50% more likely to report receiving physical activity or diet advice, or both when compared to limited English-proficient Hispanics (35). Some literature has suggested additional factors that the newly arrived Latino immigrant family may face that might affect physical activity (depending where they live) are colder weather, a greater reliance

on transportation to get around or complete errands, and residing in substandard housing (possibly over-crowded) with inadequate outdoor play spaces (20, 30). Latino immigrant parents often report having less than a high school education when they come to the US, yet they are extremely supportive of their children receiving their education (19, 36).

Children and adolescents learn to navigate the culture in the US quicker than their parents through school and interactions with peers (23). While less acculturated Latino adolescents report increased support and intentions to eat healthy, as they increase in grade level they engage in negative dietary behaviors more frequently (22). Acculturated adolescents are at an increased risk of competing values and norms of the different cultures, while wanting to be accepted by their peers (37). Some of the activities that the adolescents are likely to adopt as they are acculturated into the “American lifestyle” are a preference for sedentary activities with their friends such as playing video games or watching television (23, 38). Since adolescence is when many lifelong habits are set, teaching Latino youth nutrition and physical activity skills is imperative. Engaging youth in issues that enhance the quality of life and address human rights issues in their community contributes to youth development by identifying the social origins of the problems and creating steps to address the problems (39). Some youth have been noted to be “active advocates” for their parents’ rights, learning about the US legal system and taking an active part in educating their parents on their rights (40). Providing Latino adolescents with information relative to the issues associated with acculturation in

the Latino immigrant community could empower the youth to change their own behaviors.

### **Child Role Reversal**

The Latino family is unique in that children and adolescents often have more power in their households due to their language and knowledge skills. These youth are being underutilized as child interventionists in the family. The use of adolescents as agents of change is innovative in that the intervention aims to educate a vulnerable population, the Latino immigrant family, on healthy lifestyle strategies by strengthening the focus on family communication and participation. There are many reasons to support the use of children as change agents in the Latino population. The increased respect and responsibility and increased family closeness enable Latino adolescents to have a power position in the Latino immigrant family dynamic.

Children and adolescents are valued and supported in Latino immigrant households, where they have influence in family decision-making due to their role in household chores and caring for their siblings (41). The youth are often responsible for helping the younger siblings with their homework, responding to communication from the school, scheduling doctor's appointments, or translating media such as television or radio from English to Spanish for others in the home (41, 42). The age at which the youth have considered to reach the "age of reason" and may start taking a larger role in the responsibilities around the home is between the ages of 6 and 7 years (28). The youth may also be asked to help assist family

members with activities such as purchasing cars, filling out forms for public assistance or housing contracts, or discussing bank statements (41). Children and adolescents are often more acculturated than parents and caregivers, putting them in the position to communicate new information and often acting as language brokers for their home (30, 41). Parents report feeling a sense of pride and happiness when their child acts as a language broker, likely due to the value of familism (30). Due to the increased respect and responsibility that comes with assisting their parents and family members with translation and interpretation of information, the youth often becomes the spokesperson for the family (29, 43). This puts the youth in a position of decision-making either partially, or completely for the family (42).

The unique power position and parent relationship of influence that Latino adolescents can hold in the newly arrived immigrant household builds around the Social Power Theory (44). Social Power Theory suggests that individuals can exercise influence over others through expert, legitimate, referent, reward, and coercive power (45). The adolescent youth often has existing legitimate power due to the increased contributions to the home. They are often the communicators of new information and facts through exposure in school, which increases their expert power. Attempts at influencing others are done with predetermined goals in mind, yet the ability to achieve influence is based on the reciprocal relationship between the parties involved in the exchange (44). When looking at the power dynamic in Latino immigrant households, children and adolescents are often valued and

supported in their relationships with their parents and caregivers (41). Youth who are able to exert more influence and control in their decision-making can perceive themselves to have an increased active social power, which also influences the parents' perception of the youth's power as having an increased passive social power in the family (44). As the active social power increases, the youth will try to influence more than those with less social power. This is another strength of the Latino adolescent, as the combination of increased active and passive social power both contribute to the overall magnitude of power and influence the youth possesses.

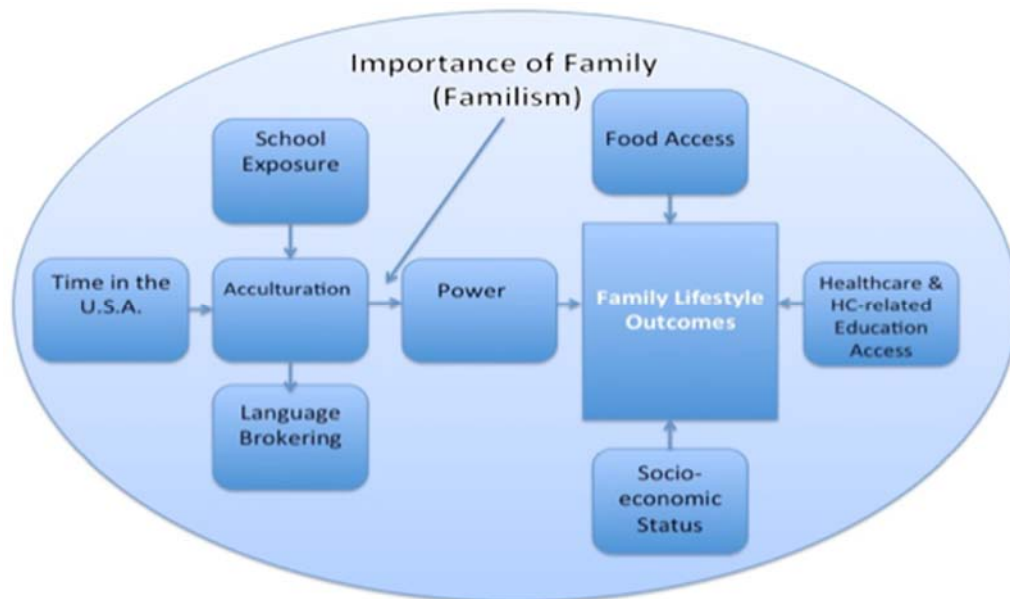


Figure 1. Conceptual Model of Utilizing Latino Adolescents as Agents of Change to Promote Healthy Family Lifestyle Behaviors Based on The Social Power Theory.

Looking at the Latino adolescent power position and the role reversal they often exert in their homes, the conceptual model in Figure 1 displays how the

strength in familism is what makes the Latino immigrant family unique. The concept that child role-reversal, as a result of acculturation (language brokering), might undermine parent authority or loss of control in immigrant families does not apply to the Latino immigrant family, as it is part of the duty to the family (38). Both length of time in the US and its associated increased acculturation level are barriers to achieving healthy outcomes. Those barriers increase the Latino adolescent power position by increasing educational and communication opportunities and are the key to communicating health messages to their families. The adolescents may be able to help offset the negative effects of acculturation and improve overall health outcomes in a population that often has low SES, limited food security, and inadequate healthcare access. Adolescents can use their power to influence family decisions and behaviors, which makes them an innovative and likely effective strategy as agents of change in the newly arrived immigrant household. Recent literature reported that familism, the central importance of family in Latino populations, continues to be a priority to Latino adolescents regardless of generational status (46).

Children and adolescents have been shown to be effective influencers on their parents' decision-making abilities. Children are an influence in parental food decisions and may be the key to initiating the change needed to improve healthy lifestyle behaviors and modifications in the home food environment (47-49). Haroldson et al. (2015) conducted research in North Carolina in 2012-2013 that included 149 household interviews of low-income Hispanic and non-Hispanic

mother/child dyads and found that on average the children made 5.16 food requests on the most recent weekday, most recent weekend day, and grocery store trip and the mothers complied with 80.8% of those requests (47). Additionally, in 2012, 135 parents of children who were between the ages of 10-14 were asked questions regarding their child's influence on food decisions and physical activity and the results were that 90% of those parents reported the children as having a great deal of influence on family food decisions and physical activity (48). Fifty-three percent of the parent respondents to the child influence questions identified themselves as Hispanic (48). According to Evans et al., Latino parents are interested in nutrition interventions that teach skills utilizing traditional Mexican ingredients and education that encourages healthy native food preparation (50).

Another example of adolescents using their influence to change or attempt to modify their parents' behavior comes out of France (51). Researchers examined teenager influence on their mother's pro-environmental behavior such as recycling and energy use by conducting interviews with 13 mother and adolescent dyads. The researchers chose to focus on the mother and adolescent dyad since prior research has shown that mothers are often the recipients of power acts, such as influence in purchase decisions (44, 48). The teenagers were between the ages of 12-18 years, with an average age of 15 years, and the researchers found that 9 out of 13 of the mother's in the dyads reported as "easily agreed to change their habits in response to their teenagers' request". Some of the factors that impacted the teenagers' influence on their mothers in this study included the mothers' parenting style



(authoritative and permissive were more receptive to influence) and the frequency of communication between the dyad (mothers who worked outside of the home had less opportunity for discussion about pro-environmental behaviors)(51).

### **Utilizing Children as Agents of Change**

Researchers have used older Latinas (Abuelas) as nutrition educators, since they are very well respected in the Latino community and provide guidance for identifying assistance and barriers for healthy Latino family lifestyle behaviors (52, 53). The preferred approach is family-focused, community-level programs for obesity prevention, versus individual programs. Cowgill et al. suggested marketing to families to gain interest in obesity prevention programs by mentioning the idea of being a better parent by participating (54). The idea of parental involvement being an essential component in healthy lifestyle programs have been suggested by other researchers working with the Latino immigrant population (55, 56). Ramirez et al. suggested in their research on developing a national Latino childhood obesity agenda that the family is the main ecological level to prevent Latino childhood obesity, followed by community (57). Most of the research in childhood and adolescent weight management interventions has focused on parents as the agent of change, as they ultimately make the majority of food decisions in the home. Therefore, it is not surprising that weight loss interventions focused on changing the parents' behavior are more effective than the traditional approaches focused exclusively on children's diet and physical activity (58). But, perhaps the key factor for influencing parent/caregiver food decisions that shows the most promise as an

effective strategy for improvement are, in fact, the children in the household.

Several studies have looked at the utilizing children as agents of change to influence health outcomes in various areas of public health.

Children have been utilized as agents of change in the areas of health promotion and prevention all over the world and although there still seems to be a stigma associated with people of wisdom also being of older age in many cultures, children have proven to be powerful health messengers (59). An example of a successful program that used seventh-, eighth-, and ninth-grade students to act as health educators in their communities was in Sri Lanka where students were educated on mosquito control in response to the epidemic and endemic of the dengue Fever (60). School children in Magu, Tanzania were also utilized as health agents to promote community health through educational lessons in the school setting (59). In both of the examples in Sri Lanka and Magu, Tanzania, the parents of the children who were communicating health information described a positive attitude towards their child's role in acting as a change agent and an increased respect in their knowledge gained at school (59).

In the rural Appalachia area, several science clubs were developed by the Health Sciences and Technology Academy (HSTA) for disadvantaged high school students to conduct a community-based participatory research (CBPR) study on the prevalence of obesity and Type II diabetes in their community (61). They chose adolescents to conduct the CBPR since the adolescents are an active part of the community, with knowledge of the existing culture, language, and attitudes of the

area. The authors emphasize that “this is of immense importance in underprivileged communities based on economic, social, ethnic, or geographic based disparities where distrust of ‘outsiders’ is prevalent” (61). The adolescents were given education on how diabetes is a preventable disease and they began to share the information with their friends and family members in their community. There are strong indications that adolescents are important vehicles of influence for the communication of health information to their friends, family members, and other community members and could facilitate obesity management and diabetes prevention by changing “local cultural perceptions that were derived from and promoted from within families in the local community” (61). This is an important study since inadequate health literacy is associated with poor diabetes control, increased hospitalizations, and decreased preventative care, particularly in vulnerable populations (62).

Findings from a pilot obesity prevention intervention (OPREVENT) trial for American Indian households on two reservations in the Upper Midwestern United States also provided an example of children serving as agents of health change (63). This study described “the processes by which American Indian children acting as change agents influence adult food and physical activity behaviors on an Ojibwa and a Potawatomi reservation” (63). They interviewed 168 community members, including 25 children between 6 and 13 years of age and used adult in-depth and paired-child interviews, household group interviews, focus groups, and community workshops to gather information. The results revealed that six American Indian

children between the ages of 10-13 years served as change agents by motivating their family members to make healthy lifestyle choices, including home food decisions and healthy food and physical activity modeling, indicating support for future development of a child as change agent theoretical framework for adult health behavior change. Children have been successful in the roles of active agents of change in their communities as leaders and activists in community-based projects and campaigns, as community researchers, peer educators in health promotion, and as community educators (64).

Latino immigrant families are at risk of developing nutrition-related chronic disease as a consequence to the acculturation to the typical US diet of high fat, high calorie foods and portions, low fiber foods such as fruits and vegetables, and poor lifestyle choices that include increased screen time and decreased physical activity. Latino immigrant families are often of low incomes, education levels, and have difficulty accessing adequate healthcare, which are associated with negative health outcomes. Latino immigrant youth acculturate quicker and tend to learn English faster than their parents and other family members. They are also well respected in their families, have increased responsibility and a power position. It is proposed that the concepts of healthy communication and strength in familism are strengthened through a healthy choices and activities intervention program that utilizes adolescents as change agents in new immigrant families. Utilizing Latino adolescents as change agents to deliver health messages to their family members, designed by health professionals, should have a positive impact on all of the

members in the Latino immigrant family and the immigrant community by teaching about the negative risks associated with acculturation to typical US diet and lifestyle. There is great promise that utilizing children as agents of change within the family unit have the potential to be as successful.

### **Future Research**

Parents and family members should be included in obesity interventions, as much obesity tends to run in families (65). Many Latina and Hispanic immigrant mothers have expressed concern if their children are “thin”; they believe they are not as healthy as “heavier” children because they associate thinness with illness (56, 66). There may also be a cultural acceptance of overweight for Latinos or a failure on the parent’s behalf to recognize their child as overweight or obese (66, 67). In order for immigrants to have a successful transition into Western culture, there needs to be access to programs that allow immigrants to gain knowledge on the health and social systems in their new community, as well as community participation in newcomer needs such as access to native foods and educational opportunities to learn the English language. This includes the training of language brokering youth in basic nutrition and health terminology, especially in emerging Latino communities, where there is an indication for training due to a lack of translation resources (30). The maintenance of home culture is possible through integration into the host culture versus a pressure for acculturation. Prevention strategies should include creating a social network and preservation of cultural

practices, which can improve poor health behaviors that result from acculturation (7).

Culturally-grounded programs should focus on parent-child relationship and improvement of relationships in the family (55). There is a considerable body of literature that discusses how the many factors associated with acculturation can lead to problems within Hispanic families, often resulting in communication problems and a decline in the overall importance of family (68). The parent and child relationship must be in a good place for a child to receive positive benefits from the language brokering experience (55). Language brokering can be a negative experience for youth if the parent-child relationship is suffering negativity due to stress in the role reversal between parent and youth, existing communication problems between family members, or mental health issues (30, 42, 69). The development of the training programs should consider resources and training on identifying symptoms of depression and coping strategies, as many newly arrived immigrants and children of immigrant families are at a high risk of experiencing depression (10, 70). Latino immigrant families of poor socioeconomic status often experience depression, anxiety, and a breakdown of family ties due to the increased work demands to endure the elevated cost of living in certain areas of the U.S. (70).

Challenges that were recognized during this review include the generalization of Hispanic/Latino ethnicities when there are differences between the cultures. Delva et al. found in a study that monitored Latino adolescents in the 8<sup>th</sup>-10<sup>th</sup> grades from 1991-2004 that Mexican-American females had a greater

prevalence of being overweight than Latina-American girls, though both ethnicities being overweight were inversely associated with socioeconomic status, lack of vigorous exercise, and increased television viewing (71). Hernandez-Valero conducted a cross-sectional study that found an alarmingly high prevalence of obesity among newly arrived immigrant children of Mexican origin, when compared to Mexican-Americans who were born and raised in the United States or Mexicans who were born and raised in Mexico (6). Many of the subjects in studies on Latino immigrants identify themselves as “Hispanic or Latino”, but since these individuals may come from as many as 20 different countries, recognizing the differences in nativity, languages, and culture is imperative for identifying the correct health messages to deliver to families and communities (1, 72).

Future work should include testing the development of a family-based nutrition and physical activity intervention that utilizes Latino adolescents as change agents in newly arrived immigrant families. This may include testing the framework of how the family members work as individuals and as a unit to prioritize health messages in the home. Heterogeneity of the Latino population needs to be taken into consideration as well. With a high prevalence of obesity in second and third generation Latino immigrant adolescents and a lack of overweight/obesity research within this specific population, an intervention teaching adolescents skills necessary to practice nutrition and physical activities could further improve overall outcomes (73). In conclusion, utilizing Latino adolescents as agents of change is likely an innovative, cost-efficient, and most

importantly, promising, means of combating the health disparities and chronic disease plaguing the United States.



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## **CHAPTER IV**

### **THE DEVELOPMENT OF AN EDUCATIONAL PROGRAM THAT UTILIZES CHILDREN AS CHANGE AGENTS TO PROMOTE HEALTHY FAMILY LIFESTYLE BEHAVIORS**

#### **Introduction**

Our nation is struggling to find effective and efficient means to prevent and treat the overweight and obesity epidemic. Immigrants come to the United States for many reasons and the longer they stay, the greater the likelihood that they will develop diet related chronic diseases, including increased rates of cancer, diabetes, and obesity (1). Sussner et al. describe how obesity is a process in the “immigrant health paradox” in that for many Latino immigrants, health is considered better than the overall U.S. born population (2, 3). However, as acculturation and time spent in the U.S. increases, trends in overweight and obesity increase (2, 4-7). Increased acculturation among new immigrants has been associated with an increased risk of obesity through increased fat and calorie intake, decreased fiber intake, decreased physical activity, and difficulty with adequate food availability, accessibility, and affordability, which affects their overall food security (8, 9). Newly arrived Latino immigrant families are at risk of developing nutrition-related chronic disease as a consequence to the acculturation to the typical U.S. diet of high fat, high calorie foods and portions, low fiber foods such as fruits and vegetables, and poor lifestyle choices that include increased screen time and decreased physical activity. Latino

immigrant families often have low incomes, low education levels, and have difficulty accessing adequate healthcare, all of which are associated with negative health outcomes.

Racial and ethnic disparities in healthcare, along with significant language barriers for immigrant and limited English proficiency populations, make the development of culturally appropriate tools a top priority in public health. There is a great need for strategic development of innovative ways to provide healthy lifestyle behavior education to at-risk populations, such as the Latino immigrant family. Much of the research in family overweight and obesity interventions have focused on parents as the agent of change, as they make the majority of the food decisions in the home. Therefore, it is not surprising that weight loss interventions focused on changing the parents' behavior are more effective than the traditional approaches focused exclusively on children's diet and physical activity (10). But, perhaps the key factor for influencing parent/caregiver food decisions that shows the most promise as an effective strategy for improvement is youth in the household.

Latino immigrant youth acculturate quicker and tend to learn English faster than their parents and other family members. They are also well respected in their families, have increased responsibility, and a power position. It is proposed that the concepts of healthy communication and familism are strengthened through a healthy choices and activities intervention program that utilizes adolescents as change agents in new immigrant families. There have been successful nutrition education interventions with Latino immigrant families that have involved children

and the use of mentors. Researchers have used older Latinas (Abuelas) as nutrition educators, since they are very well respected in the Latino community and provide guidance for identifying assistance and barriers for healthy Latino family lifestyle behaviors (11, 12). Additionally, the use of community members who are identified as leaders by the community known as *Promotores/Promotoras*, have been trained by health professionals to deliver health messages such as nutrition education to the Latino immigrant community (11, 13, 14). Nutrition education interventions that utilize adolescent youth and college-aged mentors are a promising strategy for addressing the nutrition needs of a unique population.

Adolescent youth may receive multiple benefits from the guidance of college-aged goal coaches who act as mentors to help the youth develop the necessary skills to be effective agents of change in their homes. Mentoring involves an older individual who provides “support, guidance, and opportunities for social and academic development” with the mentoring being a “professional behavior that contributes to the career success and development of leaders” with both the mentor and mentee benefiting from the experience (15). Mentors act as role models for adolescents by providing advice, skills, challenges, and the provision of information (15). A health promotion mentoring program between nursing students and middle school adolescents in Korea indicated that the adolescents “felt more intimate with the nursing students than teachers or parents” since they were similar in age to the adolescents and “peer counselors who are 2-4 years older than program participants have been shown to be effective in transmitting information and

counseling younger adolescents” (15). There is now a need to address both the behavioral modifications relevant to weight management, as well as a need to address the psychosocial outcomes, which is why many programs are “beginning to infuse mentoring into their activities. The inclusion of mentoring to curricula has led to direct improvements for children in skill development and a sense of self-worth” (16). Mentor-to-mentee relationships have demonstrated positive effects in both academic success and healthy behaviors in low-income, at-risk Latino elementary and middle school students in previous research (17). Since the Latino population is at a high risk of developing obesity and chronic diseases with acculturation to the “American Lifestyle”, improving knowledge and skills for healthy lifestyle modifications should improve the overall health of this population (1, 6, 18).

This purpose of this study was to describe the development and testing of a program that utilizes Latino adolescents as change agents to promote family-based healthy lifestyle behaviors with the aid of college-aged goal coaches.

### **Methods**

The description of data collection methods for this developmental/testing phase of the healthy lifestyle behaviors program that utilizes Latino adolescents in newly arrived Latino immigrant families is outlined under Phase II in Figure 2. Phase I occurred between September 2015 and February 2017 and included the development and translation of materials for the program and relevant research. Phase II encompasses the developmental and testing phase of the program, which occurred between February and March of 2017. Further development and testing of

curriculum and orientation materials occurred. Data collection points for the youth and goal coaches included focus groups. The parents were administered a topic interest survey. Face and content validation of program and orientation materials took place during Phase II. Phase III is the pilot intervention phase. For the purposes of this study, newly arrived Latino immigrant families are defined as families with children who have parents who have resided in the United States for only two to six years at the time the study was conducted. Prior to the developmental/testing period, Phase I involved a collaboration with a Latino community center in Hickory, North Carolina between September 2015 and September 2016 to develop and translate materials including minor assent, adult consent forms, goal coach recruitment scripts and materials, testing materials, and assessment materials such as focus group scripts in Spanish. A qualitative study employing focus groups and survey strategy was used. There were two groups of individuals involved in the testing of the program materials. The adolescent youth tested the program curriculum for face and content validation. The goal coaches tested the goal coach orientation curriculum for face and content validation. The evaluation of the testing phase included qualitative measures of focus groups with the youth and goal coaches, as well as the parent survey. The focus group with the adolescent youth included questions about their abilities to complete photo journal tasks, in addition to questions assessing what successes and challenges with creating family-based goals, and overall opinions about the program. The focus group with the goal coaches asked questions about their abilities to perform their role as a goal coach,



preparation, successes, and challenges with program curriculum, messages, and activities. The parent survey was developed to assess interest in topics for future nutrition and physical activity messages. The Social Cognitive Theory provides a framework for the curriculum material development for the adolescent youth for the workshops, activities, photo journal, and family-based goal development (19).

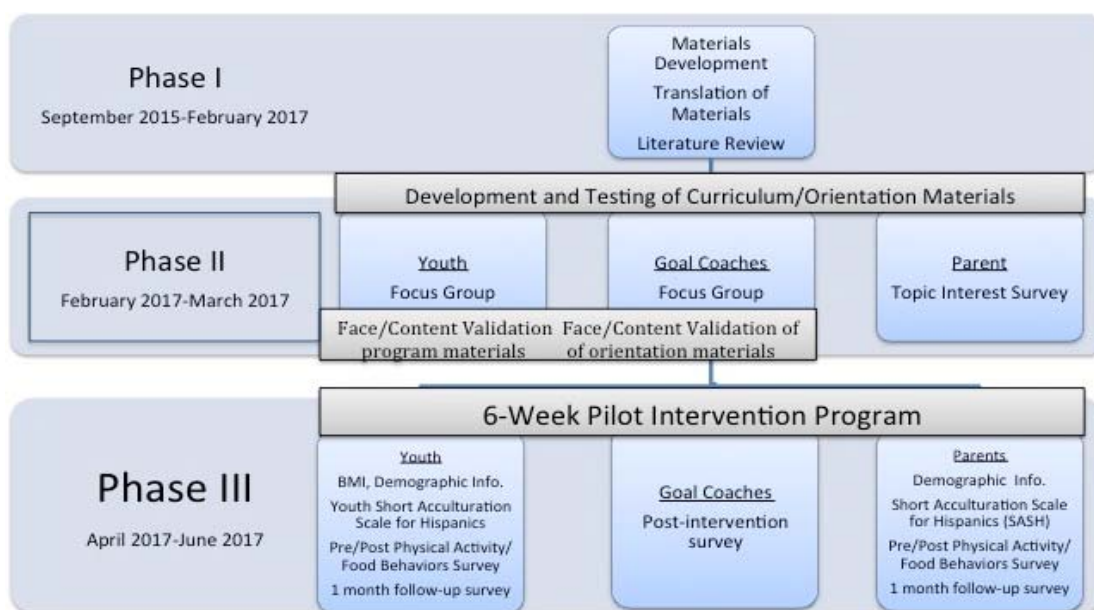


Figure 2. Description of the Three Phases of the Healthy Lifestyle Behaviors Program That Utilizes Latino Adolescents in Newly Arrived Latino Immigrant Families.

### Identification of Materials and Curriculum Development

**Theoretical framework.** The theoretical framework for this study is Bandura's Social Cognitive Theory (SCT) (19). This theoretical framework is appropriate for the study since the theory involves the notion that an individual's environment, personal knowledge, and behaviors all interact with each other to

influence outcomes. For the purpose of this study, the justification for using Latino children as agents of change in their family to improve dietary choices and physical activity level is because children are often more acculturated than their parents/caregivers and their additional language and knowledge skills often give them a greater respect and power than children of other ethnicities (20). The youth had the opportunity to influence family dietary choices and physical activity levels by improving health-promoting behaviors. They influenced nutrition and physical activity knowledge through communicating health information and improved health literacy. The youth created a health-promoting environment though setting family nutrition and physical activity goals. The curriculum and photo journaling both utilized the SCT as the framework for examining key concepts related to the nutrition and physical activity knowledge and environment in both the individual and home.

**Identification of materials.** The program facilitator was a Registered/Licensed Dietitian, whose responsibilities were to deliver healthy choices and physical activities education messages, and act as the content advisor to the goal coaches and children by answering any questions that the participants were not qualified to answer. The intervention curriculum was based off of the “Eat Healthy, Be Active Community Workshop Program” (21), which provides curriculum based on the SCT, centered around the Dietary Guidelines for Americans 2010 and the 2008 Physical Activity Guidelines for Americans. The workshops have been validated and pilot tested are suitable for older youth, including those with low

health literacy (22). The workshops work best with groups of adults or youth between 15 to 20 people and the single workshops can be modified by the nutrition educator who is facilitating the workshop to be less than hour time, depending on the activity chosen (22). The curriculum focuses on nutrition information, physical activity, and healthy habits such as healthy and quick food preparation and eating on a budget. The workshop includes lesson plans, hands-on activities, talking points, videos, and handouts that are available in both English and Spanish (21). The activities and lessons created an interactive experience for the adolescent change agents and the goal coaches during each session.

The Eat Healthy, Be Active Community workshops were modified to accommodate a 30- to 40-minute total lesson and activity time. Two to three topics and activities were chosen from each workshop, with the exception of workshop 5, since topics discussed in that workshop had been covered in previous lessons. Each of the lessons included a hands-on activity to reinforce the concepts discussed in the lessons. Topics chosen from the workshops were most relevant to youth participants and appropriate for the target population (for example, the lessons on weight loss were not provided to the adolescent youth as the focus was on healthy lifestyle behaviors). A Registered/Licensed Dietitian in the role of the program facilitator taught the lessons. Each lesson was taught with visual accompaniment, such as poster board with info graphics or educational tools. The adolescent youth received handouts during the lesson and are sent home with educational handouts

in Spanish to discuss the lesson content with their parents/caregivers for further reinforcement of the information.

### **Curriculum Development**

The SCT in the healthy choices and physical activities intervention program utilizes the concepts of the environmental factors such as socioeconomic status, food insecurity, and social support, personal cognitions such as health literacy and healthy choices and physical activity knowledge, as well as personal behavior such as the existing nutrition and physical activity behavior that affects home food environment such as the preparation of convenience foods for meals. Each lesson was created to feature a short introduction to a health topic, followed by a hands-on learning demonstration to enhance personal cognition and self-efficacy with personal behavior. The four testing lessons were derived from the following Eat Healthy, Be Active Community workshops: Eating Healthy on a Budget, Enjoy Healthy Food That Tastes Great, Physical Activity is Key to Living Well, and Quick, Healthy Meals and Snacks (Table 1). Table 2 describes the lessons and hands-on activities from the testing period and the SCT constructs that were met each week. Each lesson was created to feature a short introduction to a health topic, followed by a hands-on learning demonstration to enhance personal cognition and self-efficacy with personal behavior.

Table 1

Description of the Final Lesson and Focus Group Input from the Four Weekly Testing Lessons That Were Developed for the Healthy Lifestyle Behaviors Program Derived from the Eat Healthy, Be Active Community Workshop Series

<b>Healthy Family Lifestyle Behaviors Program Utilizing Adolescents as Change Agents: Initial Workshop Lessons</b>	<b>Development and Testing Phase Final Lesson and Focus Group Input</b>
Testing 1: Introduction to Sugar	<ul style="list-style-type: none"> <li>• Youth were very engaged in the “Rethink your Drink” activity.</li> <li>• Created awareness of name brand vs. store brand items through lemonade taste testing.</li> </ul>
Testing 2: Introduction to Salt	<ul style="list-style-type: none"> <li>• Based on youth focus group results, this was the least favorite activity (using olive oil to taste different herbs and spices).</li> <li>• Created awareness of sodium content in common foods, such as snack items and “Takis”.</li> </ul>
Testing 3: Introduction to Physical Activity	<ul style="list-style-type: none"> <li>• Based on youth focus group results, they would like more physical activity lessons and activities.</li> <li>• Included 7-minute high-intensity workout and learned body weight movements. The youth were enthusiastic about participating.</li> </ul>
Testing 4: Introduction to Healthy Snacks	<ul style="list-style-type: none"> <li>• Based on youth and goal coach focus group results, this was the most favorite activity (making mini-pizzas with English muffins).</li> <li>• Compared mini-pizza to pizza slices from stores.</li> </ul>

Table 2

Developmental/Testing Phase Lesson and Activities for the 4-week Period and the Associated Social Cognitive Theory (SCT) Constructs

Testing Lesson	Hands-On Activity	SCT Construct(s)
Introduction to Sugar	Rethink Your Drink	*EN, PC, PB
Introduction to Salt	Herbs & Olive Oil Tasting	*EN, PC, PB
Physical Activity	7-Minute Workout	*EN, PC, PB
Healthy Snacks	English Muffin Pizzas	*EN, PC, PB
	*Develop Family-Based Goals	

*Note.* SCT Construct Key: EN: Environmental; PC: Personal Cognitions; PB: Personal Behavior.

During the first lesson of the testing phase “Introduction to Sugar”, the youth actively participated in a demonstration from Workshop 1 of the “Eat Healthy, Be Active” curriculum where they had to guess how many teaspoons were in various sugar sweetened beverages while the program facilitator kept spooning table sugar into clear plastic bags to represent the amount of sugar in the beverages. They also passed around the hyperglycemia and hypoglycemia models which were made from water, corn starch, food coloring, plastic bottles, and ping pong balls, showing the difference in consistency of “blood” when it is normal and high in sugar content. Then, they participated in a taste test of a name brand and store brand calorie-free lemonade to see if they could determine if there was a difference between the brands.

The second lesson was an “Introduction to Salt”, where the youth looked at the sodium content of different foods and once again, compared store brand to

name brand items. During this lesson, the youth were introduced to different methods of flavoring foods with herbs and spices by dipping small pieces of French bread into olive oil and trying the different herbs on the bread. The youth also identified sodium on different food labels of snack foods, including snack items that they had brought to the lesson that day.

The third lesson was an “Introduction to Physical Activity”, where the youth were introduced to what physical fitness means and demonstrated several body weight exercises. They were given a 7-minute high-intensity interval training aerobic workout and walked through each of the movements for proper technique. They also participated in body weight exercises such as air squats and planks. The youth were given instructional handouts on the movements for future reference.

The fourth and final lesson of the testing phase was an “Introduction to Healthy Snacks”, where the youth created homemade pizza from English muffins. They were challenged to try to incorporate a new fruit or vegetable on their pizza. During this lesson, the youth compared a generic food label for an English muffin pizza to a slice of pizza from 4 different pizza chains in the US. The testing phase activities contributed to behavior modifications by providing opportunities for the youth to increase their behavior skills training in healthy food preparation and physical activity, participate in goal setting, and self-monitoring of those goals. The social environment of completing these activities with their peers can give a sense of belongingness and fun, which has a positive impact on personal cognition as well (self-efficacy and positive self-esteem) (23).

At the end of each lesson, the youth created family-based goals, specific to areas that they believed needed room for improvement in their own family environment. The youth then chose one goal to focus on for the next week to influence positive behavior change in the home environment, another construct in the social cognitive theory (Table 2) (19). Research shows that the earlier an intervention program is able to promote an environment that supports the healthy growth and development of a child, the more likely it will sustain long-term benefits (24). The youth brought home educational materials in Spanish from the Dietary Guidelines for Americans MyPlate 10 Tips series about “Making Better Beverage Choices”, “Being an Active Family”, as well as the Academy of Nutrition and Dietetics about “25 Healthy Snacks for Kids”, and additional recipes and information handouts from curriculum to discuss with their parents (21, 25).

**Photo journal.** The students used weekly family-based goal sheets and a photo journal to document family activities. Photo journaling is “a means to capture and reflect on a student’s everyday experience” (26). Previous research has utilized photo journaling to provide insight into home food environments and has included the SCT as the framework in describing both the physical environment related to food (kitchen, appliances) and food security status (27). Photo journaling was also found to be a successful strategy in a children as change agents project in which children increased their civil engagement by compiling and presenting photographs depicting strengths and challenges in their neighborhood (28).



The children were given a digital camera to take pictures of household meals and activities. At the beginning of the testing phase, the children were instructed to take a few test photos of specific items and events in their home, and provided an information sheet on examples of photos they could take to provide snapshots of their nutrition and physical activity environment (see Appendix A). They were instructed to take a total of ten pictures per week of their social environment (who they were eating with and who was preparing the meals), physical environment (where would the food be prepared and consumed), as well as their food behaviors (how much food is being consumed and how often). The youth were provided a calendar of activities at the beginning of the testing phase that instructed the youth to bring their cameras on the third week of the testing phase and during the assigned date of the focus groups for uploading. The program facilitator and goal coaches worked with the youth on the first day of the developmental phase to make sure each youth had properly inserted their memory card, could turn the camera on and off, and took test pictures of fake fruit and vegetables that the program facilitator had brought. The program facilitator measured the average time it took to upload the camera photos to the secure folder on the laptop and recorded this information in field notes. The photos were not used for qualitative analysis during the testing phase.

**Goal coach orientation materials.** An orientation curriculum was developed to prepare the college-aged individuals for their roles as a goal coach. During a one-hour orientation prior to the first testing session, the goal coaches

were trained to work with child change agents to develop family lifestyle goals, track the progress of these goals, and modify these goals, as needed (Appendix B). They were briefed on the nutrition and physical activity lesson plans by the program facilitator and provided examples of potential family-based goals based on the topics of the week. The goal coaches participated in mock-scenarios where they role-played both student and goal coach interactions.

### **Face and Content Validation**

Members of the staff at a Latino community center in western North Carolina were resources for interpretation and content validation by reviewing all of the English to Spanish translated materials developed for use in the study for appropriateness in both context and literacy level, as well as pre-existing evaluation tools that were going to be used in the pilot phase of the program. Additional bilingual and bicultural members of the community ( $N=2$ ) evaluated the Spanish translated materials for face and content validation before being used with program participants. Physical activity materials were modified for the youth curriculum and were evaluated by an outside reviewer (a professor of exercise science and Certified Strength and Conditioning Specialist) for content validity. The Latino youth further participated in the testing of the curriculum materials and photo journal materials, and the goal coaches further tested the goal coach orientation materials and curriculum materials during this developmental phase.

### **Site Selection**

Recruitment for studies involving vulnerable populations can be difficult. The researchers were introduced, through a community partner who was a trusted entity in the Latino community, to an organization in the central North Carolina area that provides education, advocacy, and outreach programs to the Latino community. In the later stages of project development, the researchers formed a community partnership with the Latino community center. The center has a faith-based adolescent youth group program that met after school on Fridays during the school year.

### **Recruitment**

The recruitment for the developmental phase of the program involved two groups of individuals. The first group included the adolescent youth and their parents/caregivers. The second group included the college-aged individuals who would be participating in the role of a “goal coach”. The recruitment procedures, criteria for participation, and description of incentives are described below.

**Adolescent youth and families.** A convenience sample of Latino adolescent youth and parent/caregivers were recruited from subjects who participate with the adolescent youth-group program in central North Carolina. An information meeting was held during the pick-up times for the youth-group in late February 2017. A Spanish translator and the bilingual staff member who is employed with Latino community center were available to translate the information to Spanish-speaking caregivers. A parent letter was sent home prior to the information meeting,

notifying the parents of the study (Appendix C). As an incentive for the testing phase, the youth received the digital cameras they used during the testing phase, and the parents/caregivers of each youth participant received a \$25.00 prepaid Visa gift card upon completion of the parent topic interest survey.

Criteria for the participants in the developmental phase of the study included both the children and the families of children between the ages of 10-15 years, with a parent or caregiver who speaks Spanish as their primary language, and are of Hispanic/Latino descent who attend the youth-group program in central North Carolina. A total of 14 families were recruited for the study, with a total of 21 adolescents between the ages of 10-15 years with 5 sets of sibling groups with 2 or 3 siblings per sibling group. Only Latinos were recruited for this study because research clearly indicates that obesity and diet related chronic diseases are continuously increasing among this group (1, 18). Additionally, Spanish-speaking parents often rely heavily on their children to serve as interpreters and to make family decisions (20, 29, 30). This power redistribution is unique and an innovative way to help children serve as positive agents of change in the family. Many of the families originated from a rural area of Southwestern Mexico with poverty rates almost four times greater than the national average of Mexico. Many of the families are of low socioeconomic status, with parents working in construction and food service. Many of the children deal with depression, according to the community partner.

The Latino community center and the University of North Carolina-Greensboro human subject approval and parent/guardian consent forms and photo approval forms were obtained prior to the initiation of the developmental phase. All written materials delivered to the family were provided in both English and Spanish, including the consent forms, surveys, and the weekly goal sheets from the students with the family goal. The developmental phase took place on Fridays during the adolescent youth-group program designated time period for 4 weeks in March 2017.

**Goal coaches.** The goal coaches were recruited from local college programs in central North Carolina. Recruitment letters were sent to department leaders in search of responsible students who are seeking mentoring opportunities (Appendix D). An information meeting with the mentors occurred prior to the first testing session and mentors who met the criteria for selection were asked to provide consent to participate in the study. The goal coaches were asked to participate in both the testing and pilot phases and offered an incentive of a \$250.00 stipend. The criteria for selection as a goal coach was based on their willingness to volunteer for the study, ability to attend a mandatory orientation meeting beginning of the testing phase, and completion of a background check prior to beginning the testing phase. All of the mentors were to be between the ages of 18 to 24 (college-aged individuals).

Goal coaches were individuals responsible for helping the children identify family-based goals, help them plan for implementation of these goals at home, and help them monitor for achievement and maintenance. A total of 5 goal coaches met

the criteria and were cleared to begin the testing phase prior to orientation. Of the 5 goal coaches, 4 of them were bilingual in Spanish and 2 of them were existing mentors at the Latino community center. Goal coaches were paired with 1-3 youth or sibling groups for a total of 4-5 youth per group (Table 3).

Table 3

## Goal Coach and Adolescent Youth Groups

<b>Goal Coach</b>	<b>Youth in Group</b>	<b>Age/Gender</b>
<b>Goal Coach 1</b>	Santiago & Sebastian Sofia Nicolas	10M, 11M Siblings 12F 12M
<b>Goal Coach 2</b>	Alejandro & Samuel Benjamin Daniel	12M, 14M Siblings 13M 14M
<b>Goal Coach 3</b>	Isabella, Joaquin & Lucas Tomas	14F, 13M, 10M Siblings 11M
<b>Goal Coach 4</b>	Gabriel & Martin David Emiliano	11M, 13M 12M 13M
<b>Goal Coach 5</b>	Camila, Valentina & Valeria Mariana Luciana	10F, 11F, 13F Siblings 12F 13F

*Note.* M = Male; F = Female; for reasons of confidentiality, all of these names have been changed.

The goal coaches used weekly goal coach notebooks to document progress and student questions by aiding in the creation of family goals and providing supervision on whether or not those goals were achieved. The goal coaches were encouraged to remind the youth on a weekly basis to follow their photo journal

instructions and to take photos based on the SCT environmental, social, and behavioral examples. The goal coaches interacted exclusively with the adolescent youth.

### **Data Collection**

Focus groups were conducted after the conclusion of the 4-week developmental phase with both the adolescent youth participants and the goal coaches. In order to further assess which health topics the parents of the youth participants were interested in knowing more about, they were asked about nutrition and physical activity topic interests in an open-forum setting. The data collected at these focus groups and from the parent survey were used to make any necessary changes to the program curriculum or processes prior to the implementation of the pilot intervention phase.

**Focus groups.** The focus group guide with the goal coaches asked questions that relate to the study goals by assessing whether they felt prepared to aid the students in the preparation of family-based goals and their opinion on what worked and what did not work with the program curriculum, messages, and activities in order to modify program content or orientation materials prior to the intervention phase (Appendix E). One focus group was conducted with 5 goal coaches. Questions with the youth were in a semi-structured format with open-ended questions to determine ease of use and compliance with the digital cameras, in addition to questions assessing what messages worked well and what did not (Appendix F). A total of 3 separate focus groups were conducted for a total of 16 youth participants.

All focus groups were audio recorded using Voice Memos by Apple, Inc. An undergraduate research assistant who had completed the Collaborative Institutional Training Initiative and Statement of Confidentiality with the University of North Carolina at Greensboro participated in the focus groups by taking detailed field notes. The research assistant transcribed verbatim all audiotaped information. The researchers listened to the audiotapes to verify the transcribed information. The transcripts for the focus groups were imported into ATLAS.ti version 1.6.0 to facilitate qualitative analysis.

**Parent survey.** A survey to assess topic interest was developed for the parents and caregivers of the youth participants during the development phase to assess interest in other health-related topics relevant to the Latino population (Appendix G). This information was created with the intent to assess whether a modification of the original MyPlate 10 Tips that were already associated with the original six planned workshops in the pilot intervention phase, were to be modified with new or additional resources that the parents and caregivers expressed a greater interest in learning more about. The survey was to be sent home with the parents on the last day of the testing phase and returned prior to the beginning of the pilot intervention phase. After further discussion with the research support staff, concerns regarding literacy level of the survey tool after observations during the consent process indicated that some of the parents would need assistance with all Spanish language written materials. The bilingual support staff at the youth center suggested an alternative method to assessing parent interest in curriculum



topics would be asking the parents in an open-forum setting on the last day of the testing phase. The researchers agreed to this modification by having the bilingual support staff ask the parents if they were interested in any of the topics listed on the original MyPlate topic interest survey, but once the support staff started listing topics, the parents quickly began responding with their own ideas. Therefore, the follow-up question to the group became “What nutrition and physical activity topics would you like to learn more about?” When the parents responded, the bilingual support staff would translate the information from Spanish to English so the researchers could record notes on the comments for further analysis.

## **Results**

### **Focus Group Findings Youth**

There was widespread agreement that all the youth participants who participated in the focus groups reported an aspect of the program they enjoyed (Table 4). In two of the focus groups, there was a consensus that the most negative aspect of the program was the hands-on learning activity with the olive oil, while others perceived dietary choices they made or physical activity-related issues such as sweating to be unfavorable. When it came to questions about the photo journal, most of the respondents found that taking 5 photos per week, instead of the 10 photos that they were originally asked to take, would be a better choice. Barriers to taking photos included “not wanting to take pictures of leftovers” and “being busy”. When asked how the program could be more fun, the youth requested an increase in sports-related activities and cooking-related activities.

The youth's focus group results demonstrate that they can influence family-based nutrition and physical activity behaviors in their homes. The youth expressed that they did not have difficulty talking to their parents about food choices and physical activities and a majority (85% of respondents) stated they felt like their parents and family members listened to what they had to say. The youth described both suggestions they made that their family was willing to try, as well as suggestions that their family adopted or implemented (Table 4).

Table 4

#### Focus Group Questions with Examples of Direct Quotes from the Adolescent Youth Participants

Question	Examples of Direct Quotes from Focus Groups
What are some of the positive aspects of the program?	"I can finally do over twenty push-ups" "We eat healthier" "Cooking is fun" "Pizza!" "Well for one fact, we haven't gained much weight" "We learn interesting stuff that I never knew"
What are some things that aren't so good about the program?	"Olive oil" "The olive oil" "That I have to eat salads"
What was it like discussing food choices and physical activities with your family? Were there some things you had difficulty talking with them about?	"At first it was bad, but since then it was good" Parents receptive..."most of the time" "Had beans without ranch" Had difficulty..."talking about eating salads"
Do you feel your parents and other family members listened to what you had to say?	"Yes" "Most of the time, yeah" "Yes" "Kinda" "No"

Table 4

Cont.

Question	Examples of Direct Quotes from Focus Groups
What were some of the suggestions you made that they were willing to try?	"Stop drinking so much...unhealthy stuff" "Exercise" "That thing you gave us...the exercise thingy" "We went to the grocery store and we bought healthy food"
What were some of the suggestions you made that your family adopted/implemented?	"My Dad did with drinking and smoking" "Now we eat less junk food" "Have salads more often"
What were the best parts of the photo journal? What suggestions do you have to improve the photo journal process in the future?	"Hard to take pictures of leftovers" "I only got one picture of soccer" "Cameras are easy to use" "Hard to take pictures with soccer practice, school, homework" "Easier to take five (pictures) a week"
How can we make the program more fun?	"Go outside to play sports" "Field trips" "Soccer" "It's already fun" "More exercise"

### Focus Group Findings: Goal Coaches

The goal coaches reported the hands-on activities and visual props as being positive strengths with the program (Table 5). They found the small group seating arrangement to be a negative aspect of the program, allowing for interruptions with talking, when keeping the adolescents engaged can already be challenging. The goal coaches found that sibling groups may be more likely to deliver food and activity lessons to their families than individual youth because they have a greater support and accountability system already in place because of their siblings. They also encouraged the youth they were paired with through stories of personal experience.

Table 5

## Focus Group Questions with Direct Quotes from the Goal Coaches

Question	Example of Direct Quotes from Focus Groups
What are some of the positive aspects of the program?	<p>“You help integrate the kids into the lessons...ask for their feedback...that kind of helps keep them engaged”</p> <p>“Some of the props help...like when you passed around the muscle and fat”</p> <p>“It’s especially helpful towards the end when you guys provide the snack because it’s one thing to tell them and one thing to show them what to eat or how to make it”</p>
What are some things that aren’t so good about the program?	<p>“I definitely think that the U-shape (tables) will help because right now since everybody is bunched up, they are facing each other, they can talk to each other. But, if it’s a U-shape with you in the middle, they’re gonna be much more embarrassed to talk across to each other”</p>
What were some of the ways you encouraged the youth you worked with to get their families to listen to their food and activity suggestions?	<p>“I think it was a little bit easier for my group because I have three siblings, so it’s like they all go back to the same house and know the same stuff, so it’s easier for them to be like ‘oh mom today we did planks and this is how you do them”</p> <p>“I have three siblings but one of them, especially the exercise one, she was like ‘I’m gonna do this every day, I’m gonna go home and do it’...the other two siblings were like ‘no we’re not doing that’. And she did it, but the other two didn’t”</p> <p>“I applied my personal experience...growing up my family didn’t really care about their health or their nutrition and stuff and I didn’t really start caring until middle school so I was much bigger then...I told them I started altering my habits and because I started them my family did too, so it’s like you know it’s possible but it’s slow progression”</p>
What did you learn from the youth you worked with about some of the challenges they encountered trying to influence their family’s eating and physical activity patterns?	<p>“For my group, mostly like parents working a lot and not being able to get the physical activity they need”</p> <p>“Where the parents work...is like one family, one of the father’s is a cook...where they use a lot of grease and a lot of salt and the other one they have a parent who works at McDonald’s and they’re allowed to bring back food and so that’s really bad for them”</p> <p>“The father in the family is much more reserved and doesn’t really care, so he’s like it’s okay for you to do it, but I don’t really care for it”</p>

Table 5

Cont.

Question	Example of Direct Quotes from Focus Groups
What did the youth tell you were successful goals? Less than successful goals?	<p>“Two of the siblings were talking about getting more fruits and vegetables in their diet so that was a pretty good thing they wanted to do”</p> <p>“When we did the physical activity one, my two siblings, they were really excited to have an excuse for their parents to let them go outside and play”</p> <p>“The drinks were easy. However, what surprised them is the fact that tortillas are just as bad as bread. And so they didn’t know that...I’m like okay, what if like one of our goals is to cut down on how many tortillas we eat? So instead of having this many, we’ll have this many”</p>
What were the best parts of the curriculum and activities? What suggestions do you have to improve the curriculum and activities in the future?	<p>“Pizza day, hands down!”</p> <p>“Leave a little bit more time blocked off to do the time sheet”</p> <p>“Before the lectures to get them engaged, it would be nice to have a questionnaire to fill out, like what the lecture’s going to be about, to see if I need to go over how or where are you on these things”</p>

Goal coaches identified challenges faced by youth when trying to influence their family’s eating and physical activity patterns including unhealthy food being brought into the home environment or the fact that parents were too busy to do physical activity. The successful goals that the youth spoke about with the goal coaches centered around increasing fruits and vegetables and no longer purchasing certain foods in the home, such as sugar-sweetened beverages. The goal coaches reported the pizza making activity as being the best part of the testing curriculum and had many suggestions for improvement in the future. The suggestions focused on requesting more time to fill out goal sheets and more information on how to set better goals with the youth. They also suggested more information prior to the

lessons, so they could be more prepared to discuss the topics with the youth.

Another goal coach was enthusiastic about the potential use of a phone application with which she would be able to remind her group about their goals or to take pictures for their photo journal during the week.

### **Parent Survey**

The nutrition, physical activity, and overall health topics that the parents were interested in learning more about included the *"differences between red and white meat"*, especially why people refer to *"pork as white meat"*. A topic of interest noted among the parents, as well as in earlier discussions with the youth during per the researcher's field notes, was *"Why do noodles take longer to digest?"* and *"Is it because of the plastic in them?"* when referring to ramen noodle-type products. This led to a short conversation between the parents about how they desired more information about *"how to make your stomach less bloated"* and *"how to go to the bathroom normally"*. The parents wanted to learn more about *"cholesterol...what is it? What foods have cholesterol?"* and *"Why are kids smaller than adults?"* The bilingual staff was asked to clarify with the parents what they meant by the question *"Why are kids smaller than adults?"* and the parents described, *"They can eat so much when they are younger and not gain any weight...when you get older, you can't do that anymore"* and one parent said *"metabolism"*. These suggestions for topics were taken into consideration when developing materials for the pilot intervention phase. Parental educational materials that modified as a result of this interaction were an addition of Spanish materials focused on cholesterol, fiber, red and white

meat sources, pork and cuts of pork, and grilling food safety tips. Some of the topics such as metabolism and food labels that were original to the pilot intervention were not modified from the curriculum.

### **Discussion of Revisions**

The youth's focus group results demonstrate that the youth can influence family-based nutrition and physical activity behaviors in their homes. All the lessons tied in many of the determinants of obesity for newly arrived immigrant Latino families such as low socioeconomic status, food insecurity, and inadequate health literacy. The "Rethink Your Drink" focused on educating the youth about sugar-sweetened beverages and provided economic alternatives through the store brand versus name brand taste test challenge. The youth enjoyed passing around the hyperglycemia models and shoveling sugar during the "Rethink Your Drink" demonstration. During the "Introduction to Salt" lesson, the youth proactively took snack items that they had brought with them to the program and began assessing the labels for sodium content. One popular snack item, "Takis", was often brought by the youth to the lessons. After learning about the sodium content and the portion sizes, the youth began to portion out their own bags of Takis during future lessons whenever they would arrive, so they were no longer consuming an entire bag, rather a single serving. The youth preferred trying the herbs and spices of oregano, dill, basil, and chives since these are herbs and spices they see their parents use in food preparation at home. A majority of the youth did not realize that herbs and seasonings did not have salt in them and were interested to learn more about this.

The physical activity lessons utilized movements and exercises that could be performed in one's own home, without having to purchase any equipment. And during the beginning of the testing period, the youth had emphasized that their favorite "American foods" were pizza and burgers, so the hands-on activity was changed from having a healthy snack challenge to making English muffin pizzas (which turned out to be a very positive change according to the focus group results). However, cultural appropriateness of the hands-on activities was re-evaluated prior to the pilot intervention due to the aversion to the olive oil taste testing activity during the testing phase. After the activity, the bilingual building supervisor, who helps translate for the program, informed the program facilitator that the olive oil is used for medicinal purposes to alleviate constipation in the areas where the majority of the youth's families are from. Therefore, they are not used to tasting it for any other purpose. After the youth focus groups, increased physical activities and native food preparation were included in the curriculum modification for the pilot intervention program.

Many of the activities that were just described provided the youth with the knowledge, tools, and skills to model these behaviors in their home environment and communicate new health information to improve health literacy. The hands-on activities and physical activity direction directly tie back to Social Cognitive Theory constructs through skill-development and self-efficacy. Additionally, the youth enjoyed the activities, which contributed to positive outcome expectations. They also allowed the youth to create a health promoting environment with increased



nutrition and physical activity knowledge, especially through the setting of individualized family goals centered around the main themes of the lessons, which incorporate personal behavior change.

During the focus groups, the goal coaches made suggestions that resulted in several changes prior to the pilot intervention phase. First, examples of goal sheets that had been appropriately filled out by the goal coaches were copied and placed as examples in the goal coach binders for reference. Second, the program facilitator created a “Wednesday Word” newsletter to the goal coaches that provided an outline of the lesson plan, description of the hands-on activities, and any additional pertinent information to better prepare the goal coaches for the lesson each Friday. Third, the chairs in the room were moved to a “U-shape” to facilitate less talking between the youth during the lecture portion of the lesson. Lastly, increased time was allotted with goal coaches for goal preparation at the end of each lesson. Originally, there were 10 minutes at the end of each lesson for goal development, but 15-20 minutes were allotted during the pilot intervention phase (depending on the lesson and activity).

During the parent survey on topic interest, the parents were very open to discussing what types of information they were interested in learning more about. They were also beginning to open up and interact with each other about their health concerns, which encouraged others to speak up. The survey information was used to develop informational folders that were sent home as extra materials after the pilot intervention phase. The survey information was useful, since having information on

what types of topics are of interest to the Latino immigrant community as a group is important, since it can help tailor further interventions utilizing adolescents as health messengers to help ensure information is getting to those who need it.

Additional revisions occurred as a result of the focus groups and field notes. The goal coaches were utilized for activities preparation during the lectures portion of the lessons, instead of sitting with the groups. Updated materials were placed in the goal coach notebooks such as extra paper and examples of filled out goal worksheets. The youth requested more physical activities and were interested in more Hispanic food preparation, in which a Cinco de Mayo event was planned for the pilot intervention due to the Friday lesson falling on the same day as Cinco de Mayo. The curriculum, final tools, and protocols were in place and revisions had been made before we moved on to the 6-week pilot intervention.

### **Implications and Future Work**

This article described the development and testing of a program that utilized Latino adolescents as change agents to promote family-based healthy lifestyle behaviors with the aid of college-aged goal coaches. The adolescent youth tested education materials and the feasibility of bringing targeted messages home to their families. The use of goal coaches working with the adolescent change agents to determine family lifestyle goals was tested. The results of this study were used to modify the curriculum and processes for the implementation of a 6-week pilot intervention program utilizing Latino adolescents as change agents to promote family-based healthy lifestyle behaviors.

Future work should include implementing the pilot intervention phase of a family-based nutrition and physical activity intervention that utilizes Latino adolescents as change agents in newly arrived immigrant families. This includes testing the framework of how the family members work as individuals and as a unit to prioritize health messages in the home. With a high prevalence of obesity in second and third generation Latino immigrant adolescents and a lack of overweight/obesity research within this specific population, an intervention teaching adolescents skills necessary to practice nutrition and physical activities could further improve overall outcomes (31). In conclusion, bringing the strength of the Latino immigrant family to combat the health challenges associated with dietary acculturation through the utilization of Latino adolescents as change interventionalists is a novel strategy.

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## CHAPTER V

### THE OUTCOMES OF A SIX-WEEK PILOT INTERVENTION NUTRITION AND PHYSICAL ACTIVITIES PROGRAM THAT UTILIZES CHILDREN AS CHANGE AGENTS TO PROMOTE HEALTHY FAMILY LIFESTYLE BEHAVIORS

#### Abstract

*Objective:* To measure the outcomes of a healthy choices and activities intervention pilot program utilizing adolescents as change agents on Latino parental food decisions.

*Design:* A convenience sample of Latino adolescent youth and parent/caregivers was recruited from an adolescent youth-group program in central North Carolina.

*Participants:* Participants were 21 Latino youth between the ages of 10-14 and 14 parents/caregivers of the youth. 5 college-aged goal coaches participated in the pilot intervention program.

*Intervention:* Once a week, 45-minute healthy food choices and physical activity lessons were conducted for a six-week period. Pre-, post-, and one-month follow-up intervention surveys were administered to both the adolescent youth participants and their parents/caregivers. A post-intervention survey was completed by the goal coaches at the conclusion of the 6-week pilot intervention program.

*Results:* A 6-week pilot intervention program utilizing adolescent Latino youth as agents of change resulted in an increase in healthy nutrition and physical activities in the newly arrived Latino immigrant homes after one-month post-intervention.

The parents reported increased physical activity and healthy food behaviors pre- and post-intervention. The adolescent youth reported positive self-efficacy and positive outcomes for fruits and vegetables and physical activity related behaviors pre- and post-intervention. Goal-coaches reported increased self-efficacy in coaching youth in setting family-based healthy lifestyle and physical activity goals. *Conclusions and Implications:* Utilizing adolescents as agents of change in the Latino immigrant family is an innovative strategy to reduce the incidence of overweight and obesity related to exposure to the negative determinants of obesity related to acculturation.

### **Introduction**

The overweight and obesity epidemic in the United States is a serious public health issue, as increased weight is strongly associated with an increased risk of developing chronic diseases such as diabetes, heart disease, hypertension, and certain types of cancer (1, 2). As immigrants arrive to the United States, their health is often better than the overall U.S. population. However, as time goes on and the immigrants are exposed to the “American diet” and lifestyle of increased fat and calorie intake, decreased fiber intake, low fruit and vegetable intake, decreased physical activity through acculturation, their risk has dramatically increased (3-7). With unhealthy levels of weight gain, increases in the likelihood of developing cancer, diabetes, and cardiovascular disease also have occurred (8). Since Latino immigrant families are often of low incomes, education levels, and have difficulty

accessing adequate healthcare, they are at high risk of negative health outcomes and are in great need of innovative strategies to address healthy lifestyle behaviors.

Latino immigrant youth acculturate quicker and are exposed to the English faster than their parents due to interaction in school and with peers. Through a strength in familism, the youth are respected in their families and have an increased power position through increased respect and responsibility in their homes.

Utilizing the Latino adolescents as change agents to deliver health messages to their family members communicates important health information to their family members by teaching about the negative risks associated with acculturation to typical U.S. diet and lifestyle. There is a need to develop culturally appropriate educational tools for this population. The power position that the youth hold in the family and the overall strength in familism make the Latino immigrant family a unit that must be approached as one. Yet, there are few interventions that target the Latino immigrant family.

The theoretical framework used for this intervention is Bandura's Social Cognitive Theory (SCT) (9). SCT involves the notion that an individual's environment, personal knowledge, and behaviors all interact with each other and can influence outcome expectations. Since the adolescent youth of newly arrived Latino immigrant families are often more acculturated than their parents/caregivers, their additional language and knowledge skills often give them a greater respect and power than children of other ethnicities (10). SCT suggests that providing youth the opportunity to influence their family's dietary choices and

physical activity levels through modeling, improving knowledge, physical activity, and health literacy should create a health-promoting environment that encourages healthy diet choices and physical activity. The application of SCT as the underlying framework in the healthy choices and physical activities intervention program utilizes the concepts of the environmental factors personal cognitions, and personal behavior. Environmental factors may include socioeconomic status, food insecurity, and social support; personal cognitions may include health literacy and healthy choices and physical activity knowledge; and personal behavior may include the existing nutrition and physical activity behavior that affects the home food environment such as the preparation of convenience foods for meals. Improving knowledge and skills for healthy lifestyle modifications should improve the overall health of this population, since the Latino population is at a high risk of developing obesity and chronic diseases with acculturation to the “American Lifestyle” (5, 8, 11).

This study describes the implementation of the pilot intervention phase of a family-based nutrition and physical activity intervention that utilized Latino adolescents as change agents in newly arrived immigrant families. For the purposes of this study, newly arrived Latino immigrant families are defined as families with children who have parents who have resided in the United States for only two to six years. The pilot intervention included testing the framework of how the family members work as individuals and as a unit to prioritize health messages in the home. With a high prevalence of obesity in second- and third-generation Latino

immigrant adolescents and a lack of overweight/obesity research within this specific population, an intervention teaching adolescents skills necessary to practice nutrition and physical activities could further improve overall outcomes (12).

### **Methods**

A convenience sample of Latino adolescent youth and parent/caregivers was recruited from subjects who participated with an adolescent youth-group program in central North Carolina. The Human Subjects Review Board at the University of North Carolina at Greensboro approved the study. Parent/guardian consent forms, minor assent forms, and photo approval forms were obtained prior to the initiation of the developmental phase. The Latino community center where the program took place had a large multi-purpose room with twenty tables and a separate kitchen area. A Spanish translator and the bilingual staff member employed with the Latino community center were available to translate the information to Spanish-speaking caregivers.

The testing and development of the program curriculum occurred prior to the pilot intervention program. Phase I occurred between September 2015 and February 2017 and included the development and translation of materials for the program, and relevant research. Phase II encompassed the developmental and testing phase of the program, which occurred between February and March of 2017. Phase III is the pilot intervention phase that occurred between April and June of 2017 (Figure 3). The pilot program was a 6-week intervention with weekly lessons for the adolescent youth. Goal coaches helped the youth develop individual family-

based goals to influence healthy lifestyle behaviors in the home. The parents/caregivers of the youth were monitored for changes in their healthy lifestyle habits. Pre-, post-, and one-month follow-up intervention surveys were administered to both the adolescent youth participants and their parents/caregivers. A post-intervention survey was completed by the goal coaches at the conclusion of the 6-week pilot intervention program.

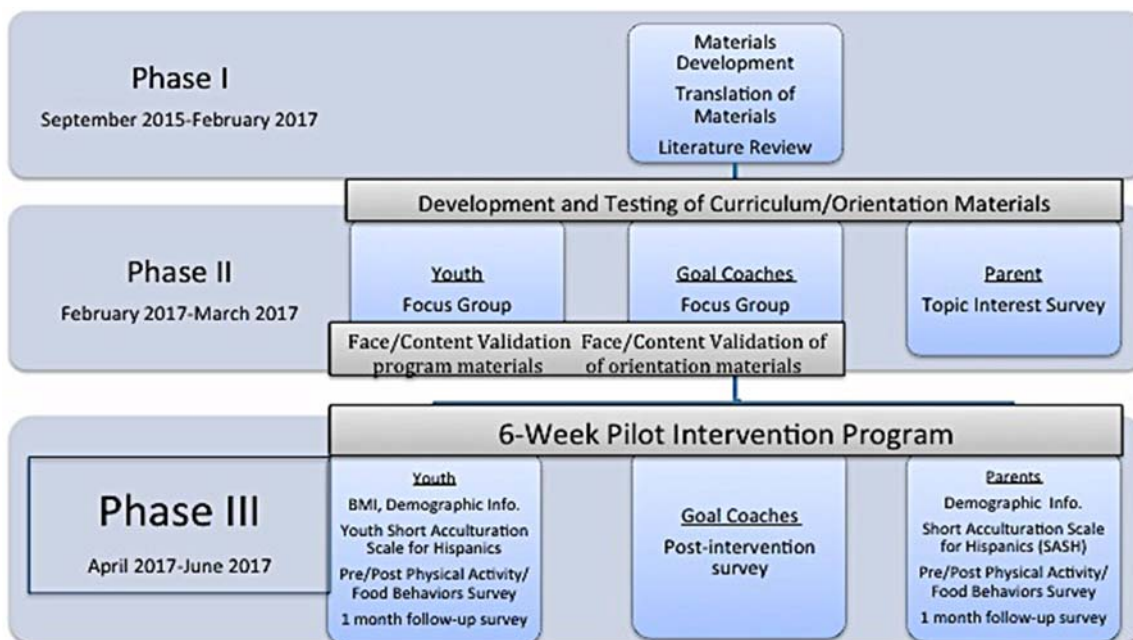


Figure 3. Description of the Three Phases of the Healthy Lifestyle Behaviors Program That Utilizes Latino Adolescents in Newly Arrived Latino Immigrant Families with Phase III Highlighted for the Pilot Intervention Period.

### Participant Recruitment and Screening

Recruitment for the pilot intervention involved two groups of individuals. The first group included the adolescent youth and their parents/caregivers. The second group included the college-aged individuals who would be participating in

the role of a “goal coach”. The recruitment procedures, criteria for participation, and description of incentives are described below.

**Adolescent youth and families.** The youth participants were also previous subjects in the testing phase of the development of the intervention program. As an incentive for the pilot phase, the youth received a photo album to use with the digital cameras they received during the testing phase, and the parents/caregivers of each youth participant received a \$50.00 prepaid Visa gift card upon completion of the parent/caregiver post-intervention survey.

Criteria for the participants in the developmental phase of the study included both the children and the families of children between the ages of 10-14 years, with a parent or caregiver who speaks Spanish as their primary language, and are of Hispanic/Latino descent who attend the youth-group program in central North Carolina. A total of 14 families were recruited for the study, with a total of 21 adolescents between the ages of 10-14 years with 5 sets of sibling groups with 2 or 3 siblings per sibling group. All written materials delivered to the family were provided in both English and Spanish, including the consent forms, surveys, and the weekly goal sheets from the students with the family goal.

**Goal coaches.** The goal coaches were recruited from local college programs in central North Carolina. Recruitment letters were sent to department leaders in search of responsible students who were seeking mentoring opportunities (Appendix B). An information meeting with the mentors occurred prior to the first testing session and mentors who met the criteria for selection were asked to

provide consent to participate in the study. The goal coaches were asked to participate in both the testing and pilot phases and paid an incentive of a \$250.00 stipend. The criteria for selection as a goal coach was based on their willingness to volunteer for the study, ability to attend a mandatory orientation meeting beginning of the testing phase, and completion of a background check prior to beginning the testing phase. All of the mentors were between the ages of 18 and 24 (college-aged individuals).

Goal coaches are individuals responsible for helping the children identify family-based goals, help them plan for implementation of these goals at home, and help them monitor for achievement and maintenance. A total of 5 goal coaches met the criteria and were cleared to begin the testing phase prior to orientation. Of the 5 goal coaches, 4 were bilingual in Spanish and 2 were existing mentors at the Latino community center. Goal coaches were paired with 1-3 youth or sibling groups for a total of 4-5 youth per group. The goal coaches used weekly goal coach notebooks to document progress and student questions by aiding in the creation of family goals and providing supervision on whether or not those goals were achieved. They also tracked attendance of the youth in these notebooks.

### **Intervention**

The healthy family lifestyle behaviors program used modified workshop lessons from the Eat Healthy, Be Active Community Workshop Series (13). This 6-week pilot intervention featured the following lessons: 1) Introduction to Food Labels/Brands, 2) Meatless Myths, 3) Defining Health, 4) Fueling Fitness, 5) Dining



Out/Cultural Food, and 6) Creating Long-term Family Goals. Each week the youth was provided a handout during the lesson, as well as a handout in Spanish to take home to discuss talking points with their parent/caregiver.

During the first lesson on “Introduction to Food Labels/Brands”, the youth visited three different stations where they compared two types of products in both a name brand and store brand version. These products included pineapple chunks, 100% cranberry juice and cranberry juice cocktail, sweet corn versus no salt added corn, Takis versus veggie straw snacks, name brand versus store brand chickpeas, and tortillas versus white and wheat bread. The youth were introduced to the 2018 food label guidelines.

During the second lesson on “Meatless Myths”, the youth had a discussion about food myths they had previously heard. Next, they were introduced to facts about why fruits and vegetables are good, including current rates of fruit and vegetable consumption in the United States and rates of obesity, fruit vegetable consumption, and sugar-sweetened beverage consumption among Latinos in the US. Topics discussed included serving sizes for vegetables, fiber, and tips for keeping healthy snacks accessible. The hands-on activity included making homemade vegetable dips including hummus, low-fat ranch dip, and ants-on-a-log with celery, peanut butter, and raisins.

During the third lesson on “Defining Health”, the youth participated in a discussion about how different cultures use food for healing purposes. Next, they were introduced to the effects of stress on the body, including the effects of stress on

behavior and mood. Topics that were discussed included ways to deal with stress and tips for exercise success. The hands-on activity included making a card for someone else who might be going through a stressful time or a card of gratitude.

During the fourth lesson on “Fueling Fitness”, the youth were presented a demonstration on how to use the set of resistance bands they received. Next, they all participated in safely moving through the movements to show competency. Topics that were discussed included strength training and metabolism. The hands-on activity included use of the resistance bands.

During the fifth lesson on “Dining Out/Cultural Foods”, the youth took part in a discussion on the history of Cinco de Mayo and their favorite Hispanic foods. Next, they were introduced to tips for eating out, including reading the menu and terms on the menu to look for and to avoid, and portion control. They also reviewed lists of healthier foods available at restaurants of different cultures. The hands-on activity included the youth’s parents creating healthy authentic Mexican cuisine for a Cinco de Mayo celebration.

During the sixth and final lesson on “Creating Long-Term Family Goals”, the youth joined in a discussion about what types of nutrition and physical activities they were planning on doing over the summer. For the hands-on-activity and lesson, the youth were introduced to a folder of nutrition topics that would be provided to their parents that they were asked to review with their parents. Topics that were included in the folder were information on fiber, pork cuts, cholesterol, tips for eating out, grilling tips, muscle activity, food safety, go/slow/whoa foods, healthy on

a budget, and a list of white and red meat sources. This lesson concluded the pilot intervention program.

### **Data Collection**

Data collection measures for the pilot intervention phase of the healthy family lifestyles intervention program are outlined in Table 6. The pilot intervention took place on Fridays during the adolescent youth-group program designated time period for 6 weeks in April and May of 2017. Youth anthropometric data were collected at the beginning of the 6-week pilot intervention phase. Youth and parent/caregiver acculturation scale and demographic information were collected at the beginning of the 6-week pilot intervention phase. Youth and parent/caregiver food behavior and physical activity measures were also collected at the beginning and the end of the 6-week pilot intervention phase. The goal coaches received a post-intervention survey at the end of the 6-week intervention phase. The youth and parents/caregivers received a one-month post-intervention survey at the end of June 2017. Additional measures included evaluation of the photos from the youth's photo journal project and additional information such as number of absences, taking of pictures, and adherence to the previous week's family goals were reported from information recorded in the goal coach notebooks.

Table 6

Pilot Intervention Data Collection Measures and Time of Data Collection for Youth Participants, Parents/Caregivers, and Goal Coaches

Who	Data Collection Measure	Time of Data Collection
<b>Youth Measures</b>	Body Mass Index	Pre-Intervention
	Demographic Information	Pre-Intervention
	Acculturation Scale <ul style="list-style-type: none"> <li>• Short Acculturation Scale for Hispanic Youth (SASH-Y)</li> <li>• Brief Acculturation Scale for Hispanics (BASH)</li> </ul>	Pre-Intervention
	Youth IMPACT Survey	Pre- and Post-Intervention
	Youth Follow-Up Survey	Post-Intervention
	Photo Journal Analysis	Photos were collected during the 6-week Intervention. Analysis occurred Post-Intervention.
<b>Parent Measures</b>	Demographic Information	Pre-Intervention
	Acculturation Scale	Pre-Intervention
	Food Behavior Checklist	Pre- and Post-Intervention
	Rapid Assessment of Physical Activity (RAPA)	Pre- and Post-Intervention
	Parent Follow-Up Survey	Post-Intervention
<b>Goal Coach Measures</b>	Goal Coach Post-Intervention Survey	Post-Intervention

### Youth Measures

**Anthropometric data.** Height and weight measurements were performed on the youth ( $N=17$ ) at the beginning of the pilot intervention using a calibrated weight

scale (Tanita BWB800) and a portable stadiometer (Charder HM200P). The youth were instructed to remove their shoes prior to being weighed and an average of 2 height and weight measurements were used to calculate their body mass index (BMI=weight in pounds/height in inches<sup>2</sup> x 703.1). BMI was calculated by the standard formula and weight categorizations were completed with the CDC 2000 BMI-for-age growth chart. Youth were classified as underweight if their BMI-for-age was less than the 5<sup>th</sup> percentile, normal weight if between the 5<sup>th</sup> and 84.9<sup>th</sup> percentile, overweight if between the 85<sup>th</sup> and 94.9<sup>th</sup> percentile, and obese if greater than or equal to the 95<sup>th</sup> percentile.

**Demographic information and acculturation scales.** The youth completed questions that gathered information on their grade and age, as well as level of acculturation during pre-intervention. Youth responded to nine questions on the Short Acculturation Scale for Hispanic Youth (SASH-Y) which asks questions to assess behavioral, social, and cultural aspects of acculturation, which is the process by which immigrants begin adopting the beliefs and attitudes of a new culture (22). Four of these questions make up the Brief Acculturation Scale for Hispanics (15). The Brief Acculturation Scale for Hispanics (BASH) is a measure of acculturation previously validated with adolescents and young adults of Latino descent (15, 16). The BASH response options are based on a 5-point Likert scale with 1=*only Spanish* and 5=*only English*. An overall (dichotomous; low or high) score less than or equal to 3 indicates a respondent is less acculturated and a score of greater than 3 is more acculturated (15). Although acculturation is a multidimensional concept, both the

BASH and the SASH are both reliable and validated acculturation scales that minimize response burden to the participants (16).

**Youth food behavior and physical activity measures.** The Power Play! School Idea and Resource Kit (SIRK) IMPACT survey (20) was given pre-test and post-test to the youth to collect information on their knowledge, outcome expectations, and self-efficacy psychosocial determinants regarding fruits and vegetables and physical activity (21). Psychosocial determinants for fruit and vegetables were categorized as positive outcome expectations, asking and shopping efficacy, and eating self-efficacy using a 5-point Likert scale from 1=*I disagree very much* to 5=*I agree very much*. Psychosocial determinants for physical activity were categorized as outcome expectations, support seeking self-efficacy, and barriers self-efficacy reported using a 1=*no* or 2=*yes* scale. Associated survey information was analyzed using descriptive statistics and *t*-tests with IBM SPSS Statistics software v24. Due to the small sample size, no inferential statistical analysis was conducted; rather, survey information was used to identify possible trends in relationships.

**Adolescent youth one-month follow-up survey.** Youth were asked to complete a one-month post-intervention survey regarding maintenance of the healthy choices and physical activity goals adopted by the family during the intervention phase, as well identified any additional changes the family had made. The surveys were administered by the bilingual support staff. The comments were

transcribed into a word document and uploaded into Atlas.ti v.16.0 for further organization in qualitative analysis.

**Photo journals.** Photos were grouped and coded according to predetermined themes for content analysis. Themes were determined by photo instructions given to the youth to take photos of nutrition and physical activities and were grouped according to the SCT constructs of environmental, behavioral, or social situations. The photos were coded as environmental if they were eating at home, at a restaurant, eating with self, playing in the yard, playing games in the home, playing games away from the home eating by self, eating with friends, or eating with family. Photos were coded as social if they were playing by self, playing with family, or playing with friends. Photos that were coded as behavioral were eating fast food, eating homemade American cuisine, eating homemade Hispanic/Latino cuisine, eating purchased American cuisine, eating purchased Hispanic/Latino cuisine, eating a meal, or eating a snack. Photos that were blurry or contained objects which the researchers could not make out any viable objects were removed from analysis. Videos that were taken with the cameras were not included in the photo journal analysis.

### **Parent Measures**

**Demographic information and acculturation scales.** Descriptive information regarding household makeup was administered to the parents/caregivers with the pre-test survey. This information included age, gender, and if they were Hispanic/Latino. Acculturation was determined using the Short

Acculturation Scale for Hispanics (SASH)(14). The 12-item SASH is a unidimensional scale that utilizes a 5-point Likert scale to assess behavioral and cultural aspects of acculturation. The first 8 items of the scale address language use and media preferences where the scores range from 1=*only Spanish* to 5=*only English*. The last four items address ethnic social relations and range from 1=*all Latinos/Hispanics* to 5=*all Americans*. The items are totaled and divided by 12 for an overall score. An overall (dichotomous; low or high) score between 1 and 2.99 indicates a respondent is less acculturated and a score of greater than 2.99 indicates that a respondent is more acculturated (14).

**Food behavior checklist.** The parents/caregivers were provided the Food Behavior Checklist, which is a 16-question checklist that measures food consumption, eating, shopping, food preparation, and food security, which has been tested for validity and reliability in Spanish with low-resource audiences (18, 19). The Food Behavior Checklist was administered by the bilingual support staff with the aid of the accompanying instruction guide to the participants. The checklist contains behaviors related to fruits and vegetable items, milk items, fat and cholesterol items, diet quality items, and food security. Questions on a 4-point Likert scale included the responses 1="no", 2="yes, sometimes", 3="yes, often", and 4="yes, every day". Questions on a 7-point scale included quantitative measurements 1="none", 3="1 cup", 5="2 cups", and 7="3 cups or more". Questions with a dichotomous scale included responses of 1="no" and 2="yes". Questions that had a 10-point Likert scale included responses of 1="poor", 4="fair", 7="good", and



10=“excellent”. Survey information was analyzed using descriptive statistics and *t*-tests with IBM SPSS Statistics software v24. Due to the small sample size, no inferential statistical analysis was conducted; rather, survey information was used to identify possible trends in relationships.

**Rapid Assessment of Physical Activity.** Included in the pretest and posttest survey completed by the parents/caregivers was the Rapid Assessment of Physical Activity (RAPA) survey (17). To score the RAPA, only questions with an affirmative answer are awarded a point. Negative answers are not awarded points for the question. Questions 1 through 6 of the RAPA counted as 1 point each, and the last two questions counted as 3 points if they were both answered as “Yes”. Any score on the RAPA less than 6 was considered to be a suboptimal physical activity score (17).

**Parent one-month follow-up survey.** A one-month post-intervention survey monitored maintenance of the healthy choices and physical activity goals that were adopted by the family during the intervention phase, as well identified any additional changes the family had made. The surveys were administered to the parents/caregivers by the bilingual support staff. The answers were translated from Spanish to English and reviewed by the bilingual support staff for errors. The comments were transcribed into a word document and uploaded into Atlas.ti v.16.0 for further organization in qualitative analysis.

### **Goal Coach Measures**

**Goal coach post-intervention survey.** The goal coaches were provided a survey at the end of the 6-week pilot intervention to gain further insight into the

perceived benefits and challenges of the goal coach role, and how the goal coach's role may have enhanced the individual's skills as a mentor. The survey also provided the goal coaches an opportunity to recommend any tools, skills, or information for future goal coaches that would assist them in their role, or additional suggestions for the program overall. These comments were transcribed into a word document and uploaded into Atlas.ti v.16.0 for further organization in qualitative analysis.

**Goal coach notebooks.** Information collected from these goal sheets included the family goals that were developed by the youth, the goal they chose to focus on for the week, whether they met the family-based goal from the previous week, ways they encouraged the goal, both positive aspects and challenges that came with the family goal, whether the youth remembered to take pictures for the photo journal, and additional goal coach notes (such as absences). All of the information from the copies of the family-based goal sheets from the goal coach notebooks were placed into excel spreadsheets and uploaded into Atlas.ti v.16.0 for further organization in qualitative analysis.

## **Results**

### **Youth Measures**

**Demographic information and acculturation.** Results from the pre-intervention survey collected from the youth are presented in Table 7. A majority of the youth participants were males ( $N=14$ ) in middle school of 6<sup>th</sup> through 8<sup>th</sup> grades ( $N=17$ ). Four of the youth were in 4<sup>th</sup> and 5<sup>th</sup> grade.

Table 7

## Demographic Information and Acculturation Scales for the Youth Participants

Adolescent Youth	Percent of Participants
<b>Gender: (N=21)</b>	
Male	67.0%
Female	33.0%
<b>Age: (N=21)</b>	
10 years	14.3%
11 years	19.0%
12 years	23.8%
13 years	28.6%
14 years	14.3%
<b>Grade in School: (N=21)</b>	
4 <sup>th</sup> grade	9.5%
5 <sup>th</sup> grade	9.5%
6 <sup>th</sup> grade	23.8%
7 <sup>th</sup> grade	33.3%
8 <sup>th</sup> grade	23.8%
<b>Acculturation Scale (BASH) (N=17)</b>	3.12 ( $\geq 3.0$ is considered "more acculturated")

Based on these questions, the adolescent youth respondents scored an overall average score of 3.12 +/- 0.59 SD. This indicates the average group of adolescent youth respondents are considered "more acculturated". The additional questions and response averages from the SASH-Y are reported as follows: 2) What languages do your parents speak to you? 1.50—Between "Only Spanish" and "Spanish better than English"; 6) In what languages are the TV programs you usually

watch? 3.35—Between “*Both Equally*” and “*English better than Spanish*”; 7) In what languages are the radio programs you usually listen to? 3.59—Between “*Both Equally*” and “*English better than Spanish*”; 8) In what languages are the movies, TV, and radio programs you prefer to watch and listen to? 3.76—Between “*Both Equally*” and “*English better than Spanish*”; and 9) In what languages do your parents speak with their parents? 1.00—“*Only Spanish*”. This information also informs that the youth are bilingual in both Spanish and English.

**Anthropometrics.** Height and weight measurements were collected to report BMI-for-age and BMI classification on 17 adolescent youth participants in the pilot intervention program. Five of the youth participants were absent from the data collection event. The results of the BMI measurements are that 41% ( $N=7$ ) of the youth were classified as having a normal BMI and 59% ( $N=10$ ) are classified as overweight or obese. Of these latter 10 youth, 2 classified as overweight and 8 were classified as obese.

**Youth food behaviors and physical activity measures.** A total of ( $N=15$ ) adolescent youth completed the pre- and post- Power Play! School Idea and Resource Kit (SIRK) IMPACT survey (20). There were no significant changes in reporting from pre- to post-intervention in self-efficacy with shopping and asking for fruits and vegetables; however, it is apparent in Table 8 that most of the youth respondents agreed that they are comfortable in shopping and asking for fruits and vegetables. The youth reported self-efficacy with eating fruits and vegetables pre- and post-intervention. These results are found at the end of Table 8 and although

there were fewer respondents saying they could eat 2 more servings of fruit or vegetables post-intervention, there were more respondents stating they could eat 5 or more servings of fruits and vegetables post-intervention.

Table 8

Pre- and Post-intervention Youth Adolescent Paired-samples Results for Self-efficacy with Shopping and Asking for Fruits and Vegetables and Eating Fruits and Vegetables from the IMPACT Survey

<b>I can...</b>		<b>N</b>	<b>Percent Not Agree</b>	<b>Percent Agree</b>
Write my favorite fruit or vegetable on the family's shopping list	<b>Pre</b>	15	26.7%	66.7%
	<b>Post</b>	15	26.7%	66.7%
Ask someone in my family to buy my favorite fruit or vegetable	<b>Pre</b>	15	13.3%	86.7%
	<b>Post</b>	15	13.3%	86.7%
Go shopping with my family for my favorite fruit or vegetable	<b>Pre</b>	15	20.0%	80.0%
	<b>Post</b>	15	33.3%	66.7%
Pick out my favorite fruit or vegetable from the store and put it in the shopping basket	<b>Pre</b>	15	20.0%	80.0%
	<b>Post</b>	15	26.7%	73.3%
Ask someone in my family to make my favorite vegetable dish for dinner	<b>Pre</b>	15	20.0%	80.0%
	<b>Post</b>	15	26.7%	73.3%
Ask someone in my family to serve my favorite fruit at dinner	<b>Pre</b>	15	20.0%	80.0%
	<b>Post</b>	15	26.7%	73.3%
Ask someone in my family to have fruits and fruit juices out where I can reach them	<b>Pre</b>	15	13.3%	86.7%
	<b>Post</b>	15	26.7%	73.3%
Ask someone in my family to have vegetables out where I can reach them	<b>Pre</b>	15	13.3%	86.7%
	<b>Post</b>	15	26.7%	73.3%
Eat 2 or more servings of fruit or fruit juice each day	<b>Pre</b>	15	13.3%	86.7%
	<b>Post</b>	15	33.3%	66.7%
Eat 3 or more servings of vegetables each day	<b>Pre</b>	15	40.0%	60.0%
	<b>Post</b>	15	53.3%	46.7%
Eat 5 or more servings of fruits and vegetables each day	<b>Pre</b>	15	53.3%	46.7%
	<b>Post</b>	15	33.3%	66.7%

There were no changes in reporting from pre- to post-intervention in positive outcome expectations regarding fruits and vegetables (Table 9).

Table 9

Pre- and Post-intervention Youth Adolescent Paired-samples Results for Positive Outcome Expectations for Fruits and Vegetables from the IMPACT Survey

<b>If I eat fruits and vegetables every day...</b>		<b>N</b>	<b>Percent Not Agree</b>	<b>Percent Agree</b>
I will become stronger	<b>Pre</b>	15	26.7%	66.7%
	<b>Post</b>	15	26.7%	66.7%
My friends will start eating them too	<b>Pre</b>	15	100.0%	0.0%
	<b>Post</b>	15	66.7%	26.7%
I will have stronger eyes	<b>Pre</b>	15	26.7%	66.7%
	<b>Post</b>	15	46.7%	53.3%
I will have a nicer smile	<b>Pre</b>	15	80.0%	20.0%
	<b>Post</b>	15	73.3%	26.7%
I will be healthier	<b>Pre</b>	15	0.0%	100.0%
	<b>Post</b>	15	0.0%	100.0%
I will think better in class	<b>Pre</b>	15	33.3%	66.7%
	<b>Post</b>	15	60.0%	40.0%
It will keep me from getting fat	<b>Pre</b>	15	26.7%	73.3%
	<b>Post</b>	15	33.3%	66.7%
I will have more energy	<b>Pre</b>	15	26.7%	73.3%
	<b>Post</b>	15	20.0%	80.0%
My family will be proud of me	<b>Pre</b>	15	40.0%	60.0%
	<b>Post</b>	15	20.0%	80.0%

Most of the youth believed that eating fruits and vegetables every day will make them strong, give them stronger eyes, help them be healthier, keep them from getting fat, give them more energy, and make their family proud. Some of the youth

reported that they do not believe that eating fruits and vegetables every day will give them stronger eyes, help them think better in class, or keep them from getting fat from pre- to post-intervention. However more youth reported believed that eating fruits and vegetables would help their friends to start eating them too, have a nicer smile, have more energy, and make their family proud in post-intervention than in pre-intervention. During the 6-week pilot intervention, many of the lessons centered around increasing fruit and vegetable intake through incorporating fruits and vegetables into snacks and healthy meals.

There were no changes in reporting from pre- to post-intervention in self-efficacy with barriers and support with physical activity (Table 10). Of the youth respondents, most believe that they can be physically active even if it is hot or cold outside, if they have a lot of homework, no matter how tired they feel, or how busy their day is. Of the youth respondents, most reported that they can be physically active most days after school, ask a parent or other adult to do physically active things with them, ask a parent or other adult to sign them up for a sport, dance, or other physical activity, ask their best friend to be physically active with them, ask a parent or other adult to get them the equipment they need to be physically active, ask a parent or another adult to take them to a physical activity or sport practice, and believe they have the skills they need to be physically active.

Table 10

Pre- and Post-intervention Youth Adolescent Paired-samples Results for Self-efficacy with Barriers and Support with Physical Activity from the IMPACT Survey

<b>Self-Efficacy with Barriers and Support with Physical Activity</b>				
<b>I can...</b>		<b>N</b>	<b>Percent Not Agree</b>	<b>Percent Agree</b>
Be physically active most days after school	<b>Pre</b>	15	13.3%	86.7%
	<b>Post</b>	15	26.7%	73.3%
Ask my parent or other adult to do physically active things with me	<b>Pre</b>	15	40.0%	60.0%
	<b>Post</b>	15	33.3%	66.7%
Ask my parent or other adult to sign me up for a sport, dance, or other physical activity	<b>Pre</b>	15	33.3%	66.7%
	<b>Post</b>	15	26.7%	73.3%
Be physically active even if it is very hot or cold outside	<b>Pre</b>	15	26.7%	73.3%
	<b>Post</b>	15	13.3%	86.7%
Ask my best friend to be physically active with me	<b>Pre</b>	15	26.7%	73.3%
	<b>Post</b>	15	20.0%	80.0%
Ask my parent or other adult to get me the equipment I need to be physically active	<b>Pre</b>	15	20.0%	80.0%
	<b>Post</b>	15	20.0%	80.0%
Be physically active even if I have a lot of homework	<b>Pre</b>	15	20.0%	80.0%
	<b>Post</b>	15	26.7%	73.3%
Ask my parent or another adult to take me to a physical activity or sport practice	<b>Pre</b>	15	46.7%	53.3%
	<b>Post</b>	15	40.0%	60.0%
I have the skills I need to be physically active	<b>Pre</b>	15	26.7%	73.3%
	<b>Post</b>	15	26.7%	73.3%
Be physically active no matter how busy my day is	<b>Pre</b>	15	33.3%	66.7%
	<b>Post</b>	15	26.7%	73.3%
Be physically active no matter how tired I may feel	<b>Pre</b>	15	6.7%	93.3%
	<b>Post</b>	15	33.3%	66.7%



Additionally, of the respondents, more youth reported a positive change in self-efficacy with barriers and support with physical activity in post-intervention than in pre-intervention. During the pilot-intervention, the youth were instructed on physical fitness strategies to complete full-body workouts with the use of resistance bands or body weight workouts. The key concepts of the lessons were to show the youth that they could complete physical activity anywhere without expensive equipment at any fitness level. Overall, the youth reported positive self-efficacy with barriers and support with physical activity both pre- and post-intervention.

There were no changes in reporting from pre- to post-intervention in positive outcome expectations regarding positive outcome expectations with physical activity (Table 11). Of the youth respondents, most of the youth believe that being physically active every day will not be boring, keep them in shape, be fun, would not make them embarrassed in front of others, help them control their weight, and would help them to be healthy. Of the youth respondents, more youth responded positively to physical activity keeping them in shape, being fun, and especially physical activity not being boring in post-intervention than in pre-intervention. Overall, the youth reported positive outcome expectations with physical activity in both pre- and post-intervention.

Table 11

Pre- and Post-intervention Youth Adolescent Paired-samples Results for Positive Outcome Expectations for Physical Activity from the IMPACT Survey

If I were to be physically active more days...		<i>N</i>	Percent Not Agree	Percent Agree
It would be boring	<b>Pre</b>	15	73.3%	26.7%
	<b>Post</b>	15	93.3%	6.7%
It would get to keep me in shape	<b>Pre</b>	15	6.7%	93.3%
	<b>Post</b>	15	0.0%	100.0%
It would be fun	<b>Pre</b>	15	6.7%	93.3%
	<b>Post</b>	15	0.0%	100.0%
It would make me embarrassed in front of others	<b>Pre</b>	15	73.3%	26.7%
	<b>Post</b>	15	73.3%	26.7%
It would help me control my weight	<b>Pre</b>	15	6.7%	93.3%
	<b>Post</b>	15	6.7%	93.3%
It would make me better in sports	<b>Pre</b>	15	13.3%	86.7%
	<b>Post</b>	15	6.7%	93.3%
It would help me be healthy	<b>Pre</b>	15	6.7%	86.7%
	<b>Post</b>	15	6.7%	93.3%

**Youth follow-up surveys.** One-month follow-up pilot intervention surveys were collected in June 2017. Of the participants who had completed the pilot intervention program ( $N=12$ ) parents and ( $N=19$ ) youth, there was a 33% ( $N=4$ ) parent response and a 42% ( $N=8$ ) youth response. Of the youth respondents, 6 reported that their parents were asking their opinion about food and exercise habits and 2 reported that their parents were sometimes asking their opinion. Of the youth

respondents, all reported that they were still practicing family based-goals in their households, providing examples that their families were eating together, were “eating healthier”, and “exercising”. Of the youth respondents, all reported that they believe each of their families has made more of an effort to incorporate healthy nutrition and physical activity choices into their household. Examples of these choices included “eating less junk food”, “put less sugar in foods and put more vegetables”, and “playing soccer”.

**Photo journals.** Due to limitations in the method, the photos were not analyzed.

### **Parent Measures**

**Demographic information and acculturation.** Results from the pre-intervention survey collected from the youth’s parents show that most of the respondents were female ( $N=11$ ) and of Hispanic/Latino ethnicity ( $N=11$ ), reported themselves to be either between 25-34 years ( $N=4$ ) or 35-45 years ( $N=5$ ) (Table 12). Two participants did not provide their age. The results of the SASH indicate that the parents were “less acculturated” with an overall score of  $1.44 \pm 0.90$  SD. Scores greater than 2.99 are considered “acculturated”.

Table 12

## Demographic Information and Acculturation Scales for the Parent/Caregiver Participants

Parents/Caregivers	Percent of Participants
Gender: ( <i>N</i> =11)	
Male	0.0%
Female	100.0%
Age: ( <i>N</i> =9)	
25-34 years	44.0%
35-45 years	56.0%
Hispanic/Latino? ( <i>N</i> =11)	100.0%
Acculturation Scale (SASH) ( <i>N</i> =11)	1.44 (<2.99 is considered "less acculturated")

**Parental food behaviors and physical activity measures.** The number of positive scores reported in the parent/caregiver sample on the pre- and post-RAPA can be seen in Table 13. The pretest results of the parent RAPA indicated that 71.4% of the parent respondents scored less than 6 on the survey, indicating a suboptimal physical fitness level. Only one of the parents met the optimal score of 9 out of 9 by indicating that they participate in both of the strength and flexibility activities noted on the survey. However, the post-testing results indicated an improvement in the group since only 42.9% of the parent respondents scored less than 6 on the survey. Of the parent respondents, there was an increase in moderate to vigorous physical activity participation pre- to post-intervention, as well as flexibility activities (Table 13). Additionally, 2 of the respondents in the post-intervention reported meeting

the criteria for the optimal score of 9 by participating in the strength and flexibility activities noted on the survey.

Table 13

Parent/Caregiver Paired Samples Results from the Rapid Assessment Physical Activity Assessment Pre- and Post-intervention

Questions		<i>N</i>	Percent Responded "No"	Percent Responded "Yes"
I rarely or never do any physical activities.	<b>Pre</b>	7	71.4%	28.6%
	<b>Post</b>	7	42.9%	57.1%
I do some light or moderate physical activities, but not every week.	<b>Pre</b>	7	14.3%	85.7%
	<b>Post</b>	7	28.6%	71.4%
I do some light physical activities every week.	<b>Pre</b>	7	14.3%	85.7%
	<b>Post</b>	7	0.0%	100.0%
I do moderate physical activities every week, but less than 30 minutes a day or 5 days a week.	<b>Pre</b>	7	57.1%	42.9%
	<b>Post</b>	7	14.3%	85.7%
I do vigorous activities every week, but less than 20 minutes a day or 3 days a week.	<b>Pre</b>	7	57.1%	42.9%
	<b>Post</b>	7	28.6%	71.4%
I do 30 minutes or more a day of moderate physical activities, 5 or more days a week.	<b>Pre</b>	7	57.1%	42.9%
	<b>Post</b>	7	28.6%	71.4%
I do 20 minutes or more a day of vigorous physical activities, 3 or more days a week.	<b>Pre</b>	7	57.1%	42.9%
	<b>Post</b>	7	42.9%	57.1%
I do activities to increase muscle strength, such as lifting weights or calisthenics, once a week or more.	<b>Pre</b>	7	85.7%	14.3%
	<b>Post</b>	7	71.4%	28.6%
I do activities to improve flexibility, such as stretching or yoga, once a week or more.	<b>Pre</b>	7	85.7%	14.3%
	<b>Post</b>	7	28.6%	71.4%

There were no changes in reporting from pre- to post-intervention in parental food behaviors (Table 14). Of the parent respondents, most had a positive change in response regarding food behaviors of “*Do you eat fruits and vegetables as a snack?*” with 28.6% reporting “yes, sometimes” and 71.4% reporting “yes, every day” pre-intervention to 42.9% reporting “yes, often” and 57.1% reporting “yes, every day” post-intervention. Of the parent respondents, most had a positive change in response regarding food behaviors of “*Do you drink fruit drinks, sport drinks, or punch?*” with 28.6% reporting “no”, 57.1% reporting “yes, sometimes” and 14.3% reporting “yes, often” pre-intervention to 28.6% reporting “no” and 71.4% reporting “yes, sometimes” post-intervention. Of the parent respondents, most had a positive change in response regarding food behaviors of “*Vegetables: How much do you eat?*” with 14.3% reporting “1/2 cup”, 57.1% reporting “1 cup”, 14.3% reporting “1.5 cups”, and 14.3% reporting “2 cups” pre-intervention to 14.3% reporting “1/2 cup”, 57.1% reporting “1 cup”, and 28.6% reporting “2 cups” post-intervention. However, of the respondents, some parents reported a negative change in food behaviors related to soda consumption, variety of fruit and vegetable consumption, consuming more than 2 vegetables at their main meal, using a food label, and fruit consumption in post-intervention than in pre-intervention. Of the respondents, the all parents reported that “yes, sometimes” they run out of food at the end of the month pre-intervention and 14.3% reported “never”, 71.4% reported “yes, sometimes”, and 14.3% reported “yes, often” in the post-intervention survey.

Table 14

Food Behavior Checklist Results Pre- and Post-intervention for Parent Fruit and Vegetable Behaviors, Food Security, Shopping Habits, and Diet Quality Items

Food Behavior Checklist						
Questions		N	Responses in Percentages			
			No	Yes, Sometimes	Yes, Often	Yes, Everyday
Do you eat fruits and vegetables as a snack?	Pre	7	0.0%	28.6%	0.0%	71.4%
	Post	7	0.0%	0.0%	42.9%	57.1%
Do you drink fruit drinks, sports drinks, or punch?	Pre	7	28.6%	57.1%	14.3%	0.0%
	Post	7	28.6%	71.4%	0.0%	0.0%
Do you drink regular soda?	Pre	7	57.1%	28.6%	14.3%	0.0%
	Post	7	28.6%	57.1%	14.3%	0.0%
Do you eat more than one kind of fruit each day?	Pre	7	0.0%	14.3%	28.6%	57.1%
	Post	7	0.0%	42.9%	42.9%	14.3%
Do you eat more than one kind of vegetable each day?	Pre	7	0.0%	28.6%	14.3%	57.1%
	Post	7	0.0%	57.1%	28.6%	14.3%
Do you eat 2 or more vegetables at your main meal?	Pre	7	0.0%	28.6%	28.6%	42.9%
	Post	7	14.3%	42.9%	42.9%	0.0%
Do you use this label when food shopping? (food label)	Pre	7	0.0%	71.4%	14.3%	14.3%
	Post	7	14.3%	42.9%	28.6%	14.3%
Do you run out of food before the end of the month?	Pre	7	0.0%	100.0%	0.0%	0.0%
	Post	7	14.3%	71.4%	14.3%	0.0%

Responses in Percentages									
Questions		N	None	½ Cup	1 Cup	Responses in Percentages			
						1 ½ Cups	2 Cups	2 ½ Cups	3 Cups
Fruit: How much do you eat each day?	Pre	7	0.0%	0.0%	42.9%	28.6%	28.6%	0.0%	0.0%
	Post	7	0.0%	0.0%	71.4%	28.6%	0.0%	0.0%	0.0%
Vegetables: How much do you eat each day?	Pre	7	0.0%	14.3%	57.1%	14.3%	14.3%	0.0%	0.0%
	Post	7	0.0%	14.3%	57.1%	0.0%	28.6%	0.0%	0.0%

Increases in overall vegetable consumption, consumption of fruits and vegetables as snacks, and decreased fruit drink, sport drinks, and punch

consumption align with the goal of the program to increased frequency of nutrient-dense food consumption and increase self-efficacy of nutrition knowledge. The youth curriculum has had a strong focus on decreasing sugar-sweetened beverages and increasing fruit and vegetable intake. The increases in overall physical activity, as shown in the results from the RAPA, align with the goal of the program to increase self-efficacy of physical activity knowledge. The youth curriculum focused on using strength training resistance bands and body weight exercises for increased fitness opportunities in areas with limited resources.

**Parent follow-up surveys.** One-month follow-up pilot intervention surveys were collected in June 2017. Of the participants who had completed the pilot intervention program ( $N=12$ ) parents and ( $N=19$ ) youth, there was a 33% ( $N=4$ ) parent response rate and a 42% ( $N=8$ ) youth response rate. Of the parent respondents, three reported that they were asking their child about their food and exercise habits and one parent reported, “no question, but I am talking about fruits and vegetables”. Of the parent respondents, all four who completed a post survey reported they were still were still practicing family based-goals in their households, stating they did “more sports and healthy eating”, “measure portions of food”, “exercise”, and “buy healthy food like fruits and vegetables”. Of the parent respondents, all four also reported that they believe their family had made more of an effort to incorporate healthy nutrition and physical activity choices into their household. Examples of these choices that the parents reported included “play more soccer”, “the children are active in the summer, playing soccer and I take them to the



pool”, “we walk a lot”, and “buying more fruits and vegetables and less junk food.” The one-month follow-up surveys indicate that the parents are making changes to increase fruit and vegetable consumption in their home. This aligns with the program goal of increased healthy food preparation knowledge. Of the respondents, the parents reported increased fruit and vegetable consumption post-intervention and decreased junk food purchasing which aligns with the program goal of increased frequency of nutrient-dense food purchasing.

Of the youth and parent respondents, all reported that they “do think the healthy choices and physical activities program could help other families.” Some of the ways they stated the program could help other families is “giving more ideas on how to incorporate fruits and vegetables in the food”, and it “can help participants or kids or either parents learn more exercise, eating healthy.” Of the youth and parent respondents, all reported that they were interested in learning more information on nutrition and physical activity topics. Some of the topics they were interested in learning more about included “sports drinks and eating well”, “meats and proteins”, “physical activities”, and “how I can be healthy for many years.”

### **Goal Coach Results**

**Goal coach post-intervention surveys.** Three of the goal coaches completed the post-intervention surveys. They described the positive aspects of the goal coach role as “getting to know the kids and working with them each week”, “learning with the kids”, and “it opened my eyes to see the disparities . . . and how socioeconomic status could affect health and nutrition”. The goal coaches described

challenges aspects of the role as “varying goals among the kids and getting them to actually implement them”, “family group work was easy (held each other accountable) . . . but only child in my group would missed meetings and not do the goals and there was no way to hold him accountable”, and one goal coach found being unable to contact their group members outside of the meeting site “difficult to stress the goal’s importance and provide motivation for actually fulfilling the goal”. Of the goal coach respondents, all of them felt that the experience enhanced their skills as a mentor. Some of the examples they provided were “it helped me work with multiple kids at once towards specific goals”, “everyone needs a different type of connection and having a group of kids with unique personalities made me work harder to connect with each one”, and “I learned a level of engagement it takes to really get to know your mentees and how to encourage them to form their own goals.” Of the goal coach respondents, the tools, skills, and information that the goal coaches recommend to future goal coaches centered around “keeping an open mind”, “give easy real-life examples that they can understand: tortillas, Takis, made those lessons more memorable”, and “develop goals with the kids as they learn.” Additional comments and suggestions that the goal coaches reported were to “do more interactive questions . . . give a more general overview of the lessons”, “goal coach attrition and lack of commitment was a problem, definitely showed up with how the kids responded to the lessons”, and “it would be helpful to meet more than once a week.” Responses from the post-intervention survey meet program goals of

increased self-efficacy in coaching youth in setting family-based healthy choices and physical activity goals.

**Additional information.** A review of the content of the goal coach notebooks revealed that 32 (82%) of the youth responses indicated they had met the family goal that they had set the week before. There was an average of 3.8 youth participants ( $N=23$  total) absent each week, with absences higher on Good Friday holiday and the following Friday due to spring break for the youth. There was an average of 1.6 goal coaches ( $N=10$  total) absent per week. With the goal coach absences, many gaps of information were missing from the days the goal coaches were not present to record follow-up information.

### **Discussion**

The goal of this study was to measure the outcomes of a healthy choices and activities intervention pilot program utilizing adolescents as change agents on Latino parental food decisions. This study indicates that utilizing adolescents as change agents resulted in positive outcomes with Latino youth ages 10-14 years old. The adolescent youth reported positive self-efficacy with shopping, eating, and asking for fruits and vegetables, as well as positive outcomes for fruits and vegetables both pre- and post-intervention. Overall, the youth reported positive self-efficacy with barriers and support and positive outcomes with physical activity both pre- and post-intervention. It was postulated that because young adolescents acculturate more quickly than their parents and have a power position in the family due to an increased respect and responsibility for the assistance they provide, they

would be in a position to influence family activity around eating and physical activity.

Over half of the youth participants were overweight or obese (60%), which is consistent with the rates of obesity in racial/ethnic minorities reported nationally (4). Acculturation is the process by which immigrants begin to adopt the beliefs, attitudes, customs, values, and behaviors of the new host culture in which they are residing (8). The results of the acculturation scales in this study support the evidence that youth acculturate more quickly than their parents through school exposure and are capable of successfully delivering health messages to their families. Furthermore, the results of this study indicate that both the youth and parents perceive their families to have made more of an effort to consume more nutrient-dense foods and increase physical activities at one month post-intervention.

Some of the curriculum messages that were delivered to the youth appeared to be more effective than others. The youth were heavily engaged when learning that corn tortillas contained less calories and carbohydrates than the flour tortillas, yet the serving size of corn tortillas was greater. Additionally, during the lesson that focused on increasing vegetables for snacks, many of the youth reported that they had made the low-fat ranch dip after the lesson at home.

The parents reported increased physical activity and healthy food behaviors pre- and post-intervention. The parents also reported increased nutrient-dense food purchasing one month post-intervention. These results support the research that

children influence decisions in the home, particularly food decisions (25, 26). Another reason why the parents may have been motivated to make changes in the home food environment was out of concern for their children's health. It was brought to the researcher's attention during the consent process that many of the parents were interested in having their children participate in the program because they were concerned with their children's eating habits. This is consistent with the results from their statements of reasons why they wanted their child to participate in the program from the one-month follow-up survey. However, it is interesting that the most reported barrier to healthy eating and physical activity from both the youth and goal coaches (from what they had learned from the youth) were factors related to the parents.

The goal coaches reported increased self-efficacy in coaching youth in setting family-based healthy lifestyle and physical activity goals. To the researcher's knowledge, this current study is the first study that has explored the use of college-aged goal coaches to aid in the development of individualized family-based nutrition and physical activity goals with adolescent youth. Use of college-aged goal coaches was a strategy for engaging the adolescent youth with someone they could consider more of a "peer" versus an authority figure such as a parent or teacher. Previous research on mentor programs has often suggested that long-term relationships with the mentees are a key component to a successful mentor-to-mentee relationship (27, 28). Therefore, expanding the length of time for the program to establish a

better relationship between the youth and goal coaches may have greater positive impact on program outcomes.

The study design has some limitations. If there was a goal coach absence, the other groups were overwhelmed with youth and often the individual goal follow-up from the previous week was not properly documented in the missing goal coach's notebook. Goal coaches need to be regularly involved with the adolescents to establish relationships with the youth and goal coach attrition affects both the youth and the other goal coaches. Most of the youth enjoyed spending time with their goal coaches and were upset when they were not present for the lessons.

The timing of the lessons and activities did not leave enough time to properly upload photos to plan for the execution of a proper photo journal project during the intervention phase. Due to time constraints and modifications to the photo journal instructions, a traditional photo journal project was unable to occur. The ideal photo journal project would have included a debriefing with each youth about what was happening in the photos they had chosen, as well as both small and large group discussions to create captions and themes among the youth photos. The youth would then create their own presentation on the strengths and needs regarding nutrition and physical activity in their community and present that to community partners. Due to changes in the photo journal process, the youth were instructed not to take pictures of other people's faces and detailed photos of their home environment to protect identities. This affected all aspects of content analysis for the photo journal as well.

The pilot intervention phase lasted 6 weeks, which may not have provided enough time for the families to adopt enough lifestyle changes, which limited the number of significant findings in the nutrition and physical activity surveys. The 6-week intervention phase was planned to reduce the time burden on the program participants, as planned upon prior to program initiation by the community partners and researchers. The intervention itself occurred during the months of April and June 2017, which also had several holidays and school breaks which may have affected attendance. The researchers did have some difficulty with the survey response rate during the summer period for the one-month follow-up, as the support staff and families were often traveling. There was not enough content from goal coach surveys and one-month follow-up surveys to theme and code for qualitative analysis. Additionally, generalizability of these findings is limited due to the sample size and the specific population chosen for the study. However, given that this was a pilot intervention study, the findings from this study can be used to advise in the development of future work with the Latino immigrant population. Barriers addressed during this pilot-testing phase can strengthen the design of future intervention programs.

### **Conclusions and Implications**

This study describes a pilot intervention program that utilized Latino adolescents as change agents to promote family-based healthy lifestyle behaviors with the aid of college-aged goal coaches. The adolescent youth used education materials and hands-on activities to learn about nutrition and physical activity

topics. They developed targeted messages to bring home to their families to influence healthy lifestyle behaviors in the home.

The goal coaches worked with the adolescent change agents to help them determine their family lifestyle goals. The Hispanic goal coaches were able to share cultural stories with their groups and the with the other youth, which allowed them to connect to their group members in a positive way. A future consideration would be to examine if these programs would benefit from primarily recruiting from bilingual and bicultural college-aged individuals.

Almost 60% of the youth in this program were considered to be overweight or obese. Adolescence is a time when many lifelong habits are set. Based on the acculturation level of the adolescents, they are more acculturated than their parents, which is what we would expect in the newly arrived Latino immigrant family. However, they are still on the lower end of the “more acculturated” spectrum, and if immigration to the US is a risk factor for obesity-related behaviors, it is plausible that the earlier the nutrition and physical activity education can occur, the more likely positive health outcomes can be maintained or achieved. Continuing to work on modifying culturally appropriate nutrition and physical activity materials with appropriate ethnic considerations is needed. Since most educational materials homogenize Latino and Hispanic culture, having more diversity in educational materials will be useful in educating newly arrived immigrant families, preferably materials with regional flare.



The parents reported greater positive changes in physical activity behaviors between pre- and post-intervention. What is meaningful when we look at the trends in the parental behaviors is that the program was developed to determine if adolescents as agents of change could impact healthy family lifestyle behaviors. What we are seeing from these results is that the parents are beginning to make positive changes towards incorporating healthy lifestyle behaviors and are continuing to make changes towards healthy family-based behaviors at one-month post-intervention. The parents are also reporting continued interest in learning more about nutrition and physical activity topics. In future research, it may be worth providing the parents with a transtheoretical measure of behavior change pre- and post-intervention. Developing a tailored parent curriculum that addresses some of the perceived barriers to healthy eating for both parents and youth, such as snacks, fast food, and using food as rewards may be beneficial for the future success of the healthy lifestyle behaviors program.

In summary, this was a very promising pilot study looking at an intervention that draws on the strength of the Latino immigrant family and the unique child role reversal that is seen when the children acculturate faster than their parents and are able to communicate information to them. Additionally, adolescence is a time when many lifelong habits are set. With the comorbidities of obesity often carried into adulthood, we are empowering youth with the knowledge to improve their health, as well as their families. The results of this study will be used to modify the curriculum and processes for the further development and implementation of future

programs and interventions that utilize Latino adolescents as change agents to promote family-based healthy lifestyle behaviors.

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## CHAPTER VI

### EPILOGUE

Every time I have taken the time to reflect on the insight, knowledge, and inspiration that I have amassed from this experience, I keep coming back to a quote by Theodore Roosevelt that states “People won’t care how much you know until they know how much you care.” Through my dissertation experience, I would like to elaborate on the premise of that quote and apply it in a more specific manner to the newly arrived immigrants in the United States; I firmly believe that until you have proven yourself a trustworthy and safe ally to the immigrant community, you stand little to no chance of being an educator in their community. I found myself urgently trying to secure a location for my research project right after the 2016 Election. I will not lie and say that I was not anxious that my project might not happen after the election. My research focused on working with newly arrived Latino immigrants and racism escalated for all Latinos in the United States for both U.S. citizens and unauthorized individuals. As I began meeting with community partners about the possibility of collaborating with them, all of them emphasized the fear and anxiety that their community members were experiencing, especially the youth. The youth were more in tune to the current events through exposure in school. Despite the turmoil in the Latino communities, the community partners thought my project would be a good distraction for the youth and immigrant families. Parts of my

project had to be changed to protect the identity of the community due to the new fears associated with the political climate, but I was more enthusiastic than ever to have the chance to be a positive distraction during these times. I felt blessed and honored to be given the chance, as an outsider to the community, to work with those wonderful people. I am grateful to everyone who helped make that possible and as I discuss the challenges and triumphs of my dissertation process, the greatest gift of this experience was that it made me a better human being.

There was a wide spectrum of challenges that I experienced during the development and initiation of my dissertation project. Community work in and of itself is a challenge. There were many times I found myself frustrated because I was not getting responses from people in adequate time frames, or sometimes not at all. I was also frustrated when information could be clarified in either phone calls or in-person meetings with individuals, but their preferred method of communication was only emails. Community work comes with a great need to rely on others. I have learned how difficult it is to coordinate a community-based research project. This has not deterred me from wanting to continue to do this type of research in the future, however. I feel that because of this experience, I have a deeper understanding of how important it is to be impeccable to your word and to always maintain good relationships with your community partners, even when you are not actively working together. I have developed, as a professional, truly learning that active listening, kindness, and emotional intelligence are some of the most powerful traits that good leaders possess.



Another challenge I encountered during my dissertation project was choosing to work with a population in which I was unable to clearly communicate with all of the members. There is a common theme in the literature that there continues to be inadequate access to qualified translators for health care information to Spanish-speaking individuals, especially the LEP. During the testing and pilot intervention phases, I was lucky enough to have the bilingual supervisor share her candor with me about what words she was explaining behind me in the lessons in Spanish, such as “increased” or “decreased”. I took five years of Spanish between high school and college, but I wish I had continued the language for many reasons. Firstly, I think it is beautiful to speak and to hear. Secondly, I now realize how useful it would be to use my new skills to create and deliver nutrition education training programs for other nutrition professionals who would like to work with LEP families and/or newly arrived Latino immigrant families, but in Spanish. Lastly, the most difficult part of conducting this program was not being able to converse socially with the parents. Although some were able to speak a little more English than others, I wanted to tell them how amazing their kids were and how grateful I was every time I saw them, but couldn’t because my translator wasn’t always next to me. I hope they know how much they mean to me. I promised them all that I would keep learning Spanish. I intend on keeping this promise.

Because of this experience I know that I want to continue working with adolescents and the development of healthy lifestyle behavior programs. I knew before I started my Ph.D. that I wanted to work with adolescents. There are other

researchers out in the field who do not have the interest or the tolerance to work with teenagers, but I think they are incredibly insightful, compassionate, and fun. I would also like to continue working with families who are at elevated risk of experiencing health disparities because although community work might seem frustrating or depressing at times to some, I felt a greater satisfaction in my life knowing I was doing *something* to contribute to the community. I would also like to continue working as a mentor to future nutrition professionals, because there is still a lot that can be taught to practicing and future dietitians about the complexities of immigrant health.

## APPENDIX A

### PHOTO JOURNAL INSTRUCTION SHEET

#### PHOTO JOURNAL INSTRUCTIONS



- Your assignment is to take a minimum of 5-10 pictures each week that relate your healthy choices and physical activity goals to the following areas:

<b>Behavioral</b>	<b>Environmental</b>	<b>Social</b>
Examples:  How often are you eating meals	Examples:  Where you and your family eat your meals	Examples:  Who are you eating with
How often are you eating snacks	Where you and your family make your meals	Who are you playing games with
How much food is on your plate	Where you and your family play games	Who Is helping you make your snacks and meals

In order to keep track of when the pictures are taken, try to write the date and time on a notecard and stick it in the picture!

Be Creative!!

**APPENDIX B****FAMILY-BASED GOAL SHEETS FOR GOAL COACH NOTEBOOKS****INSTRUCTIONS FOR GOAL-COACHES**

**Remind your participants that the topic of the week is:**

---

**What are the family goals that the participant wants to create?  
Help the participant think of 2-3 goals and then have them pick the  
one goal they would like to focus on this week:**

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

**Put a star by the goal your participant has chosen!**



**FOLLOW-UP FROM THE PREVIOUS GOAL:**

**Did the participant meet their goal from the previous week?  
Circle: YES or NO.**

**What did they do to encourage the goal?**

---

**What was something positive that came from the family goal?**

---

**What were the challenges that came with the family goal?**

---

**Did you remember to take pictures for your photo journal?**

**Circle: YES or NO**

## APPENDIX C

### RECRUITMENT LETTER FOR PROGRAM FAMILIES

#### ***Nutrition & Physical Activity Education Program***

*February 2017*

Hello to my friends at El Buen Pastor Presbyterian Church!

I am writing to let you know about an opportunity to participate in a research study about nutrition and physical activity education to promote healthy family behaviors. Allison Koch, a Registered Dietitian and student with the University of North Carolina-Greensboro, is conducting this study. This study will focus on teaching students between the ages of 10-14 with the adolescent youth-group program about nutrition and physical activity topics and how they can incorporate these messages at home. There are two parts to the study: 1) a testing phase in March of 2017 and 2) a pilot program phase from April and May of 2017. You are being asked to participate in both the testing and pilot phase.

During the month of **March**, youth will be asked to participate in the testing of nutrition and physical activity educational lessons and to keep a photo journal of their own nutrition and physical activities, which could include family activities, using a camera that they will get to keep at the beginning of the testing phase. They will work with a goal coach who will keep track of their families' progress. The youth will be asked to complete a focus group at the end of four weeks to discuss their likes and dislikes of the program content so that adjustments can be made prior to the pilot phase. During the months of **April-May**, youth will be asked to participate in nutrition and physical activity educational lessons and to keep a photo journal of their nutrition and physical activities and will continue to work with goal coaches. The youth will be asked to complete questionnaires about their nutrition and physical activity habits before and after the program. They will also have their height and weight taken at the beginning of the study. One month after the program is over, the youth will be asked to fill out a survey asking them questions about the program and if they are still doing some of the activities that they learned during the lessons.

Parents of the youth who participate in the study will be given a survey at the end of the testing phase asking for feedback on lesson topics. They will receive a \$25.00 VISA gift card for completing and returning the survey at the end of the testing period. Parents will also receive a questionnaire at the beginning and end of the pilot program that asks questions about their own nutrition and physical activity habits. They will receive a \$50.00 VISA gift card for completing and returning the survey at the end of the pilot program. One month after the program is over, the parents will be asked to fill out a survey asking them questions about how their family has or has not benefitted from the program.

Information about the date and time for the parent information meeting will be available soon!

If you would like additional information about this study, please contact Allison Koch at [aaloyd2@uncg.edu](mailto:aaloyd2@uncg.edu) or (828) 855-6508. Agreement to be contacted or a request for more information does not obligate you to participate in any study.

Thank you again for considering this research opportunity!  
*Allison Koch MA RD/LDN*



### **Parents/Caregivers Recruiting Script**

(PI will read script in English & Interpreter will translate to Spanish, orally)

*Hello Everyone! My name is Allison Koch and I am a student at the University of North Carolina in Greensboro, NC. I have come to El Buen Pastor to tell you about my research study that focuses on utilizing children as agents of change to deliver healthy information to their families. The goal of my study is to develop an innovative healthy choices and activities intervention program by teaching children about healthy food preparation practices, healthy food choices and nutrition, how to adopt healthy food eating habits and patterns, and engage regularly in health promoting physical behaviors and exercise to reduce the risk of developing health problems later in life. Since you are all youth and parents with El Buen Pastor, I am asking you to consider allowing your youth to participate in this study. I am interested in working with the youth between the ages of 10-14 because they are a very important age group that have a lot of knowledge and value to their community and families, but have not been looked at in research as much as younger and older children. Let me tell you about what the children will be asked to do for the study.*

*Once a week during the month of March, they will also be asked to test the healthy choices and activities intervention materials by sitting through a 20-minute lessons on topics such as "making healthy snacks" and "eating healthy food that tastes great". After they participate in the lessons, they will meet with goal coaches who will help them develop a goal for your family. The goal coaches will be mentors from the local colleges. This will take place 15 minutes after their lesson is finished. Your child will be asked to report to their goal coach on the progress of meeting the goals they created. The children will also be given a digital camera to take pictures of meals and activities that their household has participated in. At the beginning of the testing phase, the children will be instructed to take a few test photos of specific items and events in their home, and provided an information sheet on examples of photos they could take to provide snapshots of their nutrition and physical activity environment. I brought some examples of some pictures to show you what types of pictures I would take if someone asked me to take pictures of what I eat and what type of activity I do in my own house. I don't want them taking any pictures of any faces or people, just objects. Your child will also provide feedback in a focus group where they will answer questions about what they liked and disliked about what they had learned. The focus group will be no more than 30 minutes of their time.*

*As a Registered Dietitian, I will act as the program facilitator, delivering the healthy choices and physical activities education message as the content advisor to the goal coaches and children and answering any questions that the participants are not qualified to answer. These lessons are once a week for thirty minutes, followed by a fifteen-minute goal development period for the students and goal coaches. The students will be able to keep the camera at the end of the testing phase. The parents will be asked to fill out a survey at the end of the testing phase to get an idea of what type of healthy topics you would be interested in learning more about. After the survey is returned, you will be given a \$25.00 VISA gift card for your participation.*

*Then, beginning in April until the second week of May 2017, the students begin the second phase of the program called the pilot phase where they continue the healthy choices lessons and work with their goal coaches, developing family goals. The students will be asked to complete questionnaires about their nutrition and physical activity habits during this phase. They will also have their height and weight taken at the beginning of this phase. Parents of the youth who participate in will be given a questionnaire at the beginning and end of the phase that asks questions about their own nutrition and physical activity habits. On the last day of the program, parents who return the last questionnaire will receive a \$50.00 visa gift card for participating.*

*One month after the program is over, the parents will be asked to fill out a survey asking them questions about how their family has or has not benefitted from the program.*

*If you would like to participate in this study, please let me know and I will move forward with explaining the consent process to you, which outlines the study in greater detail.*

*Thank you very much for your time. I would love to answer any questions you have and will provide you with my contact information if you have any questions in the future.*



## APPENDIX D

### RECRUITMENT SCRIPT FOR POTENTIAL GOAL COACHES

#### Goal-Coaches Recruiting Script

*Hello Everyone! My name is Allison Koch and I am a student at the University of North Carolina in Greensboro, NC. As a Registered Dietitian, it is my goal to work towards developing efficient and effective ways to get information on how to make healthy choices about nutrition and physical activity to people with limited resources. I have come to El Buen Pastor to tell you about my research study that focuses on utilizing children as agents of change to deliver healthy information to their families. The goal of my study is to develop an innovative healthy choices and activities intervention program by teaching children about healthy food preparation practices, healthy food choices and nutrition, how to adopt healthy food eating habits and patterns, and engage regularly in health promoting physical behaviors and exercise to reduce the incidence of overweight/obesity. People in the local colleges and universities who believe you would be a great role model to the adolescents who will be participating in the healthy choices program here at El Buen Pastor have identified you all. I am asking you to consider taking on the role as a goal coach for this study. Let me explain to you what a goal coach is.*

*Goal coaches are individuals responsible for helping the children identify family-based goals, help them plan for implementation of these goals at home, and help them monitor for achievement and maintenance. The first phase of my study will include the testing of the healthy choices and activities intervention materials with the students, as well as the development and testing of orientation and training curriculum for the goal coaches. Goal coaches will use weekly goal coach notebooks to document progress and student questions. As a Registered Dietitian, I will act as the program facilitator, delivering the healthy choices and physical activities education message as the content advisor to the goal coaches and children and answering any questions that the participants are not qualified to answer. These lessons are once a week for about twenty minutes, followed by a fifteen-minute goal development period for the students and goal coaches. Topics for the lesson plans include "making healthy snacks" and "healthy food that tastes great". Goal coaches will be asked to participate in a focus group at the end of the testing phase for no longer than 45 minutes to provide insight in to what works well and needs improvement on regarding curriculum content, instruction, and preparation. The testing phase runs through the month of March and is followed immediately by a second phase, called the pilot phase. During the pilot phase, goal coaches continue to work with children on goal development and are asked to participate in a survey at the end of the intervention phase for no longer than 15 minutes to provide insight in to what works well and needs improvement on regarding curriculum content, instruction, and preparation. This phase lasts from April until early May 2017. Goal coaches will be provided a \$250.00 stipend to participate in the program.*

*If you would like to participate in this study, please let me know and I will move forward with explaining the consent process to you, which outlines the study in greater detail.*

*Thank you very much for your time. I would love to answer any questions you have and will provide you with my contact information if you have any questions in the future.*



6. What were some of the suggestions you made that your family adopted/implemented?

7. What were the best parts of the photo journal? What suggestions do you have to improve the photo journal process in the future?

8. How can we make the program more fun?

*Probes for Discussion:*

- *Goal-Coaches*
- *Understanding of curriculum*
- *Activities of interest*

That concludes our focus group. Thank you so much for coming and sharing your thoughts and opinions with us. If you have additional information that you did not get to say in the focus group, please feel free to contact us with your information.

**APPENDIX F****FOCUS GROUP GUIDE FOR GOAL COACHES**

## Focus Group Questions: Goal Coaches

**Questions:**

5. Let's start the discussion by talking about what you have enjoyed about the healthy choices and physical activities program. What are some of the positive aspects of the program?
  
  
  
  
  
  
  
  
  
  
6. What are some things that aren't so good about the program?
  
  
  
  
  
  
  
  
  
  
7. What were some of the ways you encouraged the youth you worked with to get their families to listen to their food and activity suggestions?
  
  
  
  
  
  
  
  
  
  
8. What did you learn from the youth you worked with about some of the challenges they encountered trying to influence their family's eating and physical activity patterns?
  
  
  
  
  
  
  
  
  
  
5. What did the youth tell you were successful goals? Less than successful goals?
  
  
  
  
  
  
  
  
  
  
6. What were the best parts of the curriculum and activities? What suggestions do you have to improve the curriculum and activities in the future?

That concludes our focus group. Thank you so much for coming and sharing your thoughts and opinions with us. If you have additional information that you did not get to say in the focus group, please feel free to contact us with your information.

## APPENDIX G

### PARENT SURVEY TO ASSESS TOPIC INTEREST

Estimado/Dear \_\_\_\_\_,

Su hijo ha sido un participante maravillosa en la fase de prueba de nuestro programa de opciones saludables y actividades físicas y sería muy útil si pudiéramos tener una idea de qué tipo de información que sería el más interesado en aprender más acerca de. Por favor, coloque un número de 1 a 5 con (siendo 1 el tema que sería el más interesado en) junto a los temas que le gustaría aprender más acerca de. Por favor, devuelva esta hoja en la oficina El Buen Pastor tan pronto como sea posible.

¡Muchas gracias!

Your child has been a wonderful participant in the testing phase of our healthy choices and physical activities program and it would be very helpful if we could get an idea of what type of information you would be the most interested in learning more about. Please place a number from 1 through 5 (with 1 being the topic you'd be the most interested in) next to the topics that you would like to learn more about. Please return this sheet at the El Buen Pastor office as soon as possible.

Thank You so much!

1-5 colocar sus mejores opciones aquí /Place your top 1-5 choices here	El Tema/Topics
	Haciendo Celebraciones Diversión, sanos y activos / Making Celebrations Fun, Healthy, and Active
	Hacer opciones mejores de la bebida / Make Better Beverage Choices
	Sea una familia active / Be An Active Family
	Concéntrese en las frutas / Focus on Fruits

1-5 colocar sus mejores opciones aquí /Place your top 1-5 choices here	El Tema/Topics
	Añadir más verduras a su día / Add More Vegetables to Your Day
	Hacer la mitad de sus granos enteros / Make Half of Your Grains Whole
	Varíe los alimentos proteicos / Vary Your Protein Routine
	Obtenga su Dairy Today / Get Your Dairy Today

## APPENDIX H

### PROGRAM ASSESSMENT REFERENCES

#### **The Short Acculturation Scale for Hispanics (SASH):**

Marín, G., Sabogal, F., VanOss Marín, B., Otero-Sabogal, F., & Pérez-Stable, E. J. (1987). Development of a short acculturation scale for Hispanics. *Hispanic Journal of Behavioral Sciences*, 9, 183–205.

#### **The Short Acculturation Scale for Hispanic Youth (SASH-Y):**

Barona, A., & Miller, J. A. (1994). Short acculturation scale for Hispanic youth (SASH-Y): A preliminary report. *Hispanic Journal of Behavioral Sciences*, 16, 155–162.

Copyright: The scale is in the public domain and no permission is required to use it. Researchers are asked to provide copies of their report to: Gerardo Marín, Department of Psychology, University of San Francisco, 2130 Fulton Street, San Francisco CA 94117-1080; telephone: 415-666-2416; fax: 415-479-8004.

#### **Rapid Assessment of Physical Activity:**

<http://depts.washington.edu/hprc/resources/products-tools/rapa/>

University of Washington Health Promotion Research Center, © 2006.  
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#### **SIRK Power Play:**

Original survey under public domain:  
[https://snapedtoolkit.org/interventions/programs/power-play-campaign-sirk/#Evaluation\\_Materials](https://snapedtoolkit.org/interventions/programs/power-play-campaign-sirk/#Evaluation_Materials)

Permission to modify the Power Play! Campaign, School Idea & Resource Kit (SIRK) obtained from survey contact person: Katharina Streng (CDPH-CDIC) California Department of Public Health, Nutrition Education and Obesity Prevention Branch. Copyright © 2016 UNC Center for Health Promotion and Disease Prevention. Reproduced with permission.



**Townsend Lab Food Behavior Checklist:**

Banna JC, Townsend MS, Sylva K. Translators: Luz Elvia Vera Becerra, Gloria Espinosa-Hall, Myriam Grajales-Hall. Lista de hábitos alimenticios. UCCE Food Behavior Checklist. University of California Cooperative Extension, 2007. (Spanish, 16 items reflecting MyPyramid guidelines using cups; targeting low-income Spanish speakers with limited literacy.) Available at [www.TownsendLab.UCDavis.edu](http://www.TownsendLab.UCDavis.edu).



**APPENDIX J****PARENT/CAREGIVER ONE MONTH POST-PILOT INTERVENTION SURVEY****One-month Follow-Up for Parents**

Querido (Dear) \_\_\_\_\_,

Muchas Gracias por participar en nuestro programa de opciones saludables y actividades físicas! Nos gustaría saber lo que han estado haciendo durante el último mes. Por favor, conteste a estas preguntas con el mayor detalle posible:  
(Thank you for participating in our program about healthy options and physical activities! We want to know what they have been doing for the last month. Please answer these questions in as much detail as possible):

1. ¿Le pregunta a su hijo acerca de los hábitos alimentarios y de ejercicio?  
(Do you ask your child about their food and exercise habits?)
  
2. ¿Qué objetivos de la familia se le sigue practicando en su casa?  
(What family goals are you still practicing in your household?)
  
3. En su opinión, su familia ha hecho más de un esfuerzo para incorporar la nutrición saludable y opciones de actividad física en su hogar? ¿Si es así, cómo?  
(In your opinion, has your family made more of an effort to incorporate healthy nutrition and physical activity choices into your household? If so, how?)
  
4. ¿Cree que las decisiones saludables y programa de actividad física podría ayudar a otras familias? ¿Cómo?  
(Do you think the healthy choices and physical activity program could help other families? How?)

5. ¿Le gustaría conocer más información acerca de temas relacionados con las opciones saludables y actividades físicas? Si es así, ¿qué tipo de temas que le interesan?

(Would you like to learn more information about topics related to healthy choices and physical activities? If so, what kind of topics would interest you?)

6. ¿Por qué quería que su hijo participara en este programa?

(Why did you want your child to participate in this program?)

¡¡Gracias!! (Thank You)

**APPENDIX K****YOUTH ONE-MONTH POST-PILOT INTERVENTION SURVEY****One-month Follow-Up for Children**

Dear \_\_\_\_\_,

Thank you so much for participating in our Healthy Choices and Physical Activities program! We would like to know what you have been up to for the past month. Please answer these questions with as much detail as possible:

1. Do your parents ask your opinion about food and exercise habits?
2. What family goals are you still practicing in your household?
3. In your opinion, has your family made more of an effort to incorporate healthy nutrition and physical activity choices into your household? If so, how?
4. Do you think the healthy choices and physical activity program could help other families? How?
5. Would you like to learn more information about topics related to healthy choices and physical activities? If so, what kind of topics would interest you?

Thank You!!