THE EFFECT OF INTEGRATING A MOTIVATIONAL INTERVIEWING INTERVENTION INTO A FAMILY-BASED, WEIGHT MANAGEMENT PROGRAM FOR OVERWEIGHT AND OBESE CHILDREN

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Vanessa Elizabeth Cordova

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Abstract

of

THE EFFECT OF INTEGRATING A MOTIVATIONAL INTERVIEWING INTERVENTION INTO A FAMILY-BASED, WEIGHT MANAGEMENT PROGRAM FOR OVERWEIGHT AND OBESE CHILDREN

by

Vanessa E. Cordova

The prevalence of children who are overweight and obese has increased at an alarming rate over the past 30 years. Overweight and obese children are at an increased risk for chronic diseases such as type two diabetes, hypertension, and cardiovascular disease. Minority children, particularly Latinos, are at most risk for becoming overweight or obese due to many factors including genetics, low-income, and lack of access to healthy foods. Effective strategies and interventions to help reduce overweight and obesity rates in children are needed more than ever. The following proposed study will examine the counseling technique called motivational interviewing, as an interventional method for increased weight loss. This research proposal will specifically ask if integrating motivational interviewing into a 6-week, family-based, weight management program located in Los Angeles serving the Latino families, is an effective, feasible, and cost-effective intervention that will result in increased weight loss for participating children.

Dr. Linnea Axman

March 16, 2016 Date
I would like to dedicate this work to my husband Michael, and my daughters Jacqueline and Camille.
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Chapter One

Introduction

Background and Significance

Childhood obesity is a national epidemic; according to the Centers for Disease Control and Prevention, obesity has more than doubled in children and has quadrupled in adolescents over the past 30 years (CDC, 2015). While studies show recent declines in the prevalence of obesity among preschool-aged children, obesity among children is still too high (Ogden, Carroll, Kit & Flegal, 2014). For children and adolescents ages 2-19 years, about 31.8% percent are considered either overweight or obese, and approximately 17% are considered obese (Ogden et al., 2014). Obese children are at an increased risk of being obese adults and are at an increased risk for developing a number of chronic diseases such as, Type 2 diabetes, heart disease, hypertension, and joint diseases (Babey, Hastert, Wolstein & Diamant, 2010). The rise in obesity continues to increase health care costs which are estimated to be $14 billion annually to care for obese children and their comorbidities (Babey et al., 2010; Marder, 2006). Studies show that without aggressive interventions, the rate of overweight and obese children could rise to 60% by 2050 (Spoor, Sahota, Wellings & Rudolf, 2013). The US Department of Health and Human Services (2009) has responded to many of these alarming statistics by making it a national priority to reduce the incidence of overweight and obese children by 2020 to levels that preceded 2000 (Spoor et al., 2013).

Overweight and obesity rates are significantly disproportionate for minority children, particularly Latinos (Ogden, Carroll, Curtin, Lamb & Flegal, 2010). Currently, 38.2% of Hispanic children ages two to 19 are overweight or obese, compared to the
national levels of 31.9% (Ogden et al., 2010). Hispanic boys exhibit the highest rates of overweight and obesity with incidence of 39.9%. In addition, Hispanic children have the highest risk of developing type two diabetes in their lifetime (Narayan, Boyle, Thompson, Sorensen & Williamson, 2003). For example, Hispanic boys have a lifetime risk of 45.4% as compared to Caucasian boys whose lifetime risk is 26.7%, while Hispanic girls have a 52.5% lifetime risk of developing type two diabetes compared to 31.2% of Caucasian girls (Narayan, et al., 2003). Interventions to prevent and treat overweightness and obesity, emphasizing higher risk groups such as Hispanic children, will be imperative over the next few years to prevent even greater disparities from developing.

The causes of childhood obesity are complex and multifaceted. An expert committee, organized by the American Academy of Pediatrics (AAP), argues that childhood overweightness and obesity can be attributed to both genetic and environmental factors (Barlow, 2007). Genetic risks have been proven in twin studies; however, given the rapid increase in overweight and obesity rates, changes in health-related behaviors are argued to be the leading causes (Barlow, 2007). Health-related behaviors such as indulging in sugar-sweetened drinks, consuming larger portion sizes, frequent snacking, eating out in restaurants, less walking to and from school and less playing outside, all contribute to childhood overweightness and obesity (Barlow, 2007).

Additionally, socioeconomic, environmental, and acculturation factors contribute to higher overweight and obesity rates in Hispanic children. For example, Hispanic communities often lack access to affordable healthy foods (Powell et al., 2007). Hispanic neighborhoods have approximately one-third as many chain supermarkets as other
communities, and Hispanic high school students have more access to fast food at school than their peers (Delva, O’Malley & Johnson, 2007). Furthermore, Hispanic children spend more time watching television with an average of 5 hours and 21 minutes of television daily (Rideout, Foehr & Roberts, 2010). Comparatively, Caucasian children spend 3 hours and 36 minutes daily watching television (Rideout, Foehr & Roberts, 2010). In regards to acculturation to the American lifestyle, Hispanic children born in the United States (U.S.) are more likely to be overweight or obese than Hispanic children born outside the U.S (Rodriguez, Kane, Alonzo-Diaz & Flores, 2005). In California, overweight and obesity rates are almost twice as high among Hispanic children born in the U.S. versus those not born in the U.S (Unger, Reynolds, Shakib, Spruijt-Metz, Sun & Johnson, 2004). According to a study performed on sixth and seventh graders in Southern California, acculturation to the American lifestyle is also associated with fewer days of moderate-to-high intensity physical activity and more frequent consumption of fast food (Unger et al., 2004). Hispanic children born in the U.S. have increased risk factors for becoming overweight and obese and for developing chronic disease associated with being overweight and obese.

The Problem

The complicated and multifaceted contributors to childhood obesity have left health care professionals with a lack of defined strategies for the prevention, assessment, and treatment of childhood obesity. Traditional counseling techniques have success rates of only 5-10%, which suggests that giving advice about lifestyle changes is an ineffective method of counseling (Britt et al., 2004). Giving advice can be interpreted by families as being “told what to do” where health care professionals emphasize benefits of changing
while overlooking the personal and immediate costs to the families (Britt et al., 2004). In response to the lack of strategies to prevent, assess, and treat childhood obesity, the AAP published a revised summary of recommendations for practitioners to utilize for overweight and obese children and adolescents. (Barlow, 2007). Some of the recommendations include calculating BMI levels annually, assessing familial risks, and assessing health-related behaviors (Barlow, 2007). Included in the recommendations as a prevention and treatment strategy is the application of a patient-centered counseling technique that help families identify their intrinsic motivation for change, called motivational interviewing (MI) (Barlow, 2007). MI can be utilized by health care professionals to help families resolve their ambivalence, enhance their intrinsic motivation, and increase their confidence to make health related behavior changes (Walpole et al., 2011).

**Specific Aims**

The purpose of this study is to evaluate the effectiveness of integrating brief, 10-minute motivational interviewing sessions, with limited expert support, into a family-based, pediatric weight management program based in Los Angeles. The study will examine if brief motivational interviewing sessions are an effective, feasible, and cost-effective intervention that will result in increased weight loss for participating children. It is predicted that this study will show that integrating brief motivational interviewing sessions into a pediatric weight management program will result in a greater reduction of body mass index, body fat percentage, and/or waist circumference, compared to those that did not receive motivational interviewing sessions. It is also predicted that
integrating brief motivational interviewing sessions into a pediatric weight management program is a feasible, cost-effective intervention that will result in increased weight loss.

**Primary aim.** To evaluate the effectiveness of integrating brief 10 minute motivational interviewing sessions into a pediatric weight management program. The primary aim will be accomplished by meeting the following objectives:

**Objective 1.** Perform an Efficacy Evaluation using anthropometric data, health related behaviors, and a self-efficacy questionnaire.

**Objective 2.** Perform a Feasibility Evaluation of incorporating motivational interviewing into a 6-week group pediatric weight management program to determine the degree to which intervention elements can be replicated with fidelity by trained staff according to the written plan.

**Objective 3.** Perform a Cost Analysis of incorporating brief motivational interviewing sessions with limited expert support into a 6 week group pediatric weight management program.

a. **Cost effectiveness ratio:** Compare the cost of delivery of the intervention group to the control group, and compare historical cost of the weight management (i.e., without the motivational interviewing sessions) program with the cost of the program with the motivational interviewing intervention.

**Research Questions**

This interventional study will specifically evaluate the effects of integrating brief MI sessions with limited expert support into a family-based, pediatric weight management program for overweight and obese children in the Los Angeles area. The questions that will be addressed by implementation of this research project are:
1. Does integrating MI in a pediatric weight management program decrease BMI, percent body fat, and waist circumference among overweight and obese children?

2. Does integrating MI in a pediatric weight management program improve health-related behaviors among overweight and obese children?

3. Does integrating MI in a pediatric weight management program increase the self-efficacy of overweight and obese children?

4. Is the implementation of MI in a pediatric weight management program feasible?

5. Is implementing brief sessions of MI in a pediatric weight management program cost effective?

Research Variables

The independent variable in this research proposal is brief 10-minute motivational interviewing session intervention. The outcome variables are as follows:

1. Anthropometric data: BMI z scores, percent body fat, waist circumference

2. Health-related behaviors using the Child Health and School Physical Activity and Nutrition (CATCH-SPAN) questionnaire

3. Self-efficacy to modify health-related behaviors using the Physical Activity and Healthy Food Efficacy Scale (PAHFE) questionnaire
Chapter Two

Literature Review

Finding and Critiquing the Literature

The literature synthesis began on February 2015 by using the search engines CINHAL, PubMed, Google Scholar and PsycINFO. Key words searched to research background information included “childhood obesity and rates”, “Latinos and childhood obesity”, “childhood obesity and interventions”. Words such as “motivational interviewing and obesity”, “child obesity and family-based motivational interviewing” were searched to explore the efficacy of MI in preliminary studies. Later, other terms were searched for supportive data such as “MITI scale”, “BMI and children” “waist circumference”, “body fat percent and children”, and “Self-efficacy and Bandura”.

The initial inclusion criteria for retrieved articles included:

1. Research articles, systematic reviews, and peer-reviewed articles.
2. Subject matters addressing obesity in the Latino population.
3. Subject matters addressing childhood obesity and interventions.
4. Subject matters using MI as an intervention.
5. Sampling techniques that are appropriate to the study design.
6. Research findings that are clearly written.

Major Variables Defined

Body Mass Index (BMI). Obesity is a medical condition where excess body fat can negatively affect one’s health (Javed et al., 2015). Currently, expert groups recommend BMI as the preferred measure for evaluating obesity because it can be easily obtained at little to no cost (Krebs et al., 2007). While BMI relies on body weight regardless of body
composition, it is the preferred method because it strongly correlates with body fat percentage, however, more so at extreme levels (Javed et al., 2015). It is calculated by dividing weight in kilograms by the height meter squared (Javed et al., 2015). A high BMI level is associated with high levels of body fat and a greater risk of death (Barlow, 2007). Systematic reviews show that the higher the BMI is in childhood, the more likely the child will be an obese adult (Krebs, et al., 2007). For children, BMI must be compared to a reference-standard that accounts for age and sex because children are still growing and body fat levels will change as height and weight changes, and the amount of body fat differs between girls and boys (CDC, 2014). After BMI is calculated for children and adolescents, it is plotted on the CDC BMI-for-age growth charts for either boys or girls to obtain a percentile ranking, called BMI z scores. Percentiles are most commonly used to assess the size and growth patterns of children, and can help determine if excess fat is a problem (CDC, 2014). The current percentile ranges are as follows: less than 5% is considered underweight, fifth percentile to 85th percentile is considered healthy weight, 85th percentile to 95th percentile is considered overweight, and equal or greater than the 95th percentile is considered obese. The expert committee formed by the American Academy of Pediatrics also recommends adding another category to define severe obesity for children whose BMI is at the 99th percentile (Barlow, 2007).

A systematic review and meta-analysis assessing the diagnostic performance of BMI in identifying excess body fat as compared to other techniques such as dual-energy x-ray, or air-displacement plethysmography, showed that BMI has high specificity in identifying pediatric obesity, but moderate sensitivity (Javed et al., 2015). In this systematic review, which reviewed 37 studies, it calculated a specificity of 93%, meaning
BMI was very accurate at identifying those children who are not truly overweight or obese (Javed et al., 2015). In the same systematic review, it showed a sensitivity of 73%, suggesting that over a quarter of children not identified as obese by BMI might in fact have excess adiposity (Javed et al., 2015). The moderate level of sensitivity suggest that BMI alone is insufficient in identifying children who have excess adiposity (Krebs et al., 2007).

**Waist Circumference (WC).** WC is commonly used to assess abdominal fat and health risks in children due to research linking accumulated visceral adipose tissue to increased health risks and metabolic disorders (Krebs, et al., 2007). WC correlates $r=.80$ with visceral adiposity in children making it a good indicator of excess abdominal fat (Bassali, et al., 2010). WC in children provides a better estimate of visceral adipose tissue, where BMI is better at estimating subcutaneous adipose tissue (Krebs et al., 2007). Increased WC is associated with an increased risk of cardiovascular disease, and other metabolic diseases (Bassali et al., 2010). While BMI-for-age is the preferred method to determine obesity in children, certain obese individuals have higher health risks that WC can help determine (Bassali et al., 2010). One cross-sectional study showed the sensitivity of WC status to severe obesity as 97%, while the specificity, the true negatives, was low at 44% (Bassali et al., 2010). This study showed that children with a high WC were approximately 27 times more likely to have severe BMI, 3.6 times more likely to have a low HDL levels, and 3 times more likely to have a high fasting blood glucose level (Bassal et al., 2010).
**Percent body fat.** Body fat percentage is crucial to calculate when identifying children who are overweight or obese because BMI does not differentiate between lean mass and fat mass (Kabiri, Hernandez, & Mitchell, 2015). Bioelectrical impedance analysis (BIA) is a way to differentiate between lean and fat mass (Kabiri, Hernandez, & Mitchell, 2015). Impedance is the frequency-dependent opposition of a conductor to the flow of an alternating electric current (Chumlea & Guo, 1997, p. 170). Typically, BIA measures the impedance or resistance of a low frequency signal as it travels through the body where the more water (or muscle mass) a person has, the easier the signal can travel. Conversely, the more fat an individual has, the more resistance the current meets (Chumlea & Guo, 1997). Historically, BIA was measured via electrodes placed on an individual lying supine; where today BIA technology has become easier and less intrusive using a body composition analyzer scale (Chumlea & Guo, 1997; Kabiri, Hernandez, & Mitchell, 2015). Body composition analyzer scales, such as the Tanita BF-689, have been tested for reliability and validity, with excellent results (Kabiri, Hernandez, & Mitchell, 2015). The Tanita BF-689 showed excellent test-retest reliability at .999. When compared with the dual-energy X-ray absorptiometry (DEXA), the intraclass correlation coefficients were calculated at 0.788, showing moderately strong absolute agreement with DEXA (Kabiri, Hernandez, & Mitchell, 2015). The Tanita BF-689 showed high specificity for overfat and obese classifications at 78% and 100% (Kabiri, Hernandez & Mitchell, 2015). Sensitivity was much lower at 43% at identifying true obese children (Kabiri, Hernandez, & Mitchell, 2015). Another study showed similar results where BIA performed excellent at identifying excessive visceral fat associated with overweight and obesity in children, with a specificity between 93-94%
and a lower sensitivity of 72-82%, showing again that BIA is more specific than sensitive (Fernandes, et al., 2007).

**Motivational interviewing.** Motivational interviewing is a collaborative, goal-oriented conversation style that was created to strengthen a person’s own intrinsic motivation for change (Miller & Rollnick, 2002, p. 25). It is a gentle form of counseling first developed in 1983 by Miller, who used it as a brief intervention for problem drinking to help explore and activate a client’s motivation to change. Over the past two decades, MI has been expanded by Miller and Rollnick and tested with other health related diseases such as diabetes, hypertension, unhealthy diet, and the prevention and treatment of HIV (Rollnick, Miller & Butler, 2008). According to Rollnick et al. (2008), MI is based on the assumption that no client is completely unmotivated to change (Rollnick et al., 2008). Therefore, how a counselor or clinician speaks to a client about their health can significantly influence a client’s motivation to change (Rollnick et al., 2008).

Rollnick et al., (2008), argue that clinicians have to embrace “the spirit of MI” to be an effective practitioner of MI. “The spirit of MI” is a skillful, counseling style based on collaboration, evocation, and honoring of client autonomy (Rollnick, 2008, p. 6). The clinician and client must work together in the decision-making process instead of the traditional hierarchical relationship of counseling or advising where the health clinician is directing the client what to do. Evocation means that the clinician must seek to evoke a client’s own reasons and arguments for change. The clinician has to explore the client’s personal goals, values, and aspirations. Honoring the client refers to recognizing that the client will ultimately decide when to change. Rollnick et al. (2008) argue that it is human nature to resist change when it is forced or demanded; however, when the clinician
acknowledges that it is the client’s right to choose when and how to make changes, it
often triggers the changing making process within the client (Rollnick, 2008).

There are four general principles that guide the practice of MI, all of which relate to
the “spirit of MI”. They are as follows: 1) the expression of empathy, 2) the development
of discrepancy, 3) rolling with resistance, and 4) support for self-efficacy (Miller, 1994).
Concerning the concept of empathy, it is assumed that behavior change is only possible
when the client feels accepted and valued. The development of discrepancy refers to
reviewing the pros and cons of the client’s current behaviors along with the client’s goals.
Miller (2002) argues that discussing discrepancy between the client’s behaviors and goals
will produce behavior that is more consistent. “Rolling with resistance” means not
engaging in the client’s arguments against change. It is assumed that engaging in direct
argument with the client will produce more resistance to change from the client. The
counselor, therefore, accepts that ambivalence and resistance are a normal part of the
process. Instead of trying to impose goals or strategies onto the client, the counselor will
help the client recognize alternative perspectives about the current problem. The
objective of MI is to transfer responsibility for arguing for change to the client, meaning
the client is able to verbalize concern for their current position, the need for change, their
intent to change, and that change is possible. Lastly, the counselor needs to promote self-
efficacy in the client (Miller, 2002). Self-efficacy is a well know concept that can be
defined as an individual’s belief in his ability to complete a certain task or accomplish a
goal (Bandura, 1977). Therefore, the client needs to not only recognize the need for
change, but also have the self-efficacy to make the necessary changes.
Preliminary Studies

Previous studies show evidence that MI is a promising method that can be used to change health-related behaviors in adults and children. MI has been used extensively in the psychiatric field for addictive behaviors. This includes alcohol abuse, substance abuse, and smoking cessation. Perhaps the greatest support for the efficacy of MI has come from smoking cessation studies where one study showed up to 43% of pregnant smokers quit after receiving two MI telephone sessions, and another study showed significant decreases in nicotine levels for smoking parents after receiving one in-person session of MI followed by four telephone sessions (Britt et al., 2004). Numerous randomized trials have shown the efficacy of MI for addictive behaviors, and more recently, it has been adapted to address various health related-behaviors and chronic disease such as obesity and diabetes (Resnicow, Davis & Rollnick, 2006, p. 2024).

MI has been implemented in a variety of forms. For example, MI has been initiated in a group setting for individuals who abuse alcohol and adolescents addicted to substances. While this has been effective in the group treatment setting, it may compromise the effectiveness of MI since the purpose of MI is to explore the individual’s needs and set goals accordingly (Britt et al., 2004). Another variation of MI is the concept of brief MI (Britt et al., 2004). Brief MI was explored as a method that could be implemented in shorter doctor office visits. It was first used as a single 40-minute session in the primary care setting to help individuals who abuse alcohol, and is now being explored as a method for behavior change in briefer five to ten minute sessions (Britt et al., 2004). In the context of weight management, studies have used “MI telephone sessions” to call clients and help them with goal setting and work through any
obstacles they may be facing while trying to lose weight (Resnicow, 2006; Wong & Cheng, 2010).

The AAP in conjunction with the Centers for Disease Control and Prevention and the American Dietetic Association examined the effect of MI on the BMI and health-related behavior in children in a non-randomized study that included 91 subjects that were followed over the period of one year. The Pediatric Research in Office Settings practices assigned 15 pediatricians to three conditions: control, minimal intervention, or intensive intervention (Resnicow et al., 2006; Schwartz et al., 2007). Each was asked to enroll ten eligible patients. Eligibility included children, ages three to seven, with BMI for age and sex between the 85th and 95th percentile, or a child with normal weight but with a parent with a BMI over 30. The only intervention provided to the control groups were two safety education tip sheets. The group assigned minimal intervention received one brief MI session with their pediatrician. The group assigned intensive intervention received four MI counseling sessions. Two of the sessions were led by the pediatrician and two were led by registered dietitians. The sessions given by the registered dietitians were longer sessions, i.e. up to 45 minutes long. Physicians and registered dietitians were trained at a joint two-day MI workshop. In order to assess the competency of physicians and registered dietitians delivering MI, interventions were recorded and a trained psychologist rated each MI session using 1-PASS. 1-PASS is a form to score the components of MI from one to seven. Scores of four or higher are considered proficient in MI counseling. Physicians and registered dietitians scored higher after the first session, which shows that it takes practice to successfully execute MI. The outcome measures included height, weight, and BMI, at baseline and at 6 months. Parents also
completed a food and activity survey to measure changes in health-related behaviors. The results indicated improvement in BMI at 6 months. The control group showed a decrease of 0.4, the minimal intervention group showed a decrease of 1.7, and the intensive intervention group showed a decrease of 3.1 BMI percentiles. In addition, the minimal and intensive intervention groups showed a decrease in high calorie snacks and dining outside the home and over 90% of the parents reported that the physicians and registered dietitians helped them change their health-related behaviors (Schwartz, 2007).

Another U.S. study utilized MI telephone calls in a randomized study that included 123 subjects that were followed over the period of one year. This was a church-based nutrition and physical activity program for overweight African-American adolescent females where ten churches were randomized to deliver either a high intensity (20-26 sessions) or moderate intensity (six sessions) intervention over 6 months (Resnicow, 2006). Each session included a behavioral activity, 30 minutes of physical activity, and a class on how to prepare healthy foods. The high-intensity group also received four to six MI telephone calls that focused on the same topics covered during each weekly group session. The telephone calls lasted approximately 30 minutes and were performed by health educators with master’s degrees or doctoral-trained psychologists. They received two days of MI training and ongoing clinical supervision by doctoral-level psychologists. The outcome measure was BMI, which was measured at baseline and at a six-month follow-up. At the six-month follow-up, a net difference of 0.5 BMI units between the high and moderate intensity groups was not statistically significant due to the small number of participants. Furthermore, there was no correlation between the number of MI telephone calls and reduction in BMI units;
however, positive feedback was given by the intervention group receiving MI telephone
calls, thus showing potential benefits to utilizing MI as a weight loss intervention
(Resnicow et al., 2006, p. 2029).

Another study that examined the effects of MI on weight loss in obese children
was conducted in the UK between 2010 and 2011. This study utilized a quasi-experiment
design with repeated measures that included 185 subjects. Four primary schools
participated in this study over an eleven-month period, where obese fifth and sixth
graders were placed into three groups: MI, MI+ and a control group (Wong & Cheng,
2013). The MI group received MI counseling, and the MI+ group received MI counseling
in addition to their parents receiving telephone counseling. The control group did not
receive any intervention. MI counseling consisted of six 30-minute individual
consultations over 14 weeks. Consultations were performed by registered nurses trained
in MI skills. The sessions incorporated an evaluation of the child’s diet and exercise
behaviors, increasing their self-efficacy to change behaviors, support and guidance while
the children made the recommended changes, and goal setting. The outcome measures
included anthropometric measures such as BMI, body fat percentage, waist and hip
circumference and blood pressure. They also measured weight-related behaviors using
questionnaires and a food journal, which was analyzed via a nutrition and calorie
expenditure software. Telephone counseling with parents included educating the parents
about the dangers of childhood obesity, suggestions on how to modify their child’s
lifestyle, advice on food choices, and then based on their child’s journal, an eating and
exercise routine was made with the parents (Wong & Cheng, 2013).
The results showed a significant improvement in the children’s eating habits and activity levels in the MI and MI+ groups (Wong & Cheng, 2013). The MI+ group showed the most improvement in activity levels of children, which demonstrates the benefits of parental involvement in children’s routines. The MI and MI+ groups both showed improvements in all anthropometric measures compared to baselines. The control group showed a deterioration in anthropometric measurements from baseline. There was no significant difference between the MI and MI+ groups in regards to anthropometric data. The only significant behavior change between the MI and MI+ group was the increase in physical activity for the MI+ group (Wong & Cheng, 2013).

While MI has been successfully used to treat addiction and health-related behaviors in adults, its efficacy to treat childhood obesity is still being established (Walpole et al., 2011). The preceding studies show promising data on the positive effects that MI can have on weight loss and changes in health-related behavior for overweight and obese children. The following proposed study will add to the research on MI as an intervention for childhood obesity.

**Theoretical Framework**

The Health Belief Model (HBM) (Figure 1) is a popular psychological model that aims to explain and predict health related behaviors (Hayden, 2014). It was first developed in the 1950’s by social psychologists Hochbaum, Rosenstock and Kegel, while working in the U.S. Public Health Services department in response to the failure of a free tuberculosis-screening program (Rosenstock, 1974). Originally, the HBM included five factors that help explain and predict health-related behavior (Rosenstock, Strecher, & Becker, 1988). These factors include perceived seriousness, perceived susceptibility,
perceived benefits, and perceived barriers (Cao, Chen & Wang, 2014). Perceived seriousness refers to how serious the individual believes the health condition is, and how much of a burden the disease would create (Cao, Chen, & Wang, 2014). Perceived susceptibility is the individual’s belief about how likely he is to experience the negative impacts of the health condition (Cao, Chen, & Wang, 2014). Perceived benefits are the individual’s beliefs about whether taking action will improve their condition (Cao, Chen, & Wang, 2014). Perceived barriers are the reasons why an individual does not take action even if they know that the action is beneficial. This may be due to convenience, whether the health promoting behavior is expensive, or causes him pain or discomfort (Cao, Chen, & Wang, 2014). Cues to action refers to the fact that an individual may require an external or internal cue to act for the desired behavior to occur. Sometimes weighing the benefits with the costs is not enough and they need a cue to act (Cao, Chen, & Wang, 2014).

In 1988, Rosenstock revised the HBM to incorporate self-efficacy as an additional variable that will help determine if an individual is ready to perform a health related behavior (Rosenstock, Strecher, & Becker, 1988). Self-efficacy refers to an individual’s confidence that he or she can successfully perform a task, or health-related behavior (Rosenstock, Strecher, & Becker, 1988). Since the model was created for health prevention, such as immunizations, it was most likely assumed that individuals had self-efficacy to perform that task, since receiving vaccinations is brief. However, in the case of chronic illness, or long-term dietary changes, it requires a great deal of confidence that one can make that lifestyle change (Rosenstock, Strecher, & Becker, 1988). Therefore, for behavioral change to succeed, the new and improved HBM theorizes that an
individual must have an incentive to take action, feel threatened by their current behavior, believe that changing their behavior will be beneficial, and feel competent enough to implement that change (Rosenstock, Strecher, & Becker, 1988).

In regards to motivational interviewing, MI is a counseling technique used to strengthen a person’s own intrinsic motivation for change (Miller & Rollick, 2002, p. 25). MI has shown to help increase one’s self-efficacy, or belief in one’s own ability to perform a certain task or behavior (Hayden, 2014). In the new HBM, self-efficacy plays a major part in determining whether one will engage in health promoting behavior. This research proposal will utilize MI as a counseling technique to increase participant’s self-efficacy to perform health-related behaviors such as making healthy food choices, and participating in physical activity. Using the HBM as a theoretical framework, MI sessions will help participants identify and overcome barriers to change and increase participant’s self-efficacy to change: thus, resulting in increased weight loss.

![Health Belief Model (HBM)](image)

**Figure 1.** The Health Belief Model. This figure shows how self-efficacy was added to the Health Belief Model in 1988 (Hochbaum, Rosenstock & Kegels, 1950s).

**Chapter 3**
Methodology

Design

This proposed study employs a quasi-experimental design with convenience sampling and random assignment to the intervention and comparison group. The Effectiveness Evaluations will be made possible with the use of a Multiple Time Series Design (Figure 2). The intervention, motivational interviewing, will be carried out over the 6-week KNF© program at Children’s Hospital Los Angeles. Questionnaire data and anthropometric measures will be collected in-person by trained staff for both groups at weeks one, three, and six, and at three months after program completion. Anthropometric data to be collected will include Body Mass Index (BMI), waist circumference (WC), and percent body fat. Questionnaire data to be collected will include the CATCH-SPAN questionnaire for health-related behavior and the PAHFE questionnaire to assess self-efficacy.

\[
\begin{align*}
\text{IC} & \quad O_1 X_1 \quad O_3 X_3 \quad O_6 X_6 \quad O_{18} \\
\text{IM} & \quad O_1 X_1 \quad O_3 X_3 \quad O_6 X_6 \quad X_{10} \quad X_{14} \quad O_{18}
\end{align*}
\]

\text{Intervention } C (IC) = \text{Kids N Fitness program control group} \\
\text{Intervention } M (IM) = \text{Kids N Fitness program with MI intervention} \\
\text{IC} = \text{X is usual care} \\
\text{IM} = \text{X is MI intervention} \\
O = \text{Observations to collect data}

\textit{Figure 2.} Multiple Time Series Design. This figure shows the repeated measure design comparing the control group vs the MI intervention group.
Setting

The setting for the research proposal will take place in Los Angeles at the non-profit Kids N Fitness© (KNF©) program. KNF© was developed at Children’s Hospital Los Angeles in 2000, by Dr. Francine Kaufman (Monzavi et al., 2006) and a team of pediatric endocrinologists, registered dietitians, social workers, psychologists, and physical and occupational therapists, in response to the escalating obesity epidemic. The KNF© program serves high-risk children in the Los Angeles area, most of which consist of Hispanic families. KNF© is a six-week, evidence-based, weight management program that consists of weekly 90 minute classes that focus on three components: physical activity, nutrition education/behavior modification, and family involvement. The physical activity component is a 45-minute interactive sport or game that is taught by physical education specialists. This includes activities such as warm-ups, stretches, basketball, soccer, hip-hop and salsa dancing, jump rope and running (Monzavi et al., 2006). While the kids participate in the physical activity, the parents are educated on the implications of obesity in children and adults, and the importance of healthy lifestyles to prevent obesity. In addition, parents participate in parent support groups, moderated by a registered nurse, where they can discuss their challenges and success stories regarding diet and exercise modification. Following exercise, the children and parents are given a 45-minute nutrition education/behavior modification session. All sessions are conducted simultaneously in English and Spanish and all materials are in both languages as well. The major dietary goal is to provide the highest nutritional quality food for the lowest caloric intake. Dietary education emphasizes reducing dietary fat to below 30% and
decreasing total calories by teaching appropriate portion sizes, while still being sensitive to culturally specific foods and costs of foods.

**Participants**

Participants will be recruited via flyers and referrals from pediatricians in the Los Angeles area and the Obesity Clinic at CHLA. The inclusion criteria for children participating in the study are as follows:

1. Children must be overweight or obese at time of the study, defined as greater than the 85th percentile for the child’s age group.
2. Children must be between the ages of eight to 12 years old.
3. Children and their parents must speak English or Spanish, as instructors and volunteers are bilingual.
4. Children and parents must be able to meet every week for six weeks.
5. The exclusion criteria for children include:
   6. Children who have chronic medical conditions restricting their diet or physical activity levels such as diabetes or hypertension.
   7. Children who are taking any regular medications.
   8. Children with known developmental delay, eating disorders, or psychological problems.

**Sample Size**

A repeated measures ANOVA test was used to calculate sample size to ensure a power of 0.80. A moderate effect size, Cohen’s $d$ of 0.30, was selected for generating the sample size and an alpha level of 0.05 was chosen based on literature. Estimating an attrition rate of 20%, the desired sample size will be 20. [Experimental: (8 + 20% for loss]
factors = 8 + 1.6 = 9.6 or 10)] + [Control group: 8 + 20% for loss factors – 9.6 or 10] = 20. The KNF© program is limited to 20 children with their parents per course; therefore, this sample size is feasible for the program and the recruitment efforts will be directed at booking a full class.

**Measurements and Instruments**

**Anthropometric measures.**

*Percent body fat.* Percentage body fat will be measured using bioelectric impedance via the Tanita TBF-215 body composition analyzer. Height, gender, and body type is first entered into the Tanita TBF-215 analyzer by trained staff, and then participants will stand on the scale with bare feet. The Tanita TBF-215 then produces a print out that includes height, weight, gender, percent body fat, and BMI, fat mass, and desirable range. The Tanita TBF-215 will be calibrated before every class.

*Body mass index.* BMI will be determined using the Tanita TBF-215 body composition analyzer as stated above. Then BMI z scores will be calculated using the Epi Info software developed by the Centers for Disease Control and Prevention (CDC, 2002).

*Waist circumference.* WC will be measured with a cloth tape measured horizontally across the abdomen at the midpoint between the highest point of the iliac crest and the lowest part of the costal margin in the mid-axillary line. Measurements will be performed three times and averaged for analyses.
**Health related behavior.** Activity behaviors will be assessed using the Child and adolescent trial for cardiovascular health-School physical activity and nutrition (CATCH-SPAN) survey (Appendix A). This questionnaire utilizing five items (i.e. daily physical activity, participation in team sports, attends PE class, TV, computer, video games) Acceptable reliability and validity of the instruments were determined by McKenzie et al (1996) through testing in a diverse sample of 96 elementary schools. Internal consistency for activity behavior questions was $\alpha = .85$.

**Self-efficacy.** Self-efficacy will be measured using the Physical Activity and Healthy Food Efficacy Scale for Children (PAHFE) questionnaire (Appendix B). This questionnaire was designed to measure children’s self-efficacy related to goal setting and decision making for physical activity and healthy food choices (Perry et al., 2008). This questionnaire utilizes a five-point Likert scale that ranges from “not sure at all” to “completely sure”. Acceptable reliability and validity of the instrument was determined by Perry et al., (2008), where overweight fourth and fifth graders from five public elementary schools underwent a 10-week mentoring intervention. The scores on each of these subscales show a moderate to high degree of internal consistency ($0.59 \leq \alpha \leq 0.87$). The Decision-making for Healthy Food Choice subscale and Decision-Making for Physical Activity subscale scores show significant convergent validity evidence, showing that the PAHFE may be considered a useful predictor of both physical activity and eating behaviors (Perry et al., 2008).
Data Collection Process

Full IRB approval will be requested from CSUSM and CHLA. After receiving approval, potential participants will be approached for written consent and assent. The research coordinator will explain the 6-week course to parents and children. She will explain to parents and children that they are participating in a 6-week course that will help them learn how to become healthier. The research coordinator also explains to the children participating that this course will help them and their families become healthier while having fun in the process. The research coordinator will give the child a description of a typical class, which includes activities such learning how to read food labels with their parents. Then after learning an activity with their parent, all of the parents meet for their own group meeting, while the kids participate in a fun activity such as relay races or soccer drills. Last, every course ends with learning how to prepare a healthy snack, which the child can eat or take home.

The research coordinator will then present the written consent and assent forms, (Appendix C). These forms will be verbalized to the parents and child before being signed by the parent. Children participating in the research study will receive incentives each week for coming. This includes small gifts that are given at the end of each class (Appendix E), such as a pedometer, an athletic bag, and a water bottle. Each family will also receive a $25 gift card after all 3-month follow-up measurements are obtained.

After obtaining consent, families will be randomly placed in either the control or the intervention group. Children in the intervention group will receive brief 10-minute in-person MI counseling after anthropometric data intake at weeks one, three and six, followed by monthly MI telephone phone calls for a total of 3 months. Children and their
families in the control group will fill out course evaluations instead of receiving the brief MI sessions. MI counseling sessions will last approximately 10-15 minutes and will be performed by psychology interns trained in MI.

The first MI counseling session will take place during the initial anthropometric data intake. This session will aim to increase the child’s awareness of the importance of weight loss and assess their motivation to make changes to their health-related behavior. The second MI counseling session will be performed during week three, and it will aim to increase the child’s self-efficacy and focus on goal setting. The third MI counseling will be performed during week six, and will re-visit the child’s goals and intrinsic motivation, as well as provide some resources to the child and parent on how to reach their goals.

Beginning one month after the last KNF© session, children in the intervention group will receive monthly phone calls from their counselor to discuss any difficulties they have encountered with reaching their goals. The counselor will aim to help the child come up with solutions and set new goals. The children in the control group will not receive monthly phone calls. Both the control and intervention group will come back to the KNF© facility three months post completion of the course to collect anthropometric data and to answer the Kids N Fitness 24 hour recall questionnaire, and PAHFE questionnaire.

Data Coding

KNF© staff or trained volunteers will collect anthropometric data and questionnaires onsite and place the surveys in a folder which will be kept in a locked file cabinet in a locked room. Data will be scored and entered into a secure password protected excel file by KNF© staff.
Using the most updated form of SPSS, participants will be coded with an ID number as a nominal variable (e.g., ID 1=Juan, ID 2=Maria). Gender will be coded as a nominal variable (1=male, 2=female 3=transgender). Race will be coded as a nominal variable (1= Hispanic, 2= Caucasian, 3=African American). Anthropometric data such as height and weight will be coded as a ratio variable, while BMI, percent body fat, and waist circumference will be coded as an interval variable. The CATCH SPAN questionnaire is a three-part questionnaire. The first section consists of food options where the kids choose from two types of food. These will be coded as an ordinal variable (0=undesired answer, and 1= desire answered). The second section includes yes/no questions will also be coded as an ordinal variable (no=0 and yes=1). The last section uses a 3-point Likert scale, which will also be coded as an ordinal variable (1=not sure at all, 2=not too sure, 3= sure). Each section of the CATCH-SPAN questionnaire is scored separately by being added and averaged, then given a percentile. The PAHFE questionnaire will be coded as an ordinal variable (0= 0 servings, 1= 1-2 servings, 3=3-4 servings, 4=5 or more serving). This will also be added and averaged and given a percentile.

**Fidelity**

All KNF© staff and psychology interns will complete a two-day workshop led by a trainer accredited by Motivational Interviewing Network of Trainers. The goal of the workshop is to teach employees and interns to develop the necessary skills to implement MI for weight management. The two-day workshop incorporates concepts of change talk utilizing lectures, demonstrations, group exercises, role-playing, and self-review analysis of the content of sessions using the Motivational Interviewing Treatment Integrity (MITI)
coding schedule by MI supervisors (Forsberg, Berman, Kallmen, Hermansson & Helgason, 2008).

The MI consultant will also write scripts for the 6-week course and follow-up MI telephone calls for staff and interns to utilize during the study. Staff and interns will practice the scripts and be rated on their performance over the course of 3 days.

During the study, all MI counseling sessions will be recorded and coded for accuracy using the most updated version of the MITI coding system. Coding will be performed by two MI trained postdoctoral psychology fellows. The MITI is a behavioral coding system that rates how well or poorly a clinician is using MI (Forsberg et al., 2008). The MITI is a validated tool that evaluates MI integrity in clinical research; it may also be used to enhance MI practice in clinical setting (Forsberg et al., 2008).

**Inter-rater reliability.** Counselors and interns performing MI will be rated by psychology fellows trained in MI and the MITI coding system to ensure accurate and consistent delivery of the intervention. According to Hallgren (2012), inter-rater reliability (IRR) is a way to quantify the degree of agreement between two or more coders who make independent ratings about the features of a group of participants (p. 23). This proposed study will utilize a fully crossed design, where the same two trained postdoctoral psychology fellows will code all of the participants in the study. Cohen’s kappa statistics will be used to assess IRR. This is the most appropriate statistics because kappa statistics measures the observed level of agreement between coders for a set of nominal ratings and corrects for agreement that would be expected by chance. The degree of observed agreement is determined by cross-tabulating ratings for two coders, and the agreement expected by chance is determined by the marginal frequencies of each
coder’s ratings (Hallgren, 2012, p. 5). Kappa is computed based on the following equation:

\[ K = P(a) - P(e) + 1 - P(e) \]

Where \( P(a) \) represents observed percentage of agreement, and \( P(e) \) represents probability of expected agreement due to chance (Hallgren, 2012, p. 5). Possible values for kappa statistics range from -1 to 1, with 1 indicating perfect agreement, 0 indicating completely random agreement, and -1 indicating “perfect” disagreement (Hallgren, 2012, p. 6). Widely accepted guidelines for interpreting kappa values are as follows: 0.0 to 0.2 indicate slight agreement, 0.2 to 0.40 indicate fair agreement, 0.41 to 0.60 indicate moderate agreement, 0.61 to 0.80 indicate substantial agreement, and 0.81 to 1.0 indicate almost perfect agreement (Landis and Koch, 1977). The two coders will have to reach an IRR level of 0.80 or higher in practice participants before they can rate real participants in the study.

**Evaluation**

**Feasibility and process evaluation.** The feasibility evaluation will assess if elements of the research study were performed with fidelity as written in the research plan. An abbreviated Sample Process Evaluation and associated Process Implementation Index (PII) are computed by dividing the portion reached by each procedure by the program standard: \( C/D=E \) (Table 1).
The Cost Analysis will use information obtained from the historical data collection and
the PII. Cost analysis will also consider program cost with MI intervention versus
without.

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Eligible (A)</th>
<th>Exposed (B)</th>
<th>Completion Rate (B/A =C)</th>
<th>Performance Standard (D)</th>
<th>Implementation Index (C/D = E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. IRB approval obtained</td>
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<td>2. Train staff in MI via a 2-day workshop and practice run-throughs for 3 days led by MINT</td>
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<td>3. Obtain consent/assent by parents and child</td>
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<td>4. Collect baseline data by Key Personnel: Week 1</td>
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<td>5. Record MI intervention by Key Personnel: (Week 1)</td>
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<td>6. Data Collection by Key Personnel: (Week 3)</td>
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<td>7. Record MI intervention (Week 3)</td>
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<td>8. Data Collection by Key Personnel: (Week 6)</td>
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<td>9. Record MI intervention by Key Personnel (Week 6)</td>
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<td>10. Record phone MI intervention by Key Personnel (Week 10)</td>
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<td>11. Record phone MI intervention by Key Personnel (Week 14)</td>
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<td>12. Record phone MI intervention by Key Personnel (Week 18)</td>
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<td>13. Data Collection by Key Personnel (week 18)</td>
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</table>

Table 1. A Process Evaluation of the Research Project: Integrating brief MI sessions into a 6-week family-based, pediatric weight management program (Sample Abbreviated Version)
Data Analysis

Double entry of data and data screening will be performed to make sure data entry is accurate and statistical assumptions are met prior to analyzing the data. The data analysis will begin with a careful examination of the univariate frequency distributions for each variable. Appropriate transformations of univariate distributions will be performed for non-normal distributions. Nonlinear relationships will be identified and variables will be transformed as indicated for the techniques that require linear and/or normal distributions. Nonparametric techniques will be investigated in the case of such violations.

The distributions, univariate statistics, and psychometrics for questionnaires and subscales will be examined and reported. Reliability of the measures will be evaluated using internal consistency alpha or Kudar-Richardson (K-R 20) for dichotomous data.

Frequency distributions for demographic and outcome variables of interest will be explored. Variables will be measured between intervention and comparison groups and reported weeks 1, 3, 6 and 18 weeks using univariate Analysis of Variance (ANOVA) for each of the outcome (dependent) variables. All statistical tests will be considered significant at alpha ≤ 0.05 (two-tailed) unless otherwise specified. Table 2 provides the analysis plan specific to each objective.
### Table 2. Analysis Plan

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Outcome of Interest and Level of Measurement</th>
<th>Statistical Techniques</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 1.</strong> Perform an Effectiveness Evaluation of incorporating brief 10 minute MI sessions into a 6 week weight management program using anthropometric data, health-related behaviors, and self-efficacy questionnaire:</td>
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<tr>
<td>a. Identify statistically significant differences for outcomes of interests before, during, and after implementation of the intervention</td>
<td>1. Anthropometric data: weight and percent body fat</td>
<td>ANOVA with repeated measures will be used to assess for significant differences among control group and intervention group to answer 6 different but related questions:</td>
<td>The F-test statistic will be used to evaluate main effects. If significance is found, multiple comparisons will be performed to examine differences between the intervention and the outcome of interest.</td>
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<tr>
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<td>2. Anthropometric data: BMI</td>
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<td></td>
<td>3. Anthropometric data: waist circumference</td>
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<td></td>
<td>4. Health-related behaviors involving daily physical activity, food choices, and extracurricular activities.</td>
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<td></td>
<td>5. Self-efficacy related to goal setting, and decision making for physical activity and healthy food choices</td>
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<td></td>
<td>6. Mean body weight score</td>
<td>Does incorporating brief 10 minute MI sessions in a 6 week group pediatric weight management program result in a greater change in:</td>
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<td></td>
<td>7. Mean percent body fat score</td>
<td>1. Mean body weight score</td>
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<td></td>
<td>8. Mean BMI score</td>
<td>2. Mean percent body fat score</td>
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<tr>
<td></td>
<td>9. Mean waist circumference score</td>
<td>3. Mean BMI score</td>
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<tr>
<td></td>
<td>10. Mean health-related behavior score</td>
<td>4. Mean waist circumference score</td>
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<tr>
<td></td>
<td>11. Mean self-efficacy score</td>
<td>5. Mean health-related behavior score</td>
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<tr>
<td></td>
<td></td>
<td>6. Mean self-efficacy score</td>
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<tr>
<td><strong>Objective 2.</strong> Perform a Feasibility Evaluation of incorporating motivational interviewing session into a 6-week group pediatric weight management program to determine the degree to which intervention elements were incorporated into practice with fidelity by trained staff according to the written project plan.</td>
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<tr>
<td>Processes Critical to the effective implementation of brief MI sessions</td>
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<tr>
<td>The PII is calculated by adding all indexes and dividing the total by the number of critical procedures performed in support (Table 2).</td>
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<tr>
<td>A PII of .80 or greater will be indicative of a well-run program (Windsor, et al, 1994;2003)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Objective 3.</strong> Perform a Cost Analysis of the brief 10 minute MI session Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Compare the cost of delivery of the brief MI session intervention to the cost of the program without the intervention</td>
</tr>
<tr>
<td>b. Compare the cost of delivery of the brief MI intervention with the historical cost of the course without the intervention</td>
</tr>
<tr>
<td>1. Intervention</td>
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<tr>
<td>2. Program costs</td>
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<tr>
<td>3. Effect size</td>
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<tr>
<td>4. Costs averted (economic benefit)</td>
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<tr>
<td>5. Cost difference (economic benefit minus cost)</td>
</tr>
<tr>
<td>a. Compute a Cost Effectiveness Ratio: The ratio of program cost per unit of change in Outcomes of Interest.</td>
</tr>
<tr>
<td>b. Compute historical costs of program vs program with intervention</td>
</tr>
<tr>
<td>a. Cost effectiveness ratios will be calculated for each course and compared using historical data</td>
</tr>
<tr>
<td>b. Cost comparison of previous course without MI intervention vs with MI intervention</td>
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</tbody>
</table>
Ethical Considerations

**Protection of human rights.** The rights and welfare of human subjects will be protected in accordance with the USDHHS title 45 section 46. All counselors will complete the National Institutes of Health (NIH), HIPAA, and CITI training on protection of human subjects and protected health information.

**MI counselors.** There is minimal risk to MI counselors.

**Protection from discomfort and harm.** This research will be conducted with attention to the participants’ level of comfort. In the event that a participant does not wish to participate in an activity, they may refuse. A participant may discontinue the program at any point. There is no more risk than a usual clinic visit for participants.

**Confidentiality and privacy.** Confidentiality and privacy of subjects will be ensured. Participants will not be identified by name or number on questionnaires or data collection instruments. Investigational Review Board Approval (IRB) will be obtained prior to the initiation of any data collection. Then all participant data will be collected and entered into password protected SPSS.

**Inclusion of children.** Participants will be minors, between the ages of eight to twelve years old. According to HHS regulations title 45 CFR 46.404 the IRB must determine that research presents no greater than minimal risk to children and adequate provisions are made from soliciting the assent of the children and the permission of their parents or guardians, as set forth in HHS regulations at 45 CFR 46.408. Research will involve no more risk than a usual clinic visit for participating children.
Chapter Four

Grant Elements

Three Potential Grants

Given the limited number of students that the KNF© program can accommodate; this research proposal will most likely be funded by a foundation grant. The three potential foundation grants that this research proposal will consider include the following: The Robert Wood Johnson Foundation, The Anthem Foundation, and the Aetna Foundation.

The Robert Wood Johnson Foundation (RWJF) provides grants throughout the US that aim to improve the health and health care of all Americans (including non-profit public agencies, public charities, and universities that have measurable impacts on the health of Americans. Some of programs they fund include service demonstrations, public education, training and fellowship programs, policy analysis, communication activities and evaluations. In California, the RWJF is currently funding 56 grants, totaling $27,568,459. Of these grants, 22 are located in southern California and focus on health issues for Californians, including the underserved. The RWJF fund a variety of programs ranging from public conferences, to larger studies that examine health policy. Most awarded grants are accepted through the ‘calls for proposal’, which is an on-going list of topics for which the foundation is currently funding. In addition, the RWJF does accept brief proposals for projects that suggest new and creative approaches to solving health care problems.

The Anthem Foundation funds public health-related issues via two funding options: Anthem Foundation grants, and Community Relations & Sponsorship. The
Anthem Foundation is one of the nation’s largest corporate foundations that funds preventable health issues. They fund initiatives that positively affect their Healthy Generations program. The Healthy Generations Program emphasizes five areas: cardiac mortality; cancer prevention and smoking cessation; maternal and newborn health; diabetes prevention and management; and childhood and elderly obesity. The Anthem Foundation gave $3.8 million in foundation grants in 2015. The Anthem Foundation also provides a second funding option called Community Relations & Sponsorships, which supports fundraising events, and mission priorities that are align with Health Generations program. Approximately $377,000 was given to California in 2015 via Community grants last year.

The Aetna Foundation supports non-profits that strive to increase access to healthy foods and improve opportunities for physical activity in underserved areas through their GoLocal: Cultivating Healthy Communities grant program. GoLocal: Cultivating Healthy Communities focuses on funding non-profits that increase to fresh foods, including community gardens and farmer markets, as well as funds opportunities for nutrition education and exercise promotion in local neighborhoods. In 2014, The Aetna Foundation awarded more than $3 million in community grants to 75 non-profit organizations in 22 states as part of GoLocal: Cultivating Healthy Communities. California received 12 of those grants, many of which were awarded to non-profit organizations that teach underserved children how to prepare healthy foods, including gardening, and courses that teach parents and children about nutrition and physical activity.
**Selected Grant**

The Aetna Foundation is the most appropriate grant for this proposed study for two reasons. First, the RWJF usually funds larger studies, and may require a larger population study that is group-based instead of individual counseling. The Anthem Foundation may also require a larger study for funding as well. Anthem’s Community Relations and Sponsorships may be an option; however, this usually funds shorter events.

The Aetna Foundation seems more appropriate because it funds more teaching-based programs for underserved children. Some of the previous grants awarded to California include topics such as mobile clinics that perform weight assessments for Latino children, grocery tours, training mentors to help low income and uninsured families the importance of diet, community gardens, and training community educators how to teach consumers to properly store and prepare food. The KNF© program provides a similar program that teaches underserved, at risk children and their parents about proper nutrition and physical activity. Funding would support the KNF© program with the addition of the MI intervention, which is hoped, will result in greater weight loss for obese, underserved children.
### Detailed Budget for Length of Study

(Length of study is 12 months; includes two cohorts for a total of 40 students)

<table>
<thead>
<tr>
<th>Budget Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel</strong></td>
<td></td>
</tr>
<tr>
<td>Salary</td>
<td></td>
</tr>
<tr>
<td>Principal Investigator (.1FTE)</td>
<td>$9,820</td>
</tr>
<tr>
<td>Main KNF© instructor &amp; research coordinator (.75FTE)</td>
<td>$37,065</td>
</tr>
<tr>
<td>Research assistant (.25FTE)</td>
<td>$10,000</td>
</tr>
<tr>
<td>Calculated benefits from CHLA (29.40%)</td>
<td>$16,724.19</td>
</tr>
<tr>
<td><strong>Subtotal of Salary and Benefits</strong></td>
<td>$73,609.19</td>
</tr>
<tr>
<td>Consultants</td>
<td></td>
</tr>
<tr>
<td>MI Consultant (training/script writing 80 hrs @ $150/hr)</td>
<td>$12,000</td>
</tr>
<tr>
<td>Postdoc Psychology Fellow (.1FTE for in-person assistance)</td>
<td>$5,000</td>
</tr>
<tr>
<td>Postdoc Psychology Fellow (50 hours of coding MI sessions @ $25/hr)</td>
<td>$1,250</td>
</tr>
<tr>
<td>Statistician (20 hrs @ $150/hr)</td>
<td>$3,000</td>
</tr>
<tr>
<td><strong>Subtotal Personnel</strong></td>
<td>$94,859.19</td>
</tr>
<tr>
<td>Materials &amp; Supplies</td>
<td></td>
</tr>
<tr>
<td>Printing, student workbooks, sample food, pens, and folders (for 2 cohorts n=40)</td>
<td>$1,200</td>
</tr>
<tr>
<td>Subject Incentives</td>
<td></td>
</tr>
<tr>
<td>Weekly Incentives (for 2 cohorts n=40)</td>
<td>$1,000</td>
</tr>
<tr>
<td>Follow-up Measurement Incentives ($25 gift cards for 2 cohorts n=40)</td>
<td>$1,000</td>
</tr>
<tr>
<td>Domestic travel fees</td>
<td></td>
</tr>
<tr>
<td>Conference Registration/Booth, airfare, lodging, car rental</td>
<td>$4,400</td>
</tr>
<tr>
<td>IRB Fees</td>
<td></td>
</tr>
<tr>
<td>CHLA IRB application fee</td>
<td>$2,000</td>
</tr>
<tr>
<td><strong>Startup Fee Division</strong></td>
<td>$1,500</td>
</tr>
</tbody>
</table>
Total Direct Costs………………………………………………………………………..$105,959.19

Indirect Costs (@ 10%)…………………………………………………………….$10,595.92

TOTAL COSTS……………………………………………………………………….…$116,555.11

Budget Justification

**Personnel.** Megan Lipton, MA, CCRP. Megan will serve as Principal Investigator (PI) on this research study. She is the Director of Program Development for the Diabetes and Obesity Program at Children’s Hospital Los Angeles (CHLA) and serves as the Research Administrator for the Center for Endocrinology Metabolism and Diabetes at CHLA. Previously she was a Public Health Analyst and Presidential Management Fellow for the U.S. Department of Health and Human Services and a research associate with UCLA’s Neuropsychiatry Institute and the School for Public Policy and Social Welfare doing clinical research with low-income mothers, incarcerated children and adults, the homeless, and the elderly. She graduated Phi Beta Kappa, magna cum laude from Brown University and holds a Master’s Degree in International Affairs, with a focus in Public Health from Columbia University...........................................

Since 2004 Megan Lipton has directed Kids N Fitness© (KNF©), and has adapted and implemented the program for community clinics, county parks, and after school programs in low-income areas in California. She has co-developed a train-the-trainer instructor program, enabling non-health professionals to successfully deliver the 6-week program. She is currently the PI on a research study targeting overweight children ages 3 to 7 and their parents in a new program called Kids N Fitness Jr, and is co-investigator on a faith-based health initiative in partnership with large African American Baptist church
in South Los Angeles which has adapted the KNF© curriculum for Sunday School and church summer camp.

The PI will be responsible for the overall direction of the project, present the project to the Institutional Review Board (IRB), lead project meetings and oversee the budget. She will devote 10% of her time to the grant. Megan will be provided $9,280 for the initial year of the study, which covers two cohorts totaling 40 students.

Emily Millen, MPH. She will serve as research coordinator and lead KNF© instructor. Emily is the current lead instructor for KNF©, and has prior experience leading health initiatives at a Los Angeles High School, and is a former editor of her college newspaper. Her experience in teaching nutrition to children and adults of all ages, and her writing experience will make her an ideal candidate. She will assist in data collection, team meetings, and presentation to the IRB. She will coordinate efforts of personnel and will work and consult with subject matter experts on the interventions of the study. She will coordinate and implement classroom activities and oversee the data collection and evaluation instruments. She will devote 75% of her time to the grant. Emily will be provided $37,065 for the initial year of the study, which includes two cohorts totaling 40 students.

A research assistant employed by CHLA will assist in data collection including measurements and evaluation forms. The research assistant will also assist with classroom activities including exercise and food preparation. The research assistant will devote 25% of her time to the study, totaling $10,000.

CHLA provides fringe benefits to employees at 29.40% of salary. Fringe benefits for the PI and research coordinator total $16,724.19.
Consultants. KNF© will hire a MI consultant to train staff on MI counseling techniques, and the Motivational Interviewing Treatment Integrity (MITI) coding system. The MI consultant will also write a script for the brief 10-minute in-person MI sessions performed on weeks 1, 3, and 6 of the class, and the three follow-up monthly MI telephone calls. The MI consultant will be paid for 2 weeks of work. The first week will consist of writing the scripts, and the second week will consist of training staff, including run-throughs utilizing the scripts with staff and interns, and rating performance. The MI consultant will be paid for 80 hours of work, (or 2 weeks) @ $150/hr., totaling $12,000.

KNF© will utilize two psychology postdoctoral fellows from CHLA’s Psychology Postdoctoral Fellowship program. The University of Southern California Center for Excellence in Developmental Disabilities (USC UCEDD) at CHLA offers a 2-year fellowship for clinical child psychology. KNF© will offer hours to a psychology fellow interested and trained in MI to provide in-person support during classes. This fellow will also be responsible for coding the recorded MI sessions using the MITI coding scale. This fellow will dedicate 10% of his time to the study and be provided $5,000.

Another postdoctoral psychology fellow will be hired to code recorded MI sessions using the MITI coding scale. He will provide 50 hours of work at $25/hr., totaling $1,250.

A research statistician will be hired to assist in the planning and designing of statistical methods and techniques to collect and analyze data. The research statistician will also prepare summaries, graphics and reports of data collected. An expert research statistician charges $150/hr. and will be hired for a total of 20 hours.
Material and supplies. Materials and supplies include office and classroom supplies. Office supplies include printer ink and copy paper for recruitment flyers, consent forms, questionnaires, evaluations forms, and the MITI coding instruments. Classroom supplies include student workbooks, folders, pens, and sample food for two cohorts. This will cost a total of $1,200 for two cohorts.

Subject incentives. Weekly incentives will be provided to the participants after the completion of each class. Weekly incentives for the 6-week course include the following six items: an athletic bag, pedometer, Thera band, water bottle, cookbook, and jump rope/Frisbee. The cost of incentives for two cohorts is $1,000.

A $25 gift card will be given to each participant after finishing the 3-month follow-up measurements. The total cost of gift cards for two cohorts is $1,000.

Domestic travel and conference registration fees. PI and research coordinator travel costs for dissemination of research findings. The PI and research coordinator will present study results at the American Public Health Association annual meeting and Expo in 2018. The cost of a booth is $1950. Including airfare, lodging, and car rental for PI and research coordinator, the total cost is $3000.

Results will also be presented at the Obesity Society’s Annual Meeting during Obesity Week in 2018. The cost of a booth is $500. Including airfare, lodging, and car rental for the PI and research coordinator, the total cost is $1400. Total travel and conference registration fees for 2018 are $4400.

IRB fees. IRB is the Institutional Review Board of Children’s Hospital Los Angeles. It is charged with protecting the rights and welfare of human research subjects in research studies conducted at CHLA and elsewhere by CHLA faculty or staff, using
CHLA patients or private information about CHLA patients, and funded by or through CHLA. IRB fees will total $2000 for the initial review of the proposed study.

**Start-up fee.** The start-up fee covers the administrative costs to hire consultants, and the administrative time for the IRB submission process. Start-up fees total $1500.

**Timeline**

The following table illustrates the length of the study, which will last 12 months beginning October 2016 and ending October 2017.

**Table 3. Expected timeline for research grant**

<table>
<thead>
<tr>
<th>Activities</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submit Grant Proposal and apply to IRB</td>
<td>August, 2016</td>
</tr>
<tr>
<td>Expected Grant Notification</td>
<td>October, 2016</td>
</tr>
<tr>
<td>Hire Consultants</td>
<td>November-December, 2016</td>
</tr>
<tr>
<td>Staff training and perform run-throughs</td>
<td>January-February, 2016</td>
</tr>
<tr>
<td>Begin first 6-week course</td>
<td>March, 2017</td>
</tr>
<tr>
<td>Begin second 6-week course</td>
<td>May, 2017</td>
</tr>
<tr>
<td>Data collection completion</td>
<td>September, 2017</td>
</tr>
<tr>
<td>Prepare Results Report</td>
<td>October, 2017</td>
</tr>
</tbody>
</table>

**Dissemination Plan**

The following steps will be taken to disseminate findings: 1) Final reports discussing study results, effectiveness, feasibility, cost, and recommendations will be written for peer reviewed journals 2) Oral presentation discussing study results will be presented via a booth at annual meetings for the American Public Health Association (APHA) and at the Obesity Society during Obesity Week.
References


American and Hispanic adolescents. *Journal of Community Health, 29*(6), 467-481.


Appendix A. Parental Consent Form

The Effects of Integrating a Motivational Interviewing Intervention into a Family-based, Weight Management Program for Overweight and Obese Children

Dear Parent or legal guardian,

My name is Vanessa Elizabeth Cordova and I am a nursing graduate student at California State University San Marcos. I am conducting a research study for the Kids N Fitness© program at Children’s Hospital Los Angeles. You are invited to participate in this study because you are between 8 and 12 years of age and have been identified as being overweight or obese. The purpose of this form is to provide you with information that will help you decide if you will give consent for your child to participate in this research.

PURPOSE OF THE STUDY:
Kids N Fitness© is a weight management program that teaches children between the ages of 8 and 12 years and their families about nutrition, healthy eating and physical activity. The purpose of this study is to examine the effects of incorporating a new counseling technique called Motivational Interviewing into the already proven effective Kids N Fitness© program to see if this way of counseling results in greater weight loss for participants. Some of the participants will receive this new counseling technique and some will not. We will not tell you if you are receiving the new counseling technique or not.

PROCEDURES FOR THE STUDY:
If you agree for your child to participate in the study, you and your child will participate in the standard Kids N Fitness© program, a 6 session weight management program that meets weekly for 90 minutes. Every session will include nutrition education for the family, exercise for the child and techniques and support for making behavior changes. Examples of nutrition topics include label reading, learning about portion sizes, tips for eating out and celebrating special occasions without overeating, learning how to shop, cook, and snack healthfully. Examples of physical activity may include things like relays, strength training, dodge ball, obstacle courses, freeze tag and dance.

If you volunteer to participate in the study, we would ask your child to do the following:
• **Weight, height, and body fat percentage.** A body composition analyzer is used like a scale, but it is able to measure height, weight, BMI, percentage of body fat, basal metabolic rate, impedance, fat mass, fat free mass, total body water, target percentage body fat, predicted weight, predicted fat mass, and fat needed to lose
in one quick step. It will provide a print out of all this information. This will be performed at weeks 1, 3, 6 and at a follow-up visit.

- **Waist circumference.** We will measure around your child’s waist with a measuring tape. This will be performed at weeks 1, 3, 6 and at a follow-up visit.

- **Health-related behavior survey.** You and your child will be asked to fill out a questionnaire and survey that looks at nutrition knowledge and behavior. This will be filled out at weeks 1, 3, 6 and the follow-up visit. There will also be questions about your family’s lifestyle. This survey will take approximately 15 minutes to complete.

- **Self-efficacy survey.** Your child will be asked to fill out a survey that looks at his or her confidence to choose healthy related behaviors. This will be filled out at weeks 1, 6 and the follow-up visit. This will take approximately 5 minutes to fill out.

**RISKS AND INCONVENIENCES:**

There are minimal risks and inconveniences to participating in this study. These include: 1) potential loss of confidentiality or privacy and 2) uneasiness or embarrassment from the questions you are asked in the survey or from having your weight taken. We will do everything possible to ensure confidentiality and privacy when collecting, recording, and storing you and your child’s personal measurements and information.

**SAFEGUARDS:**

To minimize risks your child can skip any questions he or she feels uncomfortable answering while taking the surveys. Your child may skip any activity he or she feels uncomfortable participating in.

**CONFIDENTIALITY**

Members of the research team and, if appropriate, your physicians and nurses will know that you are a research subject. All results will be kept confidential, but may be made available to you, and/or your physician if you wish. No information about you or provided by you during the research will be disclosed to others without your written permission, except

- if necessary to protect your rights or welfare (for example, if you are injured and need emergency care); or
- if required by law (i.e., child or elder abuse, harm to self or others, reports of certain infectious diseases).

The confidentiality of all data will be maintained by separating the coded identification which accompanies all data forms from private information such as your name. Documents linking coded IDs and your private information will be kept under lock and key in separate filing cabinets in the project office.

When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity.
Authorized representatives of the CHLA Institutional Review Board (IRB) may need to review records of individual subjects. As a result, they may see your name; but they are bound by rules of confidentiality not to reveal your identity to others.

**VOLUNTARY PARTICIPATION:**
Your child’s participation in this study is voluntary. Your child may decline participation at any time. You may also withdraw your child from the study at any time; there will be no penalty. Likewise, if your child chooses not to participate or to withdraw from the study at any time, there will be no penalty.

**BENEFITS OF TAKING PART IN THE STUDY:**
There is no guarantee that your child will benefit from this study. Learning how to make healthy food decisions and regular exercise as a part of program participation may result in your ability to maintain or lose weight for a period of time while growth in height continues, and/or improve your child’s overall health.

It is our hope, however, that the program will have a positive effect on you and your child’s weight and other health measures. If your child happens to have a normal height and weight when measured, we are hopeful he or she will be able to maintain his or her weight status.

**ALTERNATIVES TO TAKING PART IN THE STUDY:** An alternative to participation is not to participate. Your family may wish to participate in a standard weight management program in the area. We will give you referrals if you wish.

**PAYMENT:**
To thank families for returning 3 months after the program to do the follow-up measurements, we will be providing families with a $25 gift card at the follow-up visit.

If you have questions about the study, please call me at (626) 394-9199 or e-mail me at cordo014@cougars.csusm.edu. If you have any questions about your child’s rights as a participant in this research or if you feel your child has been placed at risk, you can contact the IRB Office at irb@csusm.edu or (760) 750-4029.

Sincerely,

Vanessa Elizabeth Cordova

By signing below, you are giving consent for your child to participate in the above study. By signing below you are giving us permission to take audio recording of you and your child during counseling sessions.

“Please check the option that applies to you before signing” and the following options pertaining to audio recording:

☐ I give permission for my child to be audio recorded.
☐ I do not give permission for my child to be audio recorded.
Your Child’s Name

Your Name __________________________ Your Signature __________________________ Date __________________________
Appendix B. Child Assent Form

The Effects of Integrating a Motivational Interviewing Intervention into a Family-based, Weight Management Program for Overweight and Obese Children

My name is Vanessa Elizabeth Cordova. I am a student at California State University San Marcos. I am inviting you to participate in a research study about education and children who are overweight or obese, meaning they weigh more than is healthy for their age and gender.

Your parent knows about this study, and gave permission for you to be involved. If you agree, I will ask you to come to participate in our classes about healthy eating and exercise. Some examples include learning how to read food labels with your parents, and participating in activities such as relays, dodge ball, dance or soccer. We will take measurements of you. Most of these are similar to ones your doctor takes when you visit him/her, including a measurement of your waist, your height, and a machine that looks at how much fat and muscle is in your body.

We are going to ask you and your parents some questions about you on a survey. This includes things like what you and your parent like to eat, what you and your parent think is healthy, and what kind of activities you do when you are home.

You do not have to be in this study. No one will be mad at you if you decide not to do this study. Even if you start the study, you can stop later if you want. You may ask questions about the study at any time.

If you decide to be in the study I will not tell anyone else how you respond or act as part of the study. Even if your parents or teachers ask, I will not tell them about what you say or do in the study.

Signing here means that you have read this form or have had it read to you and that you are willing to be in this study.

Name of the Participant (Write your name in the line):________________________
Signature of the Participant (Put your signature in the line):

____________________________________

Name of the Investigator: _______________________________________

Signature of the Investigator: ______________________________________

Date:___________________________
Appendix C. CATCH-Span Health Related Behavior Questionnaire

KIDS N FITNESS®
HEALTH BEHAVIOR QUESTIONNAIRE

GENERAL INFORMATION

Affix ID Label Here:

1. Student ID #: __________

2. Form Version: 10/12/03

3. Today's Date: _________/_______/_______

4. Measurement Period
   1. Fall 2006
   2. Spring 2007

5. KNF Staff Initials: __________

6. School Name ___________________________

INTRODUCTION: This is a questionnaire about health. There are no right or wrong answers. Please read each question and answer the best you can. Do not work ahead. Stop at the end of each section. Remember no one at school will see your answers.
PART B: WHAT FOODS DO YOU EAT MOST OF THE TIME?

INSTRUCTIONS: Circle one of the two foods that you eat most often.

1. cookies  
   an apple

2. hot dog  
   chicken

3. buttered popcorn  
   unbuttered popcorn

4. bran muffin with margarine  
   french toast with butter and syrup
INSTRUCTIONS: Circle one of the two foods that you eat most often.

5. chocolate cake
   an orange

6. ice cream
   fresh fruit popsicle

7. sweet roll
   whole wheat roll

8. turkey
   bologna

9. regular (whole) milk
   low-fat or skim milk
## PART C: WHICH FOOD IS BETTER FOR YOUR HEALTH?

**INSTRUCTIONS:** Circle one of the two foods that you think is better for your health.

1. whole wheat bread  
   white bread

2. broiled beef  
   broiled fish

3. cold cereal  
   eggs and bacon

4. beef  
   beans

5. chicken  
   regular hamburger
INSTRUCTIONS: Circle one of the two foods that you think is better for your health.

6. regular (whole) milk
   low-fat or skim milk

7. peanut butter
   bologna

8. frozen yogurt
   ice cream

9. green salad
   french fries

10. raisins
    candy bar
INSTRUCTIONS: Circle one of the two foods that you think is better for your health.

11. butter   margarine

12. frozen corn   canned corn

13. french fries   baked potato

14. regular peanut butter   freshly ground peanut butter

STOP HERE
Appendix D. PAHFE Questionnaire

NAME________________________________ DATE_________________

Physical Activity and Healthy Food Efficacy scale for children (PAHFE).

Directions for Mentor. This questionnaire is designed to help us understand how confident you are in setting personal goals to be more physically active and to eat healthy foods. For each question, please circle the number that best describes your level of confidence or how sure you that you can do what is described in the question.

1. How sure are you that you can set goals for yourself to be more physically active?
   - Not sure at all
   - Not too sure
   - Sure
   - Very sure
   - Completely sure

2. How sure are you that you can set physical activity goals for yourself without any help from others?
   - Not sure at all
   - Not too sure
   - Sure
   - Very sure
   - Completely sure

3. How sure are you that you can set goals for yourself to eat healthy foods?
   - Not sure at all
   - Not too sure
   - Sure
   - Very sure
   - Completely sure

4. How sure are you that you can set healthy eating goals for yourself without any help from others?
   - Not sure at all
   - Not too sure
   - Sure
   - Very sure
   - Completely sure
**Directions:** These next questions ask about how confident or sure you are that you can choose to be physically active or choose healthy foods or snacks. For each question, please circle the number that best describes your level of confidence.

### Decision-Making

<table>
<thead>
<tr>
<th>How sure are you that you can choose a healthy food to eat (such as vegetables, fruit, pretzels):</th>
<th>Not sure At all 1</th>
<th>Not too sure 2</th>
<th>Sure 3</th>
<th>Very Sure 4</th>
<th>Completely Sure 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Everyday</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. For an after school snack</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. When watching T.V. or video movies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. When playing video games</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. When with your friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. When you are bored</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. When in a bad mood</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. When at home</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. When at school</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How sure are you that you can be physically active (like playing sports or games like tag or walking, biking...):</th>
<th>Not sure at all 1</th>
<th>Not too sure 2</th>
<th>Sure 3</th>
<th>Very Sure 4</th>
<th>Completely Sure 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Everyday</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. When with your friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. In cold weather</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. In hot weather</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>------------------------</td>
<td>---</td>
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<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>5. When in a bad mood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. When you feel lazy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. When you don’t feel like it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>8. When you have a lot of homework</td>
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</tbody>
</table>
Appendix E. Sample Curriculum from KNF© Program

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>Control group activity</th>
<th>Family Nutrition Class</th>
<th>Exercise Class</th>
<th>Parent Class</th>
<th>Healthy Snack</th>
<th>Group Goal</th>
<th>Incentive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 1</td>
<td></td>
<td></td>
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<td></td>
<td>Kids N Fitness Notebook</td>
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<tr>
<td>Nutrition and the Food Groups</td>
<td>Anthropometric data. CATCH-SPAN questionnaire PAHFE questionnaire</td>
<td>Introduction to MyPlate and the Food Groups Importance of Breakfast and not skipping meals Introduction to Logbooks Food Pyramid Bingo Group Goal</td>
<td>Ice Breakers with Balls Limo Drivers Stretching Cleaning out your Arteries”</td>
<td>Setting Realistic Expectations for program Risks of Obesity</td>
<td>Ants on a Log: Celery with peanut butter and raisins</td>
<td>Eat breakfast every day</td>
<td>Kids N Fitness Athletic Bag</td>
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<tr>
<td>Session 2</td>
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<td>Kids N Fitness Notebook</td>
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<tr>
<td>Portion Power</td>
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<td>Portion Sizes</td>
<td>Interval Training</td>
<td>Difficulty in Making Change Importance of Exercise Portion Control Hunger Scales How to deal with children who overeat</td>
<td>Low Fat Yogurt Sundae with fresh fruit and low fat granola</td>
<td>Walk as much as possible, aiming for 10,000 steps a day</td>
<td>Pedometer</td>
</tr>
<tr>
<td>Session 3</td>
<td></td>
<td>Course Evals</td>
<td></td>
<td>Warm Ups Theraband Exercises Ideas for low fat food choices</td>
<td>Types of Fat and Cholesterol</td>
<td>94% Fat free popcorn</td>
<td>Theraband</td>
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<tr>
<td>Focus on Fat</td>
<td></td>
<td>Fat- Using the food label to determine if a product is low or high in fat</td>
<td></td>
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</tbody>
</table>
| Session 4 | Sugar Savvy | Identify different forms of sugar  
Correctly read food labels for sugar content  
Identify recommended maximum level of sugar content per day  
Calculate teaspoons of sugar from grams of sugar | Soccer Drills  
Indoor Soccer Game | Setting limits in relation to food  
Giving appropriate awards | Fruit smoothie | Stay away from sweetened beverages. Limit juice to 1 glass of 100% juice a day. Drink LOTs of water. | Water Bottle |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Session 5 | Cooking Healthy/Healthy Substitutes | Importance of Fiber  
Learn how to calculate how much fiber you need  
Eat a Rainbow on your plate  
Healthy Snacks | Bombing the Cones  
Relay Races  
Ball Toss and Run | Healthy Cooking Tips  
Modifying Favorite recipes to be more healthful | Broccoli with Fat Free Veggie Dip | Decrease the amount of time watching T.V. videos or computer games. Try to limit that time to less than 2 hours a day. Use that time to be more ACTIVE | Child Cookbook with healthy recipes |
| Session 6 | Dining Out and Special Occasions | Anthropometric Data  
CATCH-SPAN questionnaire  
PAHFE questionnaire | Course Evals | How to eat out without overeating/eating unhealthy  
How to enjoy special occasions and celebrations while remaining healthy | Exploding Enchiladas | How to Maintain Healthy Habits and how to deal with Relapse | Healthy Potluck |
| | | | | | | | Flexible Frisbee and Jump Rope | Graduation Certificate |
### b. Intervention Group

<table>
<thead>
<tr>
<th>Session</th>
<th>Data Collection</th>
<th>Brief MI Session</th>
<th>Family Nutrition Class</th>
<th>Exercise Class</th>
<th>Parent Class</th>
<th>Healthy Snack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 1</td>
<td>Anthropometric Data</td>
<td>Brief MI</td>
<td>Introduction to MyPlate and the Food Groups</td>
<td>Ice Breakers with Balls</td>
<td>Setting Realistic Expectations for program</td>
<td>Ants on a Log: Celery with peanut butter and raisins</td>
</tr>
<tr>
<td></td>
<td>CATCH-SPAN questionnaire</td>
<td></td>
<td>Importance of Breakfast and not skipping meals Introduction to Logbooks</td>
<td>Limo Drivers</td>
<td>Risks of Obesity</td>
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<tr>
<td></td>
<td>PAHFE questionnaire</td>
<td></td>
<td>Food Pyramid Bingo</td>
<td>Stretching Cleaning out your Arteries”</td>
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<tr>
<td>Session 2</td>
<td>Anthropometric Data</td>
<td></td>
<td>Portion Sizes Introduction to the Food Label: Serving Size</td>
<td>Interval Training</td>
<td>Difficulty in Making Change</td>
<td>Low Fat Yogurt Sundae with fresh fruit and low fat granola</td>
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<tr>
<td></td>
<td>CATCH-SPAN questionnaire</td>
<td></td>
<td>How much we should exercise?</td>
<td>Bombing the Cones Relays</td>
<td>Importance of Exercise Portion Control</td>
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<td></td>
<td>PAHFE questionnaire</td>
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<td>Learning how to use a pedometer</td>
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<td>Hunger Scales</td>
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<tr>
<td>Session 3</td>
<td>Anthropometric Data</td>
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<td>Fat- Using the food label to determine if a product is low or high in fat</td>
<td>Warm Ups</td>
<td>Types of Fat and Cholesterol Ideas for low fat food choices</td>
<td>94% Fat free popcorn</td>
</tr>
<tr>
<td></td>
<td>CATCH-SPAN questionnaire</td>
<td></td>
<td>What types of food have less fat? How much fat is too much?</td>
<td>Theraband Exercises</td>
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</tr>
<tr>
<td></td>
<td>PAHFE questionnaire</td>
<td></td>
<td></td>
<td>Shuffle But Game</td>
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<tr>
<td>Session 4</td>
<td>Anthropometric Data</td>
<td></td>
<td>Identify different forms of sugar Correctly read food labels for sugar content</td>
<td>Soccer Drills</td>
<td>Setting limits in relation to food</td>
<td>Fruit smoothie</td>
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<tr>
<td></td>
<td>CATCH-SPAN questionnaire</td>
<td></td>
<td>Identify recommended maximum level of sugar content a day</td>
<td>Indoor Soccer Game</td>
<td>Giving appropriate awards</td>
<td></td>
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<tr>
<td></td>
<td>PAHFE questionnaire</td>
<td></td>
<td>Calculate teaspoons of sugar from grams of sugar</td>
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### Incentive

- **Kids N Fitness Athletic Bag**
- **Kids N Fitness Notebook**
- **Pedometer**
- **Water Bottle**
<table>
<thead>
<tr>
<th>Session 5</th>
<th>Cooking Healthy/Healthy Substitutes</th>
<th>Importance of Fiber&lt;br&gt;Learn how to calculate how much fiber you need&lt;br&gt;Eat a Rainbow on your plate&lt;br&gt;Healthy Snacks</th>
<th>Bombing the Cones&lt;br&gt;Relay Races&lt;br&gt;Ball Toss and Run</th>
<th>Healthy Cooking Tips&lt;br&gt;Modifying Favorite recipes to be more healthful</th>
<th>Broccolis with Fat Free Veggie Dip</th>
<th>Decrease the amount of time watching T.V. videos or computer games. Try to limit that time to less than 2 hours a day. Use that time to be more ACTIVE</th>
<th>Child Cookbook with healthy recipes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 6</td>
<td>Dining Out and Special Occasions</td>
<td>Anthropometric Data&lt;br&gt;CATCH-SPAN questionnaire&lt;br&gt;PAHFE questionnaire</td>
<td>Topic: Reinforce importance of weight loss and provide resources</td>
<td>How to eat out without overeating/eating unhealthy&lt;br&gt;How to enjoy special occasions and celebrations while remaining healthy</td>
<td>Exploding Enchiladas</td>
<td>How to Maintain Healthy Habits and how to deal with Relapse</td>
<td>Healthy Potluck</td>
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<tr>
<td>Week 10</td>
<td>(Telephone) Topic: Identify barriers; goal setting</td>
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<tr>
<td>Week 14</td>
<td>(Telephone) Topic: Identify barriers; goal setting</td>
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<tr>
<td>Week 18</td>
<td>Anthropometric Data&lt;br&gt;CATCH-SPAN questionnaire&lt;br&gt;PAHFE questionnaire</td>
<td>Topic: Identify barriers; goal setting</td>
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</tbody>
</table>