The impact of an obesity intervention including motivational interviewing on outcomes for children and adolescents

Christina N. Chin

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The Impact of an Obesity Intervention Including Motivational Interviewing on Outcomes for Children and Adolescents

by

Christina N. Chin

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Doctor of Philosophy Degree in Psychology

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August 2011
An Abstract of

The Impact of an Obesity Intervention Including Motivational Interviewing on Outcomes for Children and Adolescents

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Christina Chin

Submitted to the Graduate Faculty in partial fulfillment of the requirements for the Doctor of Philosophy Degree in Psychology

The University of Toledo
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With childhood obesity on the rise, there is increasing concern about the prevention and treatment of obesity. Obesity occurs in children/adolescents and is associated with increased health risks and psychosocial problems. Standard treatment options for obesity can include dietary, physical activity, and behavioral therapy. In this project, an enhancement to the current standard treatments was conducted. Motivational Interviewing has been shown to aid in changing weight-related behaviors for adults. The present study evaluated the effects of Motivational Interviewing on children/adolescents preceding an obesity intervention. A multi-method survey approach was utilized. Results indicated that four out of the sixteen participants showed improvement in their readiness to change weight-related behavior. Furthermore, the majority of parents reported that their children showed increased awareness in weight related behaviors, improvement in mood, and positive lifestyle changes. Parental involvement appears to be one significant component in obesity treatments, such that parents supported and reinforced children’s healthy weight-related behaviors. Future studies should include a larger pool of participants with a control group and a specific parental involvement component.
To those who believe in change.
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Chapter 1

Introduction

Childhood obesity is an increasing problem in American society, such that the prevalence has tripled in the last 30 years (Ogden & Carroll, 2010). Obesity is associated with both medical and psychological problems for children, for example, cardiovascular problems and depression (Falkner, 2008; Freedman, Khan, Dietz, Srinivasan, & Bereson, 2001; Calamaro & Waite, 2009). Furthermore, obesity appears to affect minority populations disproportionally, such that the prevalence of obesity is higher in African American and the Hispanic children than European American children (Singh, Sialpush, & Kogan, 2010). Financial limitations may also play a role in food choice. Many times eating more cheaply results in eating a higher fat diet (high fat and more processed foods). With limited financial resources for food shopping and proximity/transportation issues, low-income families may be more likely to purchase unhealthy food.

Childhood obesity results from both genetic and environmental factors. For example, parental obesity (particularly maternal obesity) increases a child’s risk for developing obesity due to shared genes (genetic factors contribute to individual susceptibility to obesity) and/or an environment that promotes unhealthy eating behaviors (Kral & Rauh, 2010). In terms of strictly environmental factors, diet and physical activity play an important role. Childhood consumption of fast food has increased from 2% three decades ago to 10% currently (Sinha & Kling, 2008). Furthermore, children are spending more time engaging in sedentary tasks (e.g. watching television, playing video and computer games) (Rey-Lopez, Vicente-Rodriguez, Biosca, & Moreno, 2008). Cessna, Raudenbush, Reed, and Hunker (2007) found that playing video games decreased
participants’ ability to adequately estimate how much food they consumed. Engaging in video games may lead to underestimating food consumption, which can lead to increased weight gain. Thus, children’s current behavior (e.g. less physical activity) and diet (e.g. increase in high-fat diet) are likely contributing to the obesity epidemic.

A group’s values and beliefs can influence one’s attitude towards body weight and eating styles. For example, Kimm et al. (1997) studied black and white girls’ attitudes towards obesity. Black girls were more tolerant of heavier body types than white girls. Perceived social rejection due to obesity was also greater in white girls than black girls. However, Neumark-Sztainer et al. (2002) found both black girls and white girls reported a desire to be thinner and were concerned with their body shape and size. Furthermore, Hispanic, Asian American, and Native American girls reported similar weight concerns and behaviors as white girls. While there may be cultural differences in desired body shape, it seems clear that adolescents are concerned with their body shape (Klaczynski, Daniel, & Keller, 2009).

Treatment options for childhood obesity include dietary therapy, increase in physical activity, behavior therapy, bariatric surgery, pharmacotherapy, or combined therapy (e.g. dietary therapy, increased physical activity, and behavior therapy) (Kissane & Pratt, 2011). Dietary therapy helps individuals decrease their caloric intake and increase healthy choices. Dietary interventions for obese children and adolescents include limiting sugar-sweetened drinks, consuming fruits and vegetables, eating breakfast, having family meals at home, and decreasing portion sizes (Stevens & Summar, 2008). Physical activity therapy includes increasing physical exertion and decreasing sedentary behavior. Behavior therapy utilizes strategies based on behavior principles (e.g.
reinforcement). Behavior therapy helps modify eating behaviors, such that one is able to increase desirable eating and decrease undesirable eating styles. Strategies may include self-monitoring, goal-setting, self-control, stress management, and social support.

Pharmacotherapy and bariatric surgery are other treatment options, but both come with increased risk of side-effects including potential effects on growth and development after bariatric surgery because of post operation calcium malabsorption affecting skeletal maturity (Inge, Donnelly, & Vierra, 2005).

Research suggests that a combination of intervention strategies (i.e. diet, exercise, behavior change) will provide the most successful treatment outcome (Kirk, Scott, & Daniels, 2005). However, even with a comprehensive treatment, many individuals have trouble adhering to the program. Thus, a proposed enhancement to the interventions has been suggested to increase behavioral change. Motivational Interviewing was developed in 1991 by Miller and Rollnick as an intervention that “strives to enhance self-efficacy and personal control for behavioral change and uses an interactive, empathic listening style to increase motivation by highlighting the discrepancy between personal goals and current behavior” (DiLillo, Siegfried, & West, 2003). Motivational Interviewing has been shown to increase motivation, address ambivalence, and allow for greater behavior change (Miller & Rollnick, 2002). For example, Motivational Interviewing has been found to increase physical activity and improve healthful eating habits (Resnicow, Davis, & Rollnick, 2006; Dimarco, Klein, & Wilson, 2009). When compared to a behavioral weight loss program without Motivational Interviewing, those who received the additional component of Motivational Interviewing showed greater weight loss (Dimarco, Klein, and Wilson, 2009). Few research studies have used a face-to-face Motivational
Interviewing intervention for with obese/overweight children and adolescents. Thus, the present study investigated the effects of Motivational Interviewing in enhancing children and adolescents’ readiness to change weight-related behavior.

In the following chapters the literature on childhood obesity research is reviewed. Next, study methods will be described and results are presented. Finally study implications, limitations and directions for future research are discussed.
Chapter 2

Literature Review

Childhood obesity is a rising concern in American society. The prevalence of childhood obesity has increased from approximately 5% in 1963 to 1970 to 16.9% between 2007-2008 based on height and weight from a nationally representative sample of children and adolescents (Ogden & Carroll, 2010). Obesity poses both medical and psychosocial challenges for American children. Obesity is associated with serious health risks, such as heart disease, hypertension, diabetes, and gall bladder disease (Dietz, 1998; Baker, Olsen, & Sorensen, 2008; Falkner, 2008). Furthermore, being overweight as a child can accelerate the development of obesity-related diseases (i.e. cardiovascular diseases and metabolic system problems) (Daniels, 2006; Bibbons-Domingo, Coxson, Pletcher, Lightwood, & Goldman, 2007). For example, children who become more overweight into adulthood are more likely to have high blood pressure in adulthood. Additionally, obese children are not only at risk of developing cardiovascular problems, 3-4% of children and 30% of adolescents currently have obesity associated with high blood pressure (Falkner, 2008).

To gauge body fat, a person’s Body Mass Index (BMI) is calculated. BMI uses weight and height measurements to calculate one’s body fat. Weight in kilograms is divided by the square of height in meters. Children with BMIs falling in the 85th to the 95th percentile can be considered overweight and a BMI greater than 95th percentile can be classified as obese (Barlow, 2007). BMIs from the 85th to the 94th percentile suggest health risks that may vary depending on family history and body composition (Kuczmarski et al., 2000) For example, BMI is positively correlated with health risks
such as cardiovascular problems (Freedman, Khan, Dietz, Srinivasan, & Bereson, 2001; Baker, Olsen, & Sorensen, 2008).

**Demographic Differences in Obesity Rates**

Interestingly, there are demographic and cultural differences in the prevalence of obesity. Obesity disproportionately affects certain racial/ethnic groups. African American women are more likely than European American women to become obese (Ogden et al., 2006). Additionally, obesity rates for minority children are higher than for majority adolescents. Obesity rates for boys is highest among Mexican-Americans (26.8%), followed by non-Hispanic Black boys (19.8%), and non-Hispanic white boys (16.7%). Obesity rates for girls is highest among non-Hispanic Black girls (29.2%), followed by Mexican-American girls (17.4%), and non-Hispanic white girls (14.5%) (Ogden & Carroll, 2010).

Lifestyle differences may account for some of the higher rates of obesity in minority group members. Parental attitudes and practices can lead to overfeeding, excessive consumption of high-caloric foods, and inadequate physical activity (Kumnyika, 2007). Hughes, Power, Fisher, Mueller, and Nicklas (2005) found that Hispanic parents of pre-school aged children were more indulgent in their feeding styles (i.e. granted most of their children’s requests for food). Additionally, low-income Hispanic parents may see feeding behavior as nurturing and as a sign of achievement because parents are able provide for their children (Kaufman & Karpati, 2007). The authors note that these mothers feel that heavier children are less fragile and are thus safer than thinner children.
Moreover, poverty among children has been associated with greater obesity
(Gordon-Larsen, Adair, & Popkin, 2003). Kaufman and Karpati (2007) observed that a
family’s financial limitations in food choice allow for unhealthy food consumption. Many
times eating cheaper food results in eating a higher fat diet (high fat processed food). For
example, cheaper food often can be found at fast food establishments, such
establishments often serve high fat, high calorie, and high sodium meals. Additionally,
the authors found that low-income Latino families mostly shopped for groceries in the
neighborhood because this saves the families travel time and cost of a taxi to transport the
groceries back home. These families shopped at local bodegas (can be described as a
small Hispanic grocery store). Bodegas are known to offer fewer food options, poorer
quality of food, and limited selection of fruits and vegetables. Moreover, the families who
shopped at the bodegas tended to purchase high-carbohydrate, high fat, and processed
foods. With limited financial resources for food shopping and proximity/transportation
issues, low-income families may be more likely to purchase unhealthy food. Thus,
financial difficulties may contribute to obesity.

**Obesity and Psychosocial Functioning**

In terms of psychosocial functioning, obese youth show more maladaptive
functioning and significantly more negative behaviors than normal weight youth (Miller
et al., 2006). Specifically, health-related quality of life is impaired in obese youth (Beer,
Hofsteenge, Koot, Delemarre-van de Waal, & Gemke, 2007). The CDC defines health
related quality of life as “a person or group's perceived physical and mental health over
time” (Center for Disease Control and Prevention, 2009). Health-related quality of life is
measured via self-report questionnaires that typically gauge physical, emotional, and
social functioning. The concept of health-related quality of life helps
physicians/clinicians better understand how an individual’s illness affects day-to-day life.
Beer et al. (2007) also found an inverse relationship between body mass (BMI) and
health related quality of life, such that the higher an adolescent’s BMI, the lower the
health related quality of life. Mustillo et al. (2003) found that chronically obese children
had significantly higher rates of pathology (i.e. depression and oppositional defiant
disorder). Additionally, there is a relationship between stress during adolescence and
BMI. Experiencing persistent high amounts of moderate stress in adolescence was
significantly associated with greater BMI (Van Jaarvald et al., 2009). Furthermore,
increase in adolescent stress had a significant effect on the probability of obesity
(Lohman, Stewart, Gunderson, Garasky, & Eisenmann, 2009).

Childhood obesity has been shown to be associated with self-esteem (measured
via the Self-Perception Profile for Children) in children, such that obese children show
lower levels of self-esteem (Zeller & Modi, 2006). Interestingly, self-esteem is also
associated with accurate perception of being overweight, such that research suggests
adolescents with low self-esteem misperceive being overweight (Perrin, Boone-
Heinonen, Field, Coyne-Beasley, & Gordon-Larson, 2010).

An association between psychosocial functioning and obesity has also been found
specifically in minority populations. Overweight minority adolescents show significantly
lower physical and psychosocial health as compared to normal weight minority
adolescents (Tyler, Johnstan, Ginny, & Foreyt, 2007). In this study physical and
psychosocial health were measured using the Pediatric Quality of Life Inventory
(PedsQL); this measure assesses physical, emotional, social, and school functioning for children aged 2 to 18 years old.

Interestingly, ethnic differences have been observed between black and white children on body dissatisfaction levels and anxiety. Young-Hyman, et al. (2006) found that black children reported more body size dissatisfaction and higher anxiety than white children (even with equivalent weights). Minority adolescents are also affected by obesity-related psychosocial problems, such as lowered self-esteem, body dissatisfaction, and anxiety. Obesity not only contributes to health problems but also contributes to children’s problematic psychosocial functioning.

**Etiology of Obesity**

Obesity stems from an imbalance between the energy consumed (via food eaten) and an individual’s energy expenditure (e.g. physical activity) (Bray, 1999). When food consumption is more than needed for energy expended, there is an increase in stored fat. Understanding the cause of obesity is complicated by differences in the rate of energy expenditure which is influenced by genetic and other factors. Obesity results from both genetic and environmental contributions. A third to half of one’s susceptibility of obesity can be explained by genetics. However, in most cases genes interact with environmental factors to produce the obesity phenotype (Speiser et al., 2005).

Genetic defects such as the absence of or deficit in the protein leptin is associated with obesity. Leptin is produced and secreted from fat cells. Leptin triggers a protein called peptide in the hypothalamus, the part of the brain that controls hunger control and metabolism. Deficits of leptin can result in obesity. Some specific medical conditions are also associated with obesity. For example, patients with hypothyroidism have a slower
metabolic rate (amount of energy expended), causing them to gain weight more easily than those with normal thyroid function. (Bray, 1999). Polycystic ovary syndrome is also associated with obesity. Although the exact cause of obesity in this syndrome is unclear, 50% of women with this syndrome are obese (Bray & Popkin, 1998). The syndrome includes insulin resistance and an increase in the luteinizing hormone. Treatment of polycystic ovary syndrome typically results in weight reduction (Gambineri, Pelusi, Vicennati, Pagotto, & Pasquali, 2002).

Obesity can also result from environmental factors such as lifestyle and diet. A sedentary lifestyle may promote weight gain due to lower energy expenditure. Eating patterns are also associated with obesity, such as in “night-eating syndrome.” Those with night-eating syndrome consume more than 25% of their daily energy intake at night. The fact that they are unlikely to expend the amount of energy at night as they may in the day leads to an intake-energy imbalance and likely weight gain. For whatever reason, any time that caloric intake is higher than energy needs, weight gain is likely to occur. A diet high in fat is also positively correlated with obesity (Bray, 1999).

With childhood obesity on the rise, it is important to examine the changing lifestyle and diet of American children. Childhood consumption of fast food has increased from 2% three decades ago to 10% currently (Sinha & Kling, 2008). Furthermore, children are spending more time engaging in sedentary activities (e.g. watching television, playing video and computer games) (Rey-Lopez, Vicente-Rodriguez, Biosca, & Moreno, 2008). Cessna, Raudenbush, Reed, and Hunker (2007) found that playing video games decreased participants’ ability to adequately estimate how much food they consumed. Engaging in video games may lead to underestimating
food consumption, which can lead to increased weight gain. Thus, children’s current behavior (e.g. less physical activity) and diet (e.g. increase in high-fat diet) are likely contributing to the obesity epidemic.

However, the literature shows mixed conclusions regarding a link between children’s television usage and risk of obesity. The rationale for the link between increased television time and obesity includes the notion that children who are spending more time watching TV must be spending less time engaging in physical activity (Klesges, Shelton, & Klesges, 1993). On the other side of the debate, some researchers have found only a weak to no relationship between television watching and children’s weight (e.g. Vanderwater, Shim, & Caplovitz, 2004; DuRant, Baranski, Johnson, & Thomson, 1994). Along similar lines, there is also mixed evidence for a relationship between video game usage and increased risk for obesity. Some research demonstrates a link between video game usage and obesity (e.g. Vandewater, Shim, & Caplivitz, 2004), while other researchers found no such association (Kautiainen, Koivusilta, Lintonen, Virtanen, & Rimpela, 2005). One possible explanation of conflicting results is the other potential activities that occur during television and video game usage such as consumption of energy-dense (higher-calorie) foods (Marshall, Biddle, Gorely, Cameron, & Murdey, 2004).

**Parental Involvement in Child Obesity**

Research suggests that children with parents with obesity have 25 times more chance of developing obesity than children without obese parents (Kumar, Raju, & Gowda, 2010). Adolescents’ (ages 13- 18 years) BMI has also been found to be associated with parental obesity (Kunesova, et al., 2007).
Some forms of obesity have a genetic base. For example, genes are directly responsible for obesity in disorders such as Prader-Willi syndrome (a congenital condition with symptoms including insatiable appetite and food cravings) and Biedl-Bardet syndrome (genetic disorder that can cause obesity) (Micheal, 2001). Furthermore, as mentioned previously, genetic defects such as the absence of or deficit in the protein leptin is associated with obesity (Bray, 1999). Parenting behaviors also contribute to obesity in children. A longitudinal study by Steffan, Dai, Fulton, Darwin, & Labarthe (2009) examined children’s BMI (body mass index), PBF (percent body fat), parental height and weight, and parental and child TV viewing habits. These researchers found that TV viewing was directly associated with children becoming overweight, such that one additional hour of TV time increased the odds of being overweight by 20 to 30%. Overweight children also reported watching more television than non-overweight children, and children with at least one overweight parent watched more hours of TV than children of non-overweight parents. Furthermore, Steffan et al. found that BMI and PBF significantly increased for each hour of TV watched by children with overweight parents and this was not found with children of normal-weight parents. Preston (2010) examined children’s perception of food advertisements and their diet. Children aged 12 to 14 years old were given self-report questionnaires on their attitudes and beliefs of food advertisements. Children viewed food advertisements to have little influence over their diet. Surprisingly, children believed that their parents’ choices in food was most influential because parents are the ones purchasing the food products. It seems clear that parental behavior patterns may have a negative effect on their children’s weight status.
Parental behavior is also associated with obesity treatment outcome for obese children. Heinberg et al. (2010) examined the influence of parent involvement on BMI. A hundred and four children and parental figures were studied during an obesity intervention. Children with low parent involvement were less likely to lose any weight or to have clinically significant weight loss. Thus, parental involvement may play a significant role, not only in a child’s obesity status, but also in their child’s success in an obesity program.

Values, Belief Systems, and Obesity

A group’s values and beliefs can influence one’s attitude towards body weight and eating styles. For example, Kimm et al. (1997) studied black and white girls’ attitudes towards obesity. Black girls were more tolerant of heavier body types than white girls. Perceived social rejection due to obesity was also greater in white girls than black girls. Kimm, et al. suggest that white girls may have a different ideal body type than black girls, such that white girls strive for an “extreme leanness.” Black girls may not view this “extreme leanness” as desirable. Thus, black culture may be more accepting of a larger body type (Root, 1990). Powell and Kahn (1995) found that white women have a thinner ideal body size than black women. Furthermore, white women had greater social pressure to be thin, and greater concern with weight and dieting. An explanation of this finding was proposed by Powell and Kahn; they found that black men, compared to white men, were more willing to date “larger-than-ideal” women and even reported expecting less ridicule for dating larger women. Thus, Black women who are overweight may be less motivated to lose weight initially due to less pressure to be thin. However, as noted above, black women are more likely to be obese than white women.
Additionally, white and black women may experience body satisfaction at differing BMIs. In one study, white women reported body dissatisfaction at a BMI level below criteria for being overweight, while black women did not report body dissatisfaction until they were overweight (Fitzgibbon, Blackman, & Avellone, 2000). Thus, black women may be less motivated to change their behavior after they are overweight. Unfortunately, the consequences of obesity include higher mortality from chronic diseases (Must et al., 1999).

Results are similar in adolescent black girls, such that black adolescents did not perceive social rejection from obesity, while white girls did perceive social rejection (Kim et al., 1997). Additionally, black girls did not show the desire for extreme thinness. However, they did view obesity as undesirable. Furthermore, Neumark-Sztainer et al. (2002) studied weight-related concerns and behaviors in 4,746 adolescents from urban public schools. The authors found that both black girls and white girls reported a desire to be thinner and were concerned with their body shape and size. They found 47% of black girls reported caring “very much” about controlling their weight and 27% of black girls reported caring “somewhat.” Although, white girls reported more weight-related concerns and behaviors than black girls, black girls are nevertheless reporting concern about their weight. Furthermore, Hispanic, Asian American, and Native American girls reported similar weight concerns and behaviors as white girls. There may be cultural differences in desired body shape, but minority adolescent females are still concerned with their body shape. A study by Yanover and Thompson (2010) supports past research that black individuals seem to be more accepting of larger body sizes than white individuals. However, black females do show high levels of body dissatisfaction (Perrin
et al., 2010). This may be explained by media images of excessively thin African American females and an increase in interest in the topic of obesity. Eating disorders that were mainly reported in Caucasian females are now increasing in African American communities (Perrin et al., 2010). Thus, research clearly indicates that both majority and minority females show dissatisfaction with their bodies.

Dissatisfaction with body shape is not only a female concern. Some males are also concerned with their weight. Neumark-Sztainer et al. (2002) evaluated 2350 boys for ethnic differences in weight-related concerns. Their results indicated 21.1% of boys had low body satisfaction, 40.4% had moderate body satisfaction, and 33.6% had high body satisfaction. Additionally, 31.6% of boys reported caring about controlling their weight “very much,” 33.9% reported “somewhat,” 20.5% reported “a little bit,” and 14% reported “not at all.” 20.5% of these boys indicated they were trying to lose weight and 23.1% indicated they are trying to maintain their current weight. This research suggests that a significant proportion of male children report body dissatisfaction.

Treatment of Obesity

Obesity is difficult, though not impossible, to treat, especially in children and youth. Treatment options include dietary therapy, increase in physical activity, behavior therapy, bariatric surgery, pharmacotherapy, or combined therapy (e.g. dietary therapy, increased physical activity, and behavior therapy (Kissane & Pratt, 2011).

The goal of dietary therapy is to help individuals decrease their caloric intake. Dietary interventions for obese children and adolescents include limiting sugar-sweetened drinks, consuming more fruits and vegetables, eating breakfast, having family meals at home, and decreasing portion sizes (Stevens & Summar, 2008). A significant
amount of caloric intake in children comes from consumption of soda and sugar-fortified juices (Kranz, Smicikles-Wright, & Siega, 2005). Additionally, fast food consumption is associated with an increase in calories, fat, carbohydrates, and sugar. Therefore, a more restrictive dietary plan will reduce caloric intake in children. This can be done by reducing the intake of high fat foods and simple sugars (e.g. fried food and soda) and increasing low calorie and high fiber food (e.g. whole grains, fruits, and vegetables) (Sinha & Kling, 2008). However, it is important to note that this approach may be difficult for low-income families due to such issues as mentioned above, such as proximity to fresh produce, financial problems in buying healthier foods (unhealthy food tends to be cheaper), and cultural beliefs in feeding practices (e.g. Hispanics may see thinner children as being fragile, thus are more indulgent in feeding practices).

Increasing physical activity in children is effective in promoting weight reduction, primarily at the beginning of treatment (Nemet et al., 2005). Nemet and colleagues tailored an exercise program for children where most activities involved some sort of game (e.g. team sports and running games). Families were also instructed to walk or engage in a weight-bearing sport activity for 30-45 minutes weekly. Lastly, families were encouraged to reduce sedentary activities (e.g. use stairs instead of elevator, watch less television, and play outside instead of inside when possible). At post-test, participants showed an increase in physical activity and lowered BMI. Flores (1995) looked at the benefits of an aerobic dance (Dance for Health) program. Participants were black and Hispanic children (aged 10-13 years). After the twelve week program, minority females had decreased BMI and a lower resting heart rate.
Behavior therapy is another commonly used weight loss program component. Behavior therapy helps modify eating behaviors, such that one is able to increase desirable eating and decrease undesirable eating styles. Strategies may include self-monitoring, goal-setting, self-control, stress management, and social support. (The National Heart, Lung, and Blood Institute Expert Panel on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults, 1998). Goal-setting helps individuals commit to change by allowing for a specific measurable target (Sobel & Orstein, 1996). Beckman, Hawley, and Bishop (2006) demonstrated goal-setting with children and their families. Worksheets written in simple language and enhanced with pictures and visual aids were designed for children and given to families. The worksheets provided families with specific exercises that would help them build an action plan for the family. Families were instructed to practice writing goals by brainstorming characteristics of a goal that would increase the likelihood that it would be achieved. The goals were to be measurable, realistic, behavioral, and desirable. The family was also asked to prioritize these goals and identify the steps required to achieve such goals. Additionally, they were to explain the details of their plan and their method of monitoring progress towards goals. Thus, this was a family-based program with a parental involvement.

The behavioral technique of stimulus control can also aid in weight loss (Fabricatore, 2007). For example, stimuli related to healthful eating should be rewarded, while stimuli that induce poor eating should be avoided (e.g. only eating in designated eating area vs. by the television to increase attention to taste of food, feelings of fullness, and amount consumed). A reward system can also be implemented to reinforce healthy
choices. For example, in one study a child who exercised for 30 minutes was allowed to play a computer game for 20 minutes (Varni & Barnis, 1985).

Self-monitoring is another behavioral strategy. Baker and Kirschenbaum (1993) found that participants who self-monitored the most lost significantly more weight than those who did not keep food records. Kirk, Scott, & Daniels (2005) reviewed treatment options for pediatric obesity. Findings suggested individuals self-monitor using daily tracking. Children and families used a calendar with stickers applied to the calendar when behavioral goals were met each day (e.g. increase physical activity: walking in the park for ½ hour). Parents reviewed the calendar and progress with their children daily to encourage positive feedback/reinforcement for meeting goals. Once again, family involvement appears to be a key component in interventions for childhood obesity, such that families can provide not only social support, but also actively participate in and guide dietary, physical, and behavioral interventions at home.

Pharmacotherapy is another treatment option. Sibutramine induces satiety and helps increase energy expenditure through sympathetic nervous system activity enhancement (Arterburn, Crane, & Veenstra, 2004). However, this medication can also increase blood pressure and heart rate (Berkowitx, Wadden, & Tershakovec, 2003). Moreover, the medicine should not be used with people who have a history of hypertension, congestive heart failure, arrhythmias, and history of stroke, etc. Unfortunately, sibutramine use in adolescents resulted in only minor weight loss and slight improvement in cardiovascular risk factors (Kirk, Scott & Daniels, 2005). Furthermore, the patients often regain lost weight after discontinuing the medication. Orlistat is another medication used to treat obesity in children. Orlistat blocks absorption
of fat and prevents about 30% of fat from being digested (Kirk, Scott, & Daniels, 2005). However, the authors point out that Orlistat may interfere with absorption of important fat-soluble vitamins (A, D, E, and K).

Surgical interventions are the most extreme options for the treatment of obesity. Bariatric surgeries such as vertical banded gastoplasty (VBG) create a smaller stomach pouch; this leads to a feeling of fullness after a small amount of food is consumed (Reedy, 2009). However, weight loss surgical procedures are intrusive, can be medically risky, and costly. Thus, weight loss surgery should be considered only after all other options are evaluated. The use of bariatric surgery for children has increased recently (Tsai, Inge, & Burd, 2007). Although studies have suggested similar results for children as for adults, such as long-term weight loss, there is concern about the potential long-term effects on children (Inge, Donnelly, & Vierra, 2005). Concerns include the potential effects on growth and development after bariatric surgery because of post-operation calcium malabsorption affecting skeletal maturity. Thus, bariatric surgery is recommended for adolescent girls above age 13 and boys above age 15, in hopes they have reached their adult stature by this time.

Research suggests that a combination of intervention strategies (i.e. diet, exercise, behavior change) can provide the most successful treatment outcome (Hardcastle & Hagger, 2011). Epstein and Goldfield (1999) compared dietary intervention alone versus dietary interventions plus exercise component. Results favored the combined treatment of diet and exercise, such that studies indicate greater change in BMI for the diet and exercise intervention than the dietary intervention alone. Adding behavioral techniques (e.g. self-monitoring and goal setting) strengthens the intervention program (Kirk, Scott,
and Daniels, 2005). For example, Nemet et al. (2005) examined the effectiveness of a dietary, physical activity, and behavioral intervention for the treatment of childhood obesity. The dietary intervention included giving participants and their families information on food choices, dietary, and cooking habits and nutritional education in general (e.g. food pyramid, food labels, eating habits, and regular meals). The physical activity intervention included endurance-type activities (e.g. running games) and encouragement of physical exercise outside of sessions (e.g. 30 minutes of walking once a week). Lastly, the behavioral intervention included techniques such as stimulus control/monitoring (e.g. controlling environments that stimulate overeating). Participants in the experimental group (dietary, physical activity, and behavioral intervention) had significantly greater weight loss, lowered BMI, reduced body fat, and lowered LDL cholesterol levels than those in the control group. Grimes-Robinson and Evans (2008) examined several recent studies on the effectiveness of obesity programs for children, finding that most successful programs incorporate an interdisciplinary approach that combines a nutrition, physical activity, behavior modification, and parental involvement. However, Kirk, et al. (2005) point out that even when a comprehensive behavioral treatment for children is implemented, weight loss is modest.

Motivational Interviewing is a more recently developed proposed enhancement to obesity interventions. Motivational Interviewing has been shown to increase motivation, address ambivalence, and allow for greater behavior change (Resnicow, Davis, & Rollnick, 2006). Moreover, increasing motivation can be particularly effective in those who are less ready for change (Flattum, Friend, Nuemark-Sztainer, & Story, 2009).
Motivational Interviewing is a tool used to help individuals become ready to change their behaviors (Miller & Rollnick, 2002). Rollnick and Miller (1995) define Motivational Interviewing as “a directive, client-centered counseling style for eliciting behavior change by helping clients to explore and resolve ambivalence” (p. 326). Resolving ambivalence is the central component of Motivational Interviewing, such that clients may have ambivalence between two courses of action (or behaviors). For example, a client may think that stopping smoking will make them feel better, but they may also believe that they will put on weight and feel bad about themselves. The therapist is there to help facilitate expressing both sides of the ambivalence and guide the client to an acceptable resolution of the ambivalence. Rollnick and Miller also note that direct persuasion is not part of Motivational Interviewing and is not an effective method for resolving ambivalence. They state that direct persuasion can increase client resistance and decrease the desire for change in one’s behavior. Instead, therapists should be non-confrontational and show acceptance and affirmation. This approach also allows the client to have autonomy and freedom of choice regarding their own behaviors. Therapists should not give advice or give solutions or do most of the talking. In summary, the following techniques are the cornerstones of Motivational Interviewing:

1. Reflective listening

2. Eliciting and selectively reinforcing the client’s own self-motivational statements, expressions of problem recognition, concern, desire, and intention to change, and ability to change
3. Monitoring the client’s degree of readiness to change and ensuring that resistance is
not generated by jumping ahead of the client

4. Affirming the client’s freedom of choice and self-direction

Motivational Interviewing has proven successful in the treatment of substance use
and other problem behaviors. Motivational Interviewing has also been shown to
complement obesity treatment by increasing individuals’ motivation and readiness to
change problematic behavior (e.g. diet and physical activity). Resnicow, Davis, and
Rollnick (2006) reviewed the literature on the effectiveness of Motivational Interviewing
to enhance weight loss behavior (diet and physical activity). In the studies reviewed,
Motivational Interviewing was incorporated into the overall obesity treatment. For
example, in one project one Motivational Interviewing session was added to a standard
behavioral weight-control program (Smith, Heckmemeyer, Kratt, & Mason, 1997).

Overall, results suggest that Motivational Interviewing altered adults’ diet and physical
activity levels (Resnicow et al., 2006). In the studies reviewed, effect sizes ranged from
.20 to .50 (small to moderate). Motivational Interviewing was also effective in increasing
fruit and vegetable consumption, and overall weight loss. Furthermore, Motivational
Interviewing has been found to reduce other health risks. For example, Smith et al.
(1997) found that older obese women in the Motivational Interviewing group with non-
insulin dependent diabetes had better control of their glucose levels at post-test than those
in the control group. Smith, Dillilo, Bursac, Gore, and Greene (2007) reported that adding
Motivational Interviewing to a behavioral program for adults was more effective than a
behavioral weight management program alone. Effects were maintained 18 months after
treatment. In another study with adults, the use of Motivational Interviewing as an
enhancement to a cognitive behavioral program showed significant results, such that participants had a significant decrease in body weight, impulsive eating tendencies, and maladaptive cognitions compared with a control group who did not receive Motivational Interviewing (Rieger, 2009). Motivational Interviewing also improved attendance rates, such that attendance was increased in group sessions for the Motivational Interviewing group compared to the control group.

Only a few studies have examined the effects of Motivational Interviewing for the treatment of childhood obesity. Limbers, Turner, and Varni (2008) conducted a broad literature search to find studies that used a Motivational Interviewing intervention component in treating childhood obesity. Only two studies were identified. Schwartz, Hamre, and Dietz (2007) conducted a pilot study with children aged 3 to 7 years old with BMIIs greater than or equal to the 85th percentile. Their study excluded children who had BMIIs greater than or equal to the 95th percentile. Thus, this study excluded children who would already be classified as obese. Those in the Motivational Interviewing group were either given one (minimal intervention) or two 10 to 15 minute Motivational Interviewing sessions plus two 45 to 50 minute sessions from a pediatrician or a registered nurse who were trained in Motivational Interviewing by a psychologist. Post-test data were gathered six months later. No differences in BMI were found between the intervention and control groups.

The other study identified by Limbers and colleagues was conducted by Resnicow, Taylor, Baskin, and McCarty (2005). Resnicow and colleagues created a program for overweight minority adolescent female girls aged 12 to 16 years old. Motivational Interviewing was incorporated into a behavioral intervention, such that 4 to
6 Motivational Interviewing telephone calls were made to participants. The Motivational Interviewing calls consisted of discussion of plans and progress regarding the adolescents’ personal activity goals. Participants were either randomized into a moderate-intensity group program (6 sessions) or a high-intensity group program (24 to 26 sessions). The moderate-intensity group did not receive any Motivational Interviewing phone calls. Counselors with a masters or doctoral degree in psychology or public health who received Motivational Interviewing training by doctoral level staff made the telephone calls to participants in the high-intensity group. The participants completed baseline and 6-month follow up assessments; no significant differences in BMI were found between the two groups.

Pollak et al. (2009) utilized 30 audio-recorded physician and adolescent encounters. The transcripts were coded to determine Motivational Interviewing techniques. Researchers found that when physicians in a primary care setting utilized Motivational Interviewing, adolescents increased exercise, lost weight, and reduced amount of screen time (television, video, and computer). The authors did not describe any gender or ethnicity differences in outcomes.

Flattum et al. (2009) used Motivational Interviewing as a component of an obesity program for adolescent girls. This program was conducted in a school setting and used as a prevention program for obesity. However, this was a pilot study and detailed pre-test and post-test data were not collected. Motivational Interviewing was conducted via face-to-face sessions and through telephone calls. Participants reported that face-to-face Motivational Interviewing sessions were preferred over telephone calls.
In summary, there appears to only be preliminary research on the use of Motivational Interviewing in the treatment of obesity for children and adolescents. The previously cited studies do not address the effects of face-to-face Motivational Interviewing sessions with minority adolescents as an obesity intervention. The only minority-participant study found utilized only Motivational Interviewing telephone calls. Flattum et al. (2009) reported that adolescents prefer face-to-face sessions of Motivational Interviewing over telephone sessions. Furthermore, obese minority adolescents may be less willing to change their behavior (in terms of weight management changes) due to differing cultural values and beliefs such as being more accepting of larger body type than white adolescents (Yanover & Thompson, 2010). However, there is research to suggest that many minority adolescents are dissatisfied with their bodies. Thus, the use of a technique, such as Motivational Interviewing, that has been shown to promote behavior change through enhanced motivation and greater readiness to change, may be particularly helpful for minority, as well as for majority participants.

The Present Study

The purpose of the present study was to examine the effects of Motivational Interviewing preceding an obesity intervention with both minority and majority children and adolescents. More specifically, participants were given a Motivational Interviewing intervention during their initial visit to a weight-management clinic. A multi-method approach in which a combination of questionnaires, surveys, observations, and interviews were administered was used.
Hypothoses

Hypothesis One. Children and adolescents who participate in the Motivational Interviewing intervention will show greater readiness to change weight-related behaviors as seen by the Readiness Ruler.

Hypothesis Two. After receiving the intervention, participants will show healthy behavior changes such as increase in physical activity levels and healthy eating patterns as reported by parents/guardians.
Chapter 3

Method

Motivational Interview Training

To obtain training in Motivational Interviewing, the researcher and research assistant attended a sixteen hour/two-day Motivational Interviewing training workshop in Indianapolis, Indiana conducted by a clinician who is a member of MINT (Motivational Interviewing Network of Trainers). The workshop included training on the principles of motivational interviewing. The researcher and research assistant learned to assess their own skills and to give feedback to others using Motivational Interviewing strategies. The researchers also learned when Motivational Interviewing is appropriate and how to integrate it into their existing therapeutic techniques.

Setting

The research was conducted at the University of Toledo Health Science Campus in the pediatrics clinic. The clinic functions as a primary care clinic for children and adolescents in the community. The clinic accepts both Medicaid and commercial insurance. Seventy percent of patients have Medicaid as their insurance provider. The pediatric clinic includes physicians, nurses, nurse practitioner, residents from the medical school, and support staff.

LEAP Clinic. The LEAP clinic is a specialty clinic within The University of Toledo Department of Pediatrics. Its goals are to help children and adolescents achieve and maintain an optimal weight through lifestyle changes, dietary adjustments, and physical activity.
The LEAP Clinic staff includes a physician and a pediatric nurse practitioner, pediatric nurse, nutritionist, and a personal trainer. Referrals come from a variety of sources: from within the pediatric clinic, additional UT departments/clinics (e.g. endocrinology, asthma, cardiology, etc.), outside physicians, and from parents of clients. Typically, the criterion for acceptance into the clinic is overweight or obese status. However, there is not a specific cut-off point for weight or BMI for acceptance to the LEAP Clinic.

The LEAP Clinic opened in January 2010. The clinic is a weekly program that includes an initial health assessment, eight weekly classes in nutrition and fitness, follow-up health check, and the opportunity to continue sessions after the eight weeks. The intake process is as follows. The legal guardian calls to schedule an initial health assessment appointment. Upon arriving at the scheduled time, the family checks in at the front receptionist desk of the Pediatrics Clinic. The nurse shows the family to an examination room to wait until a physician or nurse practitioner is ready to see the family for their initial health assessment.

The initial health assessment includes a comprehensive medical exam (complete physical), discussion of history of present condition, such as weight at birth, major illnesses, when the patient/parent began noticing weight gain, any ideas why the child began to gain weight, ideas on the general cause of problem, history of participation in weight management programs, dietary history, amount of current exercise, current amount of television/computer time, and types of activities the child enjoys. Initial assessments are conducted by either a physician or nurse practitioner.
After the intake procedures have been completed, the client and any family members present are invited to tour the Morse Center YMCA which is located within the University of Toledo Health Science Campus. The YMCA facility is equipped with workout equipment, such as free weights and weight machines, cardio equipment (e.g. treadmills, elliptical, bicycle), inside track, racquet ball courts, and exercise rooms.

While participating in the LEAP activities, participants arrive at the clinic, check-in with the LEAP Clinic nurse, and participate in one hour sessions that include nutrition education and exercise sessions. Participants receive gym bags with exercise devices (e.g. pedometer, stretch bands). Sessions are set up in a “rolling” fashion, such that each participant has an individual start date and joins a group already in session. Participants have an opportunity to enroll for an additional eight week program if interested.

**Recruitment**

Participants were recruited during regularly scheduled clinics from March 2010 to December 2010. A total of 15 clinic sessions were attended by the principal researcher. In addition, 8 sessions were attended by the other trained clinical psychology doctoral student. The researcher and/or research assistant spent approximately two to three hours each session at the LEAP Clinic.

**Participants**

There were two phases to data collection that involved different subsets of participants. In Phase One, interview and questionnaire data were collected from child participants in a specialized pediatric clinic following a brief intervention. In Phase Two, which occurred after the LEAP clinic, parents of four participants were interviewed by
telephone in order to assess actual behavioral changes after the Motivational Interviewing intervention and satisfaction with the LEAP Clinic.

Table 1

Demographic Information

<table>
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<tr>
<th>Participant #</th>
<th>Age</th>
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<td>African American</td>
</tr>
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<tr>
<td>16</td>
<td>_</td>
<td>Female</td>
<td>Bi-racial</td>
</tr>
</tbody>
</table>

*Note.* Age information was not available for Participant 016.

Participants in Phase One included 16 children and adolescents ranging in age from 6 to 17 years of age, with the average child being 11.4 years old ($SD = 3.19$). The present study collected data from both male and female participants; 62.5% ($n = 10$) of the sample were female and 37.5% of the sample were male ($n = 6$). The majority of
the sample, (68.8%) were African American; 18.8% European American, 6.2% Hispanic, and 6.2% considered themselves Biracial, as shown in Table 1. According to LEAP Clinic staff, Medicaid is the primary insurance provider for participants in the LEAP Clinic, suggesting that lower socioeconomic status is typical.

Participants in Phase 2 included interviewing parents of five participants who were contacted for phone interviews. The clinic cases were chosen using the maximum variation sampling method (Miles & Huberman, 1994). Maximum variation sample is a type of purposeful sampling that involves purposefully picking a wide range of variation in clients on outcome variables. The following interviewees were purposefully chosen: a male youth with increased motivation to change and increased physical activity outcome scores (child 06), two brothers with no change in motivation (child 09 and 010), a female youth with no change in motivation, elevated depression scores, and decreased physical activity outcome scores (child 07), and a female youth with increased motivation to change and no change in physical activity scores (child 014). All interviews were completed by the primary researcher via telephone.

Child 06 is a 13-year-old African American male with a family history of high blood pressure and diabetes. The parent of Child 06 was told her son was borderline diabetic, thus his mother enrolled him into the LEAP program. Parents of child 06 both have problems with high blood pressure and his grandmother has diabetes.

Child 07 is a 9-year-old African American female who recently experienced the loss of her mother due to a medical condition. Child 07 resides with her maternal grandmother, although, there were custody battles between the grandmother and her father which continue to remain unresolved. Reportedly, child 07 has put on a significant
amount of weight since the death of her mother, although, child 07 was overweight prior to her mother’s death. Child 07’s father and grandmother both have Type 2 diabetes. Child 07 also has high blood pressure and her mother had gestational diabetes and high blood pressure. Child 09 and Child 010 are brothers brought to the LEAP Clinic by their mother.

Child 09 is a 17-year-old African American male; child 010 is a 15-year-old African American male. Parent of children 09 and 010 reported that her sons “did well going together,” such that they helped motivate each other and helped each other learn about healthy habits. The parent of children 09 and 010 stated that her sons did not compete against one another, rather they helped each other. Children 09 and 010’s father is diabetic and overweight. They also have a maternal grandmother with high blood pressure and diabetes.

Child 014 is an 11-year-old African American female who, in contrast to Child 07, did not endorse any depressive symptomatology on the depression screener items. Child 07’s father has diabetes, high blood pressure, and also struggles with his weight, such that his weight classifies him in the obese range.

**Measures**

In Phase One, prior to Motivational Interviewing, participants completed questionnaires to gather demographic information; to briefly assess symptoms of depression; to evaluate self-perception of attractiveness; to evaluate their level of physical activity; and to assess pre-intervention readiness for change. After the Motivational Interviewing, participants completed questionnaires to assess post-intervention readiness to change and to determine the impact of motivational
interviewing. In Phase Two, parents of five participants were interviewed via phone to determine parent and child satisfaction of the clinic, intervention acceptability, and child/family changes following attendance at the clinic.

**Depressive Symptoms.** Because of the association between obesity and depression in children (Mustillo et al., 2003) a screen for depressive symptomatology was utilized to gauge depressive symptoms in participants. The questionnaire included two questions about depressed mood: “During the past month have you often been bothered by feeling down, depressed, or hopeless?” and, “During the past month have you often been bothered by little interest or pleasure in doing things?” These questions have been shown to have good sensitivity and reasonable specificity for screening depression when asked in primary care evaluations (Arroll, Khin, & Kerse, 2003).

**Perception of Attractiveness.** Research has demonstrated that African American girls may be more tolerant of heavier body types, such that white girls may have a different ideal body type than black girls (Neumark-Sztainer et al., 2002). White girls may strive for an “extreme leanness,” while black girls may not view this as desirable. To assess for possible cultural differences in perception of attractiveness regarding weight, participants answered the question “Are men attracted to women who have a few extra pounds?” Participants indicated the degree to which they thought men were attracted to women with a few extra pounds by choosing from five possible responses on a Likert-type scale (not at all, a little bit, somewhat, likely, very likely).

**Readiness to Change.** To gauge participants’ readiness to change weight-related behavior participants were given a Readiness Ruler (Miller and Rollnick, 2002; see Appendix #). Participants were asked, “How willing are you to change your weight-
related behavior?” and told to indicate their willingness to change on the Ruler. The Ruler includes numbers from 0 to 10, with 0 indicating lowest motivation to change weight-related behavior and 10 indicating the highest motivation. Participants responded to the ruler before and after the Motivational Interviewing intervention.

**Physical Activity Levels.** Participants were asked to give a baseline indication of their current physical activity during the initial clinic visit. Participants were also asked to provide information about their physical activity levels during each successive LEAP clinic session they attended. Information was obtained in terms of the number of minutes per day and the number of days per week participants engaged in physical activity.

**Self-Perceived Impact of Motivational Interviewing.** To gauge the impact of the motivational interviewing intervention, immediately after the intervention participants rated the following statements: “I felt listened to,” “I plan to be more active,” and “I felt judged” on a five point Likert scale (not at all, a little bit, somewhat, much of the time, all of the time).

**Satisfaction with the Clinic and Social Validity.** To determine the child’s and parent’s perceived treatment efficacy and their satisfaction with participation in the LEAP clinic, parents of selected participants were interviewed by telephone. Particular emphasis was placed on questions indicating social validity. Social validity is the social meaningfulness, or importance, of a child’s behavior change (Wolf, 1978). The social validity measure was used to gauge parental satisfaction with the Motivational Interviewing intervention/LEAP Clinic procedures and overall program. The questions also targeted parental perception of their child’s improvement (or lack thereof) in weight-related behaviors. Parents of five participants were interviewed by telephone to assess for
child satisfaction with the clinic and child/family changes following attendance at the clinic.

**Procedure**

Motivational Interviewing (MI) was conducted by the researcher and/or a research assistant who was another trained clinical psychology doctoral student. The Motivational Interviewing intervention occurred during the initial appointment day just before the health assessment. The researcher met with the family in the exam room. Participants were informed that this research was investigating weight-related thoughts and behaviors. All parents/legal guardians gave informed consent. Children/adolescents gave assent. The researcher then collected background information (described above).

**Motivational Interviewing.** This portion of the intervention was audio-taped to allow for transcription and analysis of responses (Appendix A). Due to audio equipment problems, transcriptions for child 04, 06, 011, 014, 015, and 016 could not be made. The Readiness Ruler was given prior to the Motivational Interviewing intervention to gauge pre-test readiness to change weight-related behaviors. During the Motivational Interviewing the researcher asked the participant to tell why he/she was here today (“Tell me about why you came to the clinic.”), and the participant’s goals (“What are your goals?”). The researcher also asked what the pros and cons were of changing one’s behavior. The researcher then summarized what the participant stated via reflective listening (“Let me summarize what you told me so far… It sounds like…”). The researcher then asked about the participant’s next step in the change process (“I’m wondering what you would like to do next.”). The Readiness Ruler was given to gauge post-intervention motivation. To further gauge the impact of the Motivational
Interviewing intervention the researcher then had the participant answer three qualitative questions. Finally, the researcher asked if the family had additional questions, thanked the family, and informed them that the physician would be in shortly to complete the health assessment.

**Follow-up data.** For some participants, additional outcome data was collected during the weekly sessions. Upon arriving to the YMCA facility, participants were asked how many minutes a day and how many days a week they engaged in physical activity.
Chapter 4

Results

Impact of Motivational Interviewing

To examine the effects of motivational interviewing, reliable change (Jacobson and Traux, 1991) was calculated for each participant. Reliable change allows researchers to observe whether participants changed to a degree that the change is unlikely due to simple measurement unreliability. Participant Readiness Ruler scores pre and post test were used in the following formula. To calculate the standard error of the difference of two measurements, the formula for SEM was utilized with the present study’s pre-test Readiness Ruler SD and pre-post correlations for s and $r_{xx}$ respectively.

Reliable Change Index (in SE$_{meas}$ units):

$$\text{RCI} = \frac{(x_{post} - x_{pre})}{\text{SEM}_D}$$

where: $x_{post}$ = a participant’s post-test score

$x_{pre}$ = a participant’s pre-test score

$\text{SEM}_D$ = Standard error of the difference of two measurements (assumes equal standard errors)

$$\text{SEM}_D = s\sqrt{2(1-r_{xx})}$$

Participants with a reliable change index greater than 2 points are considered to have made reliable change, using a .05 level of significance. Reliable change scores for each participants’ Readiness Ruler scores can be found in Table 2. Five participants showed reliable change from pre- to post- Motivational Interviewing intervention. Children 05, 06, 014, and 016 showed greater readiness to change, while child 01 showed a decrease.
in her readiness to change weight-related behavior. The remaining participants did not have reliable change from pre- to post- test.

Table 2

*Reliable Change Index for Participants' Pre/Post Ruler Scores*

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<td></td>
<td>04</td>
<td>16</td>
<td>9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>016</td>
<td>-</td>
<td>7</td>
<td>9</td>
<td>*2.53</td>
</tr>
</tbody>
</table>

*Note.* * indicates participant showed reliable change

The researcher also considered calculating clinically significant change. Clinically significant change allows researchers to observe if the change (i.e. due to an intervention) has taken the participant from a score typical of a problematic, dysfunctional patient to a score typical of the “normal” population. However, no standardized cut-off point (of a
“normal” score) was found in the literature for the clinical population of obese children using the Readiness Ruler. Thus, clinically significant change could not be calculated.

**Perception of Motivational interviewing.** To gauge the participants’ perception of the motivational interviewing intervention, the researcher asked participants to rate, on a Likert-type scale, the following statements: “I felt listened to” and “I felt judged.” Most participants reported feeling listened to “all of the time” (75%), with 12.5% reporting “a little bit,” 6.3% reporting “somewhat,” and 6.3% reporting “much of the time.” The majority of participants felt listened to and did not feel judged during the Motivational Interviewing intervention. See Table 3 for responses by gender.

Table 3

| “I Felt Listened to” Responses by Gender |
|-----------------|-----------------|
| Response        | Male | Female |
| Not at all      | -    | -      |
| A little bit    | -    | 2      |
| Somewhat        | -    | 1      |
| Much of the time| -    | 1      |
| All of the time | 6    | 6      |

Regarding feeling judged, most participants reported feeling judged “not at all” (86.67%), with 6.7% reporting “a little bit,” and 6.7% reporting “much of the time.” See Table 4 for responses by gender.
Table 4

“**I Felt Judged**” Responses by Gender

<table>
<thead>
<tr>
<th>Response</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>A little bit</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Somewhat</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Much of the time</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>All of the time</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note.* Information from one male participant is missing.

To gauge the impact of Motivational Interviewing on participants, the researcher asked participants to rate, on a Likert-type scale, the following statement: “I plan to be more active.” The majority of participants reported planning to be more active “all of the time” (81.3%); 6.3% reported “much of the time,” 6.3% reported “somewhat,” and 6.3% reported “not at all.” See Table 5 for responses by gender.

Table 5

“**I Plan to be More Active**” Responses by Gender

<table>
<thead>
<tr>
<th>Response</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>A little bit</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Somewhat</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Much of the time</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>All of the time</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
Change in Physical Activity

To evaluate participants’ level of physical activity during the attendance at the clinic the researcher gathered data on the number of minutes of physical activity per day and how many days a week participants engaged in physical activity. The average amount of baseline physical activity (first session) was 83.12 (SD = 99.39) minutes for 3.91 (SD = 2.11) days of the week (N = 16). The average amount of physical activity during the second session was 80.12 (SD = 54.93) minutes for 4.50 (SD = 2.16) days of the week (N = 16). The average amount of physical activity during the third session was 86.36 (SD = 57.31) minutes for 5.36 (SD = 1.57) days of the week (N = 10). The average amount of physical activity during the fourth session was 46.67 (SD = 15.28) minutes for 4.00 (SD = 1.73) days of the week (N = 3). Refer to Table 6 for information on each individual participant. No significant difference was found between sessions regarding physical activity levels (p > .05).

Perception of Attractiveness

To assess participants’ perception of attractiveness, participants were asked “Are men attracted to women who have a few extra pounds?” “Not at all” was endorsed by 1 African American female. “A little bit” was endorsed by 3 African American females, 1 European American male, and 2 African American males. “Somewhat” was endorsed by 1 African American female and 1 Biracial (African American and European American) female. “Likely” was endorsed by 1 African American female and “Very Likely” was endorsed by 2 African American females, 1 Hispanic female, and 1 African American male.
Table 6

*Physical Activity Levels by Gender*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Participants</th>
<th>Session 1 Minutes</th>
<th>Session 2 Days</th>
<th>Session 3 Minutes</th>
<th>Session 4 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>02</td>
<td>45</td>
<td>1.5</td>
<td>60</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120</td>
<td>4</td>
<td>130</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300</td>
<td>7</td>
<td>180</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120</td>
<td>5</td>
<td>180</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>360</td>
<td>7</td>
<td>180</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>160</td>
<td>4.25</td>
<td>128.67</td>
<td>5.50</td>
</tr>
<tr>
<td>Female</td>
<td>01</td>
<td>30</td>
<td>4</td>
<td>60</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90</td>
<td>3</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>6</td>
<td>60</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45</td>
<td>2</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td>2</td>
<td>10</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>7</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>3</td>
<td>40</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>7</td>
<td>60</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>2</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30</td>
<td>2</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>39.30</td>
<td>3.8</td>
<td>47</td>
<td>4</td>
</tr>
</tbody>
</table>


Depressive Symptomatology

To screen for depressive symptoms, participants were asked two depression screener questions. Most participants responded “no” (76.9%) to the question “During the past month have you often been bothered by feeling down, depressed, or hopeless;” 23.1% responded “yes.” Responses are shown in Table 7.

Table 7

“During the Past Month Have You Often Been Bothered by Feeling, Down, Depressed, or Hopeless?” Response by Gender and Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>African American</td>
<td>-</td>
<td>09, 010</td>
</tr>
<tr>
<td>European American</td>
<td>011</td>
<td>02</td>
</tr>
<tr>
<td>Bi-racial</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. There are three missing participant responses.

On the second depression question, which was administered only to those who answered “yes” to question 1: “During the past month have you often been bothered by little interest or pleasure doing things,” 69.2% responded “no” and 30.8% responded “yes.” Most participants did not endorse depressive symptomatology on the depression screener (Table 8).
Table 8

“During the Past Month Have You often Been Bothered by Little Interest or Pleasure in doing Things?” Response by Gender and Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Male</th>
<th>Female</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>African American</td>
<td>-</td>
<td>09, 010</td>
<td>01, 012, 013</td>
<td>03, 07, 08, 014</td>
</tr>
<tr>
<td>European American</td>
<td>-</td>
<td>02, 011</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bi-racial</td>
<td>-</td>
<td>-</td>
<td>016</td>
<td>-</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>015</td>
</tr>
</tbody>
</table>

Note. There are three missing participant responses.

Maternal Physical Activity

Regarding the reported physical activity of mothers the results were split down the middle, 50% of participants reported their mothers engaged in some form of physical activity, and 50% of participants reported their mothers do not engage in physical activity. See Table 9 for participants’ responses.

Table 9

Maternal Physical Activity by Gender and Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>African American</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>European American</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bi-racial</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. There are three missing participant responses.
Response to Motivational Interviewing for Subset of Participants. Two out of the five participants (06, 014) had an increase in their readiness to change weight-related behavior, with readiness to change scores changing from a “5” to a “7” at post-test. Three of the five participants (07, 09, 010) had no change in their readiness to change weight-related behaviors score from pre-test to post-test. Participant #09 began at a score of 7.5 and reported the same score of “7.5” after the Motivational Interviewing intervention. Participant #10 had a pre-test score of “9” and a post-test score of “9;” and Participant #07 also did not change pre- and post-intervention, with a high score of “10” both pre- and post-test. There appears to be a “ceiling effect,” such that pre-test measures of readiness to change weight-related behavior (scale ranged from 0 -10) were high at baseline, before the Motivational Interviewing intervention. Three of the participants reported a pre-test score above a “7,” leaving little room for change from pre- to post-test. With a high pre-test score it is difficult to see changes from pre- to post-intervention, specifically Participant #07, as her pre-test score of “10” had no room for change in motivation.

Participants were asked to respond to three qualitative statements (“I felt listened to,” “I felt judged,” and “I plan to be more active”). 60% of participants (06, 09, and 010) of interviewed parents said they felt listened to “all of the time.” The remainder (07 and 014) said they felt listened to “a little bit.” The majority (80%) of the participants of interviewed parents (06, 09, 010, and 014) indicated not feeling judged at all. Of the five participants of interviewed parents, Child 07 had a significantly different feeling of being judged, such that Child 07 reported feeling judged “much of the time.” Child 07 had no change in motivation after the Motivational Interviewing and also had decrease in
physical activity levels after the intervention. The majority (80%) of the children (06, 07, 09, 010) of interviewed parents said they planned to be more active “all of the time.” Child 014 indicated she plans to be more active “much of the time.” The responses for the full set of 16 participants can be found in Table 10.

**LEAP Clinic Parent Interviews**

Four parent/guardians were interviewed after their child’s participation in the LEAP Clinic to obtain a more in-depth look at parental satisfaction with the intervention/program and to identify any changes in their child’s health behaviors. Social Validity questions and responses by participant can be found in Table 11.

Content analysis of the four interviews identified the following themes: Internal Changes, Lifestyle Changes, and Parental Involvement.

**Internal Changes.** Interviewed parents/guardians reported internal changes in their children after the Motivational Interviewing intervention and participation in the LEAP Clinic. It is difficult to solely assess the effects of the Motivational Interviewing intervention because it was only one aspect of the overall experience in the LEAP Clinic. However, changes made after the clinic can be indirectly related to the Motivational Interviewing component.
Table 10

Perception of Motivational Interviewing

<table>
<thead>
<tr>
<th>Participant #</th>
<th>Felt listened to</th>
<th>Felt judged</th>
<th>Plan to be more active</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>All of the time</td>
<td>Not at all</td>
<td>All of the time</td>
</tr>
<tr>
<td>02</td>
<td>All of the time</td>
<td>Not at all</td>
<td>All of the time</td>
</tr>
<tr>
<td>03</td>
<td>All of the time</td>
<td>Not at all</td>
<td>All of the time</td>
</tr>
<tr>
<td>04</td>
<td>Somewhat</td>
<td>Not at all</td>
<td>A little bit</td>
</tr>
<tr>
<td>05</td>
<td>All of the time</td>
<td>Not at all</td>
<td>All of the time</td>
</tr>
<tr>
<td>06</td>
<td>All of the time</td>
<td>Much of the time</td>
<td>All of the time</td>
</tr>
<tr>
<td>07</td>
<td>A little bit</td>
<td>Not at all</td>
<td>All of the time</td>
</tr>
<tr>
<td>08</td>
<td>Much of the time</td>
<td>A little bit</td>
<td>All of the time</td>
</tr>
<tr>
<td>09</td>
<td>All of the time</td>
<td>Not at all</td>
<td>All of the time</td>
</tr>
<tr>
<td>10</td>
<td>All of the time</td>
<td>Not at all</td>
<td>All of the time</td>
</tr>
<tr>
<td>11</td>
<td>All of the time</td>
<td>-</td>
<td>All of the time</td>
</tr>
<tr>
<td>12</td>
<td>All of the time</td>
<td>Not at all</td>
<td>Not at all</td>
</tr>
<tr>
<td>13</td>
<td>All of the time</td>
<td>Not at all</td>
<td>All of the time</td>
</tr>
<tr>
<td>14</td>
<td>A little bit</td>
<td>Not at all</td>
<td>Much of the time</td>
</tr>
<tr>
<td>15</td>
<td>All of the time</td>
<td>Not at all</td>
<td>All of the time</td>
</tr>
<tr>
<td>16</td>
<td>All of the time</td>
<td>Not at all</td>
<td>All of the time</td>
</tr>
</tbody>
</table>

Note. There is a missing response for Child 011.

Parental figures reported a change in their children’s awareness and understanding of healthy behaviors and eating habits. The parent of Child 06, who showed reliable change on the Readiness Ruler, was reported to have a stronger awareness of healthy food choices and a better understanding of portion control, such that Child 06 would make statements regarding what foods were “good” and what foods were “bad” for him. For example child 06 would verbalize while eating a salad at dinner, “We’re eating salad and that’s good for you.”
Table 11

Phase Two Social Validity Questions for Parents with Answers by Participant

<table>
<thead>
<tr>
<th>Social Validity Questions</th>
<th>Yes</th>
<th>Somewhat</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Was this an acceptable intervention for your child’s overweight/obesity problem?</td>
<td>014, 06, 09/010</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2. Was the intervention effective in changing your child’s problem?</td>
<td>06, 09/010</td>
<td>014</td>
<td>07</td>
</tr>
<tr>
<td>3. Would you suggest this clinic to other parents/children?</td>
<td>014, 06, 09/010</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4. Do you think your child’s obesity problem was severe enough to warrant use of this clinic intervention?</td>
<td>014, 06, 09/010</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5. Would you be willing to have your child participate in this clinic again?</td>
<td>014, 06, 09/010</td>
<td>07</td>
<td>-</td>
</tr>
<tr>
<td>6. Did you like the procedures used in the clinic intervention?</td>
<td>014, 06, 09/010</td>
<td>07</td>
<td>-</td>
</tr>
<tr>
<td>7. Did the intervention quickly improve your child’s attitude about living a healthy lifestyle?</td>
<td>014, 06, 09/010</td>
<td>-</td>
<td>07</td>
</tr>
<tr>
<td>8. Did the intervention produce a lasting improvement in your child (the child’s healthy behaviors remained improved after the intervention was discontinued)?</td>
<td>014, 06, 09/010</td>
<td>-</td>
<td>07</td>
</tr>
<tr>
<td>9. Did the intervention influence you (as a parent) to increase you exercise/healthy eating habits?</td>
<td>014, 06, 09/010</td>
<td>07</td>
<td>-</td>
</tr>
<tr>
<td>10. Did the intervention produce enough improvement in your child’s healthy lifestyles (exercising/healthy eating) so that his/her problem is not as severe as it was prior to the intervention?</td>
<td>06, 014, 09/010</td>
<td>07</td>
<td>-</td>
</tr>
<tr>
<td>11. Overall, was the intervention was beneficial for your child?</td>
<td>014, 06, 09/010</td>
<td>07</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. Four parents of participants completed Social Validity questions. Numbers identify individual participants.

In terms of portion control, Child 06 would verbally articulate to his mother that he will only eat one or two slices of pizza “because they said I can’t eat a lot.”
Child 014, who showed reliable change on the Readiness Ruler, was reportedly more aware of healthy habits, such that she was heard discussing with her friends and cousins the importance of eating healthy. Her parent reported that Child 014 struggled with significantly changing her eating habits, but nonetheless, was able to verbalize awareness and understanding of healthy choices. Child 014 would discuss how carbohydrates convert into sugar which can be converted to fat. The parent of Children 09, who did not show reliable change on the Readiness Ruler, and 010, who also did not show reliable change on the Readiness Ruler, reported an increased awareness in her children’s awareness of portion control, such that they had greater consciousness of how much they ate at one time. Child 07, who did not show reliable change on the Readiness Ruler, did not demonstrate evidence of an awareness and/or understanding of healthy behavior choices. The parental figure of Child 07 stated that Child 07 had a difficult time with generalizing what she learned in session to at-home behaviors. Child 07 continued to eat poorly and would often sneak food. The parental figure of Child 07 reported that her granddaughter really enjoyed coming to the clinic, but just had difficulty making changes outside of session. Overall, four out of the 5 participants were reported to demonstrate some awareness and understanding of changing their weight-related behavior, whether through verbally articulating food choices or through actual behavior change.

Parental figures also reported a difference in their children’s self-esteem or mood after attending the clinic. The parent of Child 014 reported that her daughter was often teased and bullied at school due to her weight. This parent stated that Child 014 is shy and will often “shut-down” when she is being teased or bullied at school. After participation in the intervention and LEAP Clinic, her parent reported that Child 014
showed an improvement in her mood and seemed happier after each LEAP Clinic session. The parent of Child 06 also reported that her son was teased at school, but he often did not want to talk about these incidents. She stated that her son was very much aware of being overweight and had a strong desire to be thin. After attending the clinic, this parent reported that his self-esteem increased and that he felt better about his body. For example, Child 06 was excited to show his mother his slimmer waist, stating, “Mom look at my stomach!” The parent of Children 09 and 010 also shared a similar story of increased self-esteem for both her children after participating in the LEAP Clinic.

However, the parental figure of Child 07 reported that her granddaughter, who had no change in the Readiness Ruler and physical activity levels during sessions decreased, continued to have low self-esteem and depression after attending the LEAP Clinic. This child had recently experienced the loss of her mother, continues to struggle with depressive symptoms, and is currently receiving therapy services. Of the five participants of interviewed parents, Child 07 was the only participant to report depressive symptoms in a direct interview, responding “yes” to the following question: “During the past month have you often been bothered by feeling down, depressed, or hopeless?”

**Lifestyle Changes.** After analyzing the four interviews from parental figures, another significant theme surfaced. It is apparent that most participants made noteworthy changes in their lifestyle after participating in the Motivational Interviewing component/LEAP Clinic. Parental figures reported an increase in physical activity levels during the clinic and after participation of the clinic. The parent of Child 09 reported that he increased the amount of basketball playtime. Additionally, his brother, Child 010 increased his amount of swimming. The parent of Child 06 also reported that her son
enjoyed swimming, but did not swim much prior to attending the clinic. However, during the clinic Child 06 “got back into swimming.” Additionally, one participant also now asks her mother to participate in physical activity with her: the parent of Child 014 reported that her daughter will now ask her to go for a walk with her.

Most parental figures of participants reported that their children continued to be physically active after participating in the LEAP Clinic. For example, the parent of Children 09 and 010 reported that her sons continue to be very active, such that both brothers continue to play basketball, swim, and weight train. Her parent reported that Child 014 also continues to engage in physical activity, such that she is enrolled in dance classes (ballet). The parent of Child 06 reported that her son continues to take karate lessons and play basketball. The parent of Child 07 reported no continuation or increase in physical activity levels at home. This is further evidence that Child 07 did not generalize what she learned in sessions to her lifestyle at home.

Most parental figures also reported a change in their children’s eating habits. The parent of Child 06 excitedly reported that her son “actually asked for oatmeal at McDonald’s.” She was so excited because she did not expect her son to even try a food like oatmeal and also because he could have asked for other menu items, but chose a healthy option. The parent of Child 014 also stated that when her daughter orders from McDonald’s, she no longer orders fries with her meal. Additionally stating, Child 014 often chooses milk over soda at McDonald’s. The parent of Children 09 and 010 reported that her sons are now accepting of healthier foods, such that when she buys granola bars, they actually eat them and do not complain. She stated that, prior to attending the clinic, they would have rejected this healthy option. These children have also stopped drinking
soda and currently drink only juice, water, and milk. The parental figure of Child 07 reported no change in her eating habits after the clinic; she continues to sneak food and, at the time of the interview, had actually gained about 28 pounds since the start of the clinic.

**Parental Involvement.** The importance of parental involvement emerged as a significant theme among the interviewed parental figures. The majority of parental figures attended clinic sessions with their children. For example, the parent of Child 06, who had consistent levels of physical activity during participation in the clinic, attended LEAP Clinic sessions with her child. She stayed with her child during sessions and often observed him while he was participating in the clinic classes. The parent of Children 09, who had consistent physical activity levels after the first session, and 010, who had an increase in physical activity levels after the first session, attended sessions with her children and also stayed to watch her sons participate in the program. The parent of Child 014, who had consistent physical activity levels across sessions, attended sessions with her child and reported that her father attended a couple of sessions. The parent of Child 014 stated that she really enjoyed when her father was also able to observe a session. In contrast, Child 07 had a decrease in physical activity levels across sessions and did not have a parental figure attend sessions with her. Her parental figure reported “dropping off” Child 07 to sessions and picking her up at the end of sessions.

The majority of parents interviewed appeared to play an active role in their children’s weight-related behaviors. The parent of Child 06 reported that she talked to her son regarding his thoughts about the LEAP Clinic and would reinforce and support his engagement in physical activity. For example, she reported that her child used devices
received from the LEAP Clinic, such as stretch bands and dumbbells, at home. This parent gave positive attention to her child’s interest in the exercise devices. Furthermore, she reported that every time her child actually utilized the exercise devices she would praise him for choosing to exercise. The parent of Child 014 reported that she often reminds and prompts her daughter to change her eating habits. For example, when the Child 014 makes unhealthy food choices (e.g. sweets, chips, soda) her parent will remind her daughter to make a healthy choice. She reported that although her daughter will argue with her, she complies and does not choose an unhealthy snack. Parent 014 reported that prior to the clinic, Child 014 did not care what her mother was saying regarding healthy food choices, but now she will comply with her mother’s prompting. The parent of Children 09 and 010 (who both made lifestyle changes in regard to healthy eating habits and increased physical activity levels) reported no longer buying frozen foods/meals for the family since attending the LEAP Clinic. Instead, she now buys healthier snack items. As previously noted, her children have been eating these healthy snacks with no complaints. The parental figure of Child 07 did not report any healthy changes in Child 07’s lifestyle. Additionally, she reported that her child will often eat when she is upset. She reported that she encourages her child to make healthy food choices at home, but the child will often sneak unhealthy foods.

Two of the four parents reportedly engaged in some form of physical activity prior to attending the clinic. Children 06 and 014 reported that their mothers took walks for physical activity. Additionally Child 014 reported that her mother also jogged. Children 09, 010, and 07 reported that their mothers did not engage in any form of physical activity. This is consistent with reports from the full database of the 16
participants in present study, in that 50% of mother’s engaged in some form of physical activity prior to the LEAP Clinic and 50% did not. Most of the interviewed parental figures reported that attending the LEAP clinic has prompted them to increase their own physical activity levels and healthy eating habits. Parental figures of Children 06, 09, 010, and 014 indicated “yes” to the question “Did the intervention influence you (as a parent) to increase your exercise/healthy eating habits? The parental figure of Child 07 reported “somewhat.” Following a similar trend, three out of the four parental figures said that the intervention was definitively beneficial for their child. The parental figure of Child 07 said that the intervention was “somewhat” beneficial for her grandchild.
Chapter 5

Discussion

It was hypothesized that, after receiving the Motivational Interviewing intervention, children and adolescents will show a greater readiness to change weight-related behaviors as demonstrated by their report on the Readiness Ruler. Four out of the sixteen participants reliably increased their level of motivation to change weight-related behaviors as measured by the Readiness Ruler following the Motivational Interviewing intervention. It was also hypothesized that, after receiving the Motivational Interviewing intervention, participants would show healthy behavior changes such as an increase in physical activity and healthy eating styles. Based on interviews conducted with four parents of participants regarding changes noticed in the children after attending the clinic, the majority of children showed an increase in physical activity levels and improved eating habits after attending the LEAP Clinic.

Motivational Interviewing

As mentioned above, four out of sixteen participants showed improved readiness to change weight-related behavior after a Motivational Interviewing intervention. These four participants showed reliable change from the pre- to post-test measurement. Several participants reported no change in their readiness to change weight-related behavior, but also indicated a high level of readiness to change prior to the Motivational Interviewing intervention. It is possible that a ceiling effect occurred, because a high pre-score on the Readiness Ruler does not allow for much change from pre- to post-test. In fact, some participants rated such a high level of readiness to change prior to the intervention (maximum score on the Readiness Ruler), that there was no room to change. There is
also the possibility of influence from social desirability and situational demand characteristics, such that participants may have wanted to present themselves in a positive light and/or please their parents and other authority figures at the beginning of the program. Children may have initially indicated a higher level of readiness than they actually felt in the moment.

Another possible explanation for the relatively low number of participants who showed increased readiness to change is that the motivational interviewing intervention was approximately 5 to 10 minutes long and occurred in only one session. Longer sessions may be more effective in eliciting “change talk,” such that an individual is able to change their beliefs and then demonstrate their desire to change a maladaptive behavior (Miller & Rollnick, 2002). Additionally, adding sessions would allow for motivation prompts throughout the obesity treatment. Increasing the length and frequency of the intervention may be more effective in encouraging measurable behavior change.

The Readiness Ruler was utilized to gauge variation in participants’ motivation to change weight-related behaviors. This ruler may either be too abstract for adolescents, as participants were asked to choose a number from 0 to 10 regarding how ready they were to change their weight-related behaviors, or lack sensitivity to reflect subtle change. A variety of readiness to change measures should also be included in future research to ensure an accurate gauge of a child’s motivation before and after a Motivational Interview intervention.

With the current design, it is not possible to separate the effects of the Motivational Interview intervention and the LEAP Clinic on participants’ reported longer term change in physical activity and healthy eating habits. In future research, a control
group of participants who did not receive the Motivational Interviewing would be helpful in isolating the effects of the intervention. However, the small pool of potential participants in this new clinic made that design not feasible.

**Content Analysis**

As stated above, the researcher applied social validity principles and collected additional qualitative data from a subset of parents to examine behavioral changes after the child’s Motivational Interviewing and participation in the LEAP Clinic. By focusing on a purposefully-chosen subset of participants (male with change on the Readiness Ruler, female with change on the Readiness Ruler, two males with no change on the Readiness Ruler, and a female with no change on the Readiness Ruler) the researcher was able to obtain a more detailed perspective on parental perception of the impact of participation in the LEAP Clinic using Social Validity principles to develop a structured interview. Some themes emerged after a content analysis of parental interviews. These themes include internal Changes, Life-style Changes, and Parental Involvement.

**Social Validity.** To examine parents’ perception of the effects of the LEAP Clinic obesity program, social validity was utilized. Social validity is the social meaningfulness, or importance, of a child’s behavior change (Wolf, 1978). The social validity measure is a structured interview used to gauge parental satisfaction of the intervention/LEAP Clinic procedures and overall program. Furthermore, the questions also targeted parental perception of their child’s improvement (or lack thereof) in weight-related behaviors. Results of the social validity measure-based structured interview suggested that the majority of interviewed parents approved of the procedures used in the intervention/clinic, would be willing to have their child participate in the program again,
and would recommend the LEAP Clinic to other parents. Additionally, parents indicated that the intervention produced both short-term and long-term changes in their child’s healthy behaviors, such that their children quickly improved while regularly attending the clinic and continued to improve following termination of their participation in the obesity program. Furthermore, parents said that the clinic influenced them as parents to increase their physical activity and healthy eating habits. The parental figure of Child 07 is the exception to this general satisfaction with the clinic. She reported that the clinic did not seem to help her granddaughter improve her weight-related behaviors. The parental figure of Child 07 reported that her granddaughter had problems generalizing what she learned in the clinic to everyday life. Child 07 appeared to be struggling with the recent death of her mother and adjusting to living with her grandmother. These extenuating factors may play a role in Child 07’s lack of improvement in weight-related behaviors.

The social validity questionnaire was a way to gain additional information. However, the reports should be interpreted with some caution due to the possible influence of social desirability pressures. When responding to the researcher, parents could have responded to the interview questions in a way they believed the researcher would like them to respond or in way that they believe was most desirable to the researcher. However, at least one parental figure felt comfortable stating a less positive view of clinic outcome.

**Parent Perspective on Child Motivation.** All of the parents interviewed reported that the intervention/clinic was an acceptable intervention for their child’s/children’s obesity problem. Two parents indicated that the intervention was definitely effective in changing their child’s/children’s problem (physical activity/diet). One parent reported that the intervention was “somewhat” effective and one parent said the intervention was
not successful. When asked specifically if their children showed a change in motivation from the beginning to the end of the program, parents’ responses differed considerably. One parent reported being unsure if her daughter changed in motivation; another parent stated she did not believe the program was long enough to change her son’s motivation. The parent of two brothers in the program said that the intervention/LEAP Clinic motivated both of her sons and that they are still motivated and active at the time of the interview. The grandmother of one child stated that her granddaughter was not motivated to do anything outside of the LEAP clinic sessions. There does not seem to be a general consensus among parents regarding whether or not participants had a change in motivation from the beginning to the end of the clinic; motivation levels appear to vary within the subset of participants. Furthermore, it appears that some parents were unsure of their children’s motivation change. Parents may also struggle in gauging their child’s motivation level. Motivation is an abstract concept that may be difficult to concretely measure or articulate (Miller & Johnson, 2008).

**Parent Perspective on Child’s Internal Changes.** Most parents reported that the intervention quickly improved their child’s attitudes about healthy living, with only one (parental figure of Child 07) reporting the intervention did not improve her granddaughter’s attitude. Additionally, most parents stated that their children showed increased awareness and understanding of what is means to have a healthy diet (e.g. understanding portion control). Parents also reported an increase in self-esteem and mood following the LEAP Clinic program. This is an interesting finding because research suggests that obese children typically demonstrate lower levels of self-esteem (Zeller & Modi, 2006). In terms of psychosocial functioning, obese youth show more maladaptive
functioning and significantly more negative behaviors than normal weight youth (Miller et al., 2006). It seems likely that children who are able to effectively participate in an obesity treatment may start to feel better about themselves. In the present study, some parents reported that their children began to notice a decrease in their waistline measurement and/or lost pounds. The observation of such actual physical changes may encourage self-efficacy regarding the potential for weight loss and may instill hope in the child that they can change their obesity status.

**Parent Perspective on Child’s Lifestyle Changes.** Most of the parents interviewed said that the intervention produced enough improvement in their child’s/children’s lifestyle that his/her obesity was not as severe as it was prior to the intervention. One parent (Child 07) reported that the intervention did not produce enough improvement in her child’s healthy lifestyle. The LEAP Clinic emphasized increasing physical activity and healthy eating, such that weekly clinic sessions included a class with the nutritionist and an exercise class with a personal trainer. Children were also given a bag with exercise devices/equipment (i.e. stretch bands, pedometer, dumbbells). Parents commented on their children continuing to use the exercise devices/equipment while attending the clinic and after participation of the clinic. Previous research indicates that the combination of diet and exercise is helpful in improvements in BMI and greater weight loss (Epstein and Goldfield, 1999). This limited data supports past research, such that the LEAP Clinic components of nutrition and exercise appear to be useful in an obesity treatment program.
Importance of Parental Involvement. Parent support and encouragement seemed to be a major contributor to the increase in healthy eating and exercise. It appears that parents of children who made positive changes often prompted and reinforced good eating habits. The LEAP Clinic allowed parents to attend sessions and observe their children participating in the program. LEAP staff often spoke with parents during the sessions and may have reinforced parental involvement by allowing and engaging the parents. Furthermore, parents were required to be with their children during the initial appointment and the child and parental figures were given a tour of the clinic during that same appointment day. Thus, the LEAP Clinic may have indirectly encouraged parental involvement. Parental involvement appears helpful in identifying who is likely to do well in an obesity intervention (Heinberg et al., 2010; Golley, Hendrie, and Corsini, 2011).

Several parents reported reminding their children to choose healthy snacks and reinforcing positive physical activity levels by engaging in activities with their child and/or praising their children for exercising. Parents also supported their children’s obesity treatment by attending and observing LEAP Clinic sessions, showing interest in their children’s weight-related behaviors, and also by providing healthy food options in the home. Again, recent research suggests that parents may play a significant role in obesity treatments (Heinberg et al., 2010).

The Exception: Child 07. Child 07 did not appear to show the same positive trends as the other children whose parents were interviewed, such that she did not show positive changes in healthy eating or physical activity levels. There are several possible explanations for this difference. For example, Child 07 said she felt judged “much of the time.” Thus, the Motivational Interviewing intervention may have lacked effectiveness.
for her. In addition, Child 07 did not have a parental figure who was able to attend
sessions with her. As noted above, parental involvement in obesity treatment appears to
be a significant influence on the effectiveness of the treatment. Perhaps most important,
on the depression screener, Child 07 was the only child to endorse depressive
symptomatology. She had recently experienced the loss of her mother, was in the middle
of a custody battle between her grandmother and her step-father, and was adjusting to
living with her grandmother. Child 07 had a decrease in physical activity levels across
LEAP Clinic sessions. Furthermore, she gained 28 pounds from the start of the clinic to
the time of the interview (within a year). The parental figure of this child reported that
her granddaughter eats when she is upset and did not seem to generalize information
learned during clinic visits. Child 07’s depressive symptoms may contribute to her
obesity problem. As mentioned in the literature review, a relationship between stress and
BMI was found, such that experiencing high amounts of stress in adolescence was
significantly positively associated with BMI (Van Jaarvald et al., 2009). The variable of
mental health status may also play a role, such that ongoing stress and adjustment may
influence adherence to an obesity program. Child 07 was receiving therapy services, but
her grandmother reported she had troubles getting Child 07 to all her appointments due to
transportation issues. Child 07 appeared to have been going through significant life
circumstances which made it difficult to adhere to an obesity treatment.

**Gender Differences**

Past research suggests that across ethnicities, girls and boys are dissatisfied with
their bodies (Neumark-Sztainer et al., 2002), such that females and males of all
ethnicities reported some dissatisfaction with their bodies. Although, black individuals
appear to be more accepting of larger body sizes than white individuals. Most of this research has been conducted comparing black and white female perceptions of body image, such that white women have a thinner ideal body size than black women (Powell & Kahn, 1995), with limited studies on male perception of body type. Three out of the four males who answered the question “Are men attracted to women with a few extra pounds?” reported “a little bit” (options included not at all, a little bit, somewhat, likely and very likely), with the other reporting “very likely.” Females in the present study had a greater variation in responding, such that one female reported “not at all,” 3 reported “a little bit,” 2 reported “some what,” and 3 reported “very likely.” As a gender group, females may differ on their perceptions of obesity than males. However, in the present study a lack of male participants makes it difficult to make conclusions based on gender differences between males and females. Furthermore, all females in the present study were minorities. Thus, the present study was unable to examine differences between minority females and majority females’ perceptions of body image. Past research suggests that minority females would be more accepting of a larger body type. In future research, it will be useful to compare ethnicity groups (especially white females and black females) on this question to aid in developing treatment strategies.

Depressive symptomatology did not seem to differ between gender groups, such that 75% of both male and female participants did not report often feeling down, depressed, or hopeless in the past month. In terms of the perception of Motivational Interviewing, male participants, again, did not show variation in responses compared to female participants. All six of the male participants reported feeling listened to “all of the time,” while female responses varied. Two females reported feeling listened to “a little
“bit,” one female reported “somewhat,” one reported “much of the time,” and 6 reported “all of the time.” This trend was similar for the statement “I plan to be more active.” Again, females as a gender group show greater variation in responses. The Motivational Interviewing component may have been less effective for females. However, it should be noted that there were more female participants than males and an increase in male participants/responses may have demonstrated a similar pattern of males and female responses.

**Depression Screener.** Six female and participants and one male participant responded affirmatively to one of the depression screener questions which indicates some depressive symptomatology. Thus, physicians should be screening for depression and providing relevant resources to patients regarding psychological services. Physicians may be the first provider to hear about psychological problems and thus, have an opportunity to help their patients find appropriate resources. Furthermore, obese children show higher rates of pathology, such as depression (Mustillo et al., 2003). Therefore, a weight-management clinic for children may provide physicians with a good opportunity to help their patients find psychological care.

**Physical Activity Levels.** Males and females appear to show differences between their level of physical activity during the LEAP Clinic (see Table 6). Males show higher levels of physical activity then female participants. This finding is not unexpected. For example, a study by Trost et al. (2002) found gender differences between physical activity levels for youths. Boys and girls (grade 1-12) wore an accelerometer for one week. Results indicated that boys were significantly more active than girls. Thus, the
present study’s results are consistent with past research that boys are typically more physically active than girls.

**Barriers to Healthy Eating**

Weight-related behaviors can also be influenced by the availability of healthy food options. Medicaid is the primary insurance for the participants in the LEAP Clinic, suggesting low socioeconomic status for the majority of the families in the clinic. As stated in the literature review, Kaufman and Karpati (2007) observed that a family’s financial limitations in food choice allow for unhealthy food consumption, and noted that many times eating cheaper results in eating a higher fat diet (high fat processed food). Cheaper food often can be found at fast food restaurants, but it is well-known that these restaurants often serve high fat, high calorie, and high sodium meals. Two parents interviewed reported continuing to eat at fast food establishments. However, it was reported that Child 06 asked for oatmeal at McDonald’s and child 014 reportedly skipped the fries with her meal at McDonalds. Although these children were able to select healthier options at fast food restaurants, it is unclear whether or not they are still consuming some of the high fat, high calorie, and high sodium products. Thus, a family’s financial situation can influence choice of restaurants, as well as family food preferences. This may make it difficult for a child to adhere to a healthy diet. It is important to be aware of the effect of socioeconomic factors in adhering to an obesity program.

Another barrier to healthy eating is parental choice of groceries. A child’s lack of control over purchasing groceries may be a unique contributor to childhood obesity. The parent of child 06 reported that one dish during family dinnertime has always included a salad. The parent of Children 09 and 10 reported that she now buys granola bars for her
sons as a healthy snack. The parent of Child 014 reported that her child often attempts to eat unhealthy foods in the house, but after prompting from her mother, she chooses a healthier option, suggesting that healthy and unhealthy food choices are present in the household. In contrast, Child 07 was reported sneaking unhealthy foods from the kitchen. Especially for children and adolescents, the availability of unhealthy food options may be a barrier to healthy eating. The picture may be more complicated when a child has other family members in the household who are not participating in changing unhealthy eating behaviors, such that they may eat unhealthy foods in front of the child. The family/household environment can play a significant role in adherence to healthy eating (Steffan, Dai, Fulton, Darwin, & Labarthe, 2009).

Limitations of the Present Research

As mentioned previously there were limitations in gauging the effectiveness of the Motivational Interviewing intervention. The session length was brief and the Motivational Interview only occurred once. Thus, eliciting “change talk” was difficult. To measure readiness to change as a result of the Motivational Interviewing the Readiness ruler was utilized. However, the ruler may have been too abstract for children and adolescents and may have lacked sensitivity to reflect subtle changes. Additionally, a ceiling effect may be occurring. Some participants rated their readiness to change weight-related behaviors at a high level during the pre-test, thus there was little room to increase their scores at post-test. It was difficult to separate the effects of the Motivational interviewing component and the LEAP Clinic without a control group of participants who did not receive the Motivational interviewing. Making comparisons between subgroups
in the study was difficult due to the small number of participants. For example, gender differences, age, and ethnicity would be useful future comparisons.

Social desirability and demand characteristics may have played a large role in the study due to reliance of self-report or parent-report information. Participants and parents may have wanted to present themselves in a positive light and/or please the researcher. This may have created biased responding. The researcher was not able to get actual data on how much time participants spent outside of sessions engaging in physical activity. Participants were asked to remember physical activity levels of the past week. Daily weight and activity tracking by participants would likely be more accurate ways of obtaining reliable data, instead of relying on participants’ memory of the past week when asked at the beginning of sessions.

Another limitation of the present study is the “newness” of the LEAP Clinic. When the researcher began collecting data (March 2010), the clinic was still adjusting and adapting to its role as an obesity clinic. Thus, changes occurred throughout the data collection period. For example, the exercise bag was introduced after a couple of months into the program. Therefore, some participants received their bags after a few sessions and some at the beginning of the program which is a further source of variability in participant experience and outcome. Another issue stemming from the “newness” of the clinic includes tracking attendance. The LEAP Clinic did not have a systematic way to track attendance at the beginning of the clinic. Thus, the researcher was unable to compare attendance level with outcomes. Furthermore, parents of the LEAP Clinic participants were able to re-enroll their children for an additional 8 weeks. However, the
researcher was unable to track how many participants were enrolled for an additional 8 weeks.

As stated above, the LEAP Clinic was relatively new and had a high rate of “no shows.” Originally the present study’s design was to collect data from adolescents, but due to recruitment limitations, the researcher decided to accept children of all age groups. With this change came some problems in measurement comprehension for younger participants. For example, the question “Are men more attracted to women with a few extra pounds?” may have been difficult for younger children to comprehend. Furthermore, from an observational stance the younger children struggled with answering this question and appeared to choose responses without careful thought. According to Piaget’s theory of cognitive development (Piaget, 1972), between the approximate ages of 2 to 6 years children think egocentrically and have difficulty taking the viewpoint of others. Egocentric thinking does not start to diminish until the child reaches the concrete operational stage (elementary and early adolescence). Thus, this question may be especially problematic for younger participants. Additionally, the Readiness Ruler may have been too abstract for youths, such that motivation is an abstract concept and may require a higher level of cognitive functioning. Piaget’s theory suggests that the formal operation stage (adolescence to adulthood) is where individuals start to understand abstract concepts. In the present study, children as young as 6 years old to 17 years old were given the same measures. Thus, some measures may not have been age-appropriate.

**Implications and Recommendations for Future Research**

For the participants whose parents reported an increase in physical activity levels and improved eating behaviors, parental involvement appeared to play a major role.
Parents supported their children’s obesity treatment by attending and observing LEAP Clinic sessions, prompting and reminding their children to make healthy behavior choices, showing interest in their children’s weight-related behaviors, and also by providing healthy food options in the home. Limited past research suggests that a comprehensive obesity treatment, including a strong parental involvement component, may be needed to effectively change weight-related behaviors in children and adolescents (Grimes-Robinson & Evans, 2008). The most successful programs incorporate an interdisciplinary approach that combines a nutrition, physical activity, behavior modification component and parental involvement.

Most of the participants in the present study were of minority ethnic groups. Seo, Ches, and Sa (2010) conducted a meta-analysis of obesity interventions among minority children in the United States. The authors found that, among minority children, obesity interventions with three or more components were more effective than interventions with fewer components. Components of obesity interventions that appeared to be effective include parental involvement, lifestyle change (physical activity and diet), using interactive computer programs (individualized feedback on physical activity and eating behaviors and motivational encouragement for healthful changes), and considering cultural characteristics. Interestingly, the study by Seo, Ches, and Sa (2010) found that encouragement via a computer program was one effective component of obesity treatments. It would be interesting to compare an intervention that used the computer program with Motivational Interviewing. A Motivational Interviewing “coach” could not only provide encouraging statements, but also elicit “change talk” to ensure that the child was developing readiness to change weight-related behaviors.
The structured interview included in the present study highlighted the importance of parent involvement. Although the LEAP Clinic did not have a formal parental component, the Clinic may have encouraged parents to become involved in their child’s obesity treatment by allowing them to attend sessions and including parents during initial the appointment and tour. In a comprehensive obesity intervention for children, it would be useful for parents to actively participate in obesity treatments for their children through parent groups held at the same time as child groups. Both parents and children could learn about diet, nutrition, and physical activity. Parents could also be incorporated into child group activities, such that they could interact with their children during the session by learning about health-related topics and exercising together. To engage parents in practicing healthy eating behaviors outside of sessions, it may be useful to give concrete incentives to parents, such as healthy food coupons. As parents play an important role in their child’s obesity treatment, it may be interesting to have parents participate in a Motivational Interviewing intervention. Additionally, since some participants were young (average age 11.4) and may have had difficulty understanding some of the Motivational Interviewing concepts, it may be helpful for parents to also participate in Motivational Interviewing.

It may also be useful for children and parents to keep a food diary and activity tracking schedule during the week and report their outcomes at each session. This would allow for more objective measures of their physical activity levels.

The LEAP Clinic included nutrition, physical activity, and Motivational Interviewing components. This approach appeared to be effective in changing parental perception of physical activity levels and health eating patterns. However, a formal
behavioral modification intervention was not incorporated (goal setting, monitoring, stimulus control) in the LEAP Clinic. A diet, exercise, and behavioral intervention increase the strength of an obesity program over programs with only diet and exercise components (Kirk, Scott, & Daniels, 2005).

The parents interviewed reported that their children improved in weight-related behaviors, the exception being the parental figure of Child 07. In terms of encouraging a child to engage in an obesity program, professionals should be mindful that some children may not be at a point in their life where they can fully engage in a program. The child’s overall adjustment needs to be taken into consideration, such as Child 07’s depressive symptoms due to the recent death of her mother and her attempts to adjust to a new environment without her primary guardian.

As mentioned previously, 7 out of 16 participants screened positively for depressive symptomatology on the depression screener. Thus, physicians should screen for depression during primary care appointments (including LEAP Clinic initial appointments) and provide appropriate referrals for psychological services.

The researcher will share to share the results and recommendations of the present study to the local weight-management program in the Toledo area (LEAP Clinic). The following recommendations will be discussed with the LEAP Clinic staff.

- Add a formal parental component (e.g. at minimum, an educational video for parents while children are participating in LEAP classes)
- Coupon incentives for healthy foods to parents
- Weight tracking
• Activity tracking and food diary
• Depression screener at initial appointment with appropriate list of referrals if screened positively
• Continuation of Motivational Interviewing component for more than one session

Summary and Conclusions

The present study examined the impact of an obesity intervention for children and adolescents that included a motivational interviewing component. Participants’ motivation to change weight-related behaviors was gauged prior to and following a Motivational Interviewing component. Four out of 16 participants showed reliable improvement in readiness to change weight-related behavior after the Motivational Interviewing component. In later interviews, the majority of parents reported improvement in their child’s physical activity levels and healthy eating behaviors. Parents appear to play a significant role in their child’s weight-related behaviors by supporting their child’s participation in an obesity treatment program and by reinforcing healthy weight-related habits. For children with obesity, a comprehensive obesity treatment that emphasizes parent involvement appears to have the strongest likelihood of success.
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Appendix A
Transcriptions of Motivational Interviews

01

C: Tell me why you’re here today.

P: First I want to learn what foods to eat and like better foods to eat and to lose weight.

C: Great. What would you like to have different in your life?

P: Um, to not eat as much junk food and learn what foods to eat

C: To not eat as much junk food and learn what foods to eat. Okay. What are your goals you want to accomplish?

P: I want to be become a veterinarian.

C: you want to become a vet. Okay. So it sounds like you want to learn better foods to eat and to lose weight. What strategies have you tried in the past?

P: Be more active, do more sports.

C: What sports?

P: Soccer and basketball

C: Have you heard of the phrase pros and cons? It means the good and bad of doing something. So, for example, what are the pros and cons of going to school? The good parts of going to school might be to learn new things, to get a better education and the cons, the bad things might be maybe some days you feel tired and might not want to go or maybe you don’t like your teacher. So, in terms of eating better or exercising more what might be the good parts?

P: Feeling better about yourself. Sometimes when you weigh too much you feel tired.

C: So you feel like when you don’t have all that weight you feel better. So what are the bad parts of exercising more or eating better?
P: Sometimes I get really tired and sweaty.

C: What are the bad parts of not changing?

P: You can get really fat and die

C: Let me summarize what you have told me so far. Sounds like there are two sides of it. If you have more physical activity and eat better you might feel better. On the other side more physical activity may make you more tired and sweaty. So what would you like to do next?

P: Probably like exercise a lot more. Exercise more, exercise every day.

C: You did a great job. Thank you.

02

C: Alright 02, Tell me why you are here today?

P: Because I want to get in shape.

C: what would you like to be different in your life?

P: I just want to be able to keep up with my friends, be able to do more.

C: Have you heard of the term pros and cons? So that means the good and bad of doing something. So, for example, going to school; maybe the good parts of going to school is to learn things to be with friends and the bad parts of going to school might be homework, be tired and not feeling like going. So, what do you think the good parts of eating better and doing more physical activity would be?

P: Be able to do more and keep up with my friends and feel better.

C: So being able to move around more will make you feel better. What do you think are the cons or bad parts of eating better or doing more physical activity would be?
P: Nothing.
C: No bad parts?
Parent: You’re gonna’ have to give up sweets, you’re not going to be able to be lazy…I’m know I’m not suppose to interfere here but there’s going to be negative parts. That’s going to be hard on you.
P: I don’t see anything wrong with them.
Parent: You got the right attitude, I’m just saying there’s gonna’ be things that are going to be hard with this. I probably shouldn’t be saying anything, I’m sorry. It’s a commitment.
C: Let me summarize what you’ve told me so far. The good parts of eating healthy and exercising more would be you would feel more in shape, be able to keep up more with the other kids, and you feel better. The some of the bad parts you would have to cut back on some of the things you like, like candy and things like that. So what would you like to do next? If you had a plan, what would you want to do next?
P: Go to the gym a lot.
C: Sounds like you’re pretty committed. You did a good job.

03
C: Tell me why you are here today.
P: To exercise and change my lifestyle. To change.
C: Do you know what goals are?
P: Uh yes.
C: things you want to happen or achieve. What are your goals?
P: I want to be a doctor.

C: Do you have any goals in terms of physical activity or with this program?

P: Um, like I want to exercise more and be healthier. This is a good program to start with.

C: Have you heard of the phrase pros and cons? It means the good and bad of doing something. For example, going to school maybe the good part of it might be that you are learning things and maybe the bad part is sometimes you maybe don’t feel like going to school or you don’t feel like doing homework or you’re tired. That might be the bad part of going to school.

Parent: I don’t think she got any bad parts of going to school. She loves going to school.

C: That’s really good. What about remember that big word physical activity we talked about? What are the good parts of that?

P: You could lose more weight and be healthier and happier.

C: What about so what would be the good parts of not changing- how much physical activity or not doing physical activity?

P: There’s no good parts to me.

C: What are the bad parts of doing more physical activity?

P: No bad parts.

C: Can you think of anything?

P: I can’t think of anything.

C: What would be the bad parts of not doing more physical activity?

P: You would get more like obese and everything. You would get very tired and you don’t want to feel like that.
C: So, let me summarize what we’ve talked about so far. It sounds like you could think a lot of good reasons for changing your physical activity and not so many bad parts of changing physical activity. So what would you like to do next?

P: Well, I like to run on the tracks and everything. I’d like to do that.

05

C: Okay Tyler, so tell me why you are here in your words.

P: To lose weight and eat healthy and be active when I can

C: what are your goals?

P: keep on a regular basis of eating , portion my food, not eat as much

C: have you ever heard of the phrase pros and cons? It means that there are good things and bad things of doing something. Like for example going to school. Like the good parts of going to school might be that you are learning, you get to see your friends, things like that. Then maybe the bad parts of going to school, you might not feel like going one day or you are tired. So what do you think the good parts of changing your behavior, so like exercising more or eating better. What are the good parts?

P: you can do a lot of other things, not just sit at home and play video games.

C: So you can do more things and not just sit at home. What do you think would be the bad parts of having to change?

P: I would have to do more things and hard things

C: Let me summarize what you have told me so far. It sounds like you have goals you want to control your portion size, eat healthy and be more active. There are good and bad to change. A good part might be you would be able to do more, go out and ride your bike
and do things like that and the bad part might be it might be difficult to change some of the things you do now like playing video games and eating the foods you like to eat. So what would you like to do next?

P: I don’t know. Baseball practice,

07: (for some reason in middle of 08)

C: What are your goals in terms of health?

P: Well I’m trying to lose the weight b/c me and my grandma are trying to go on a diet and lose so we’re actually trying to beat each other so I’m already at a head start cus’ I’ve lost a few pounds

C: You did. That’s awesome

P: So, really me and my granny are we sometimes go to the park and barely lets me go to the park but sometimes I’m allowed to go to the park

C: What do you do at the park?

P: Oh I like to swing slide down the slides run around the track or walk

C: Okay awesome. Okay. So have you ever heard of the term pros and cons? It means the good and bad of doing something so for example going to school there might be good and bad things the good part might be learning new things, you get to hang out with people, and maybe get to play fun games or something in gym. Maybe sometimes the bad parts are you have a lot of homework of you don’t feel like going to school that day or things like that. There’s good and bad. So in terms of losing weight and doing more physical activity what do you think are the bad parts?

P: Well I get tired really fast cus’ I have asthma so sometimes I get tired really really fast.
C: So you get tired quickly.

P: Mmm hmm. Sometimes. Not most of the time but sometimes.

C: Okay what else?

P: Well…

C: What would be hard about doing this?

P: Not that much is hard for me at all.

C: What would be the good parts?

P: I get to have fun with different kids I don’t know.

C: What other things would be the good parts of changing your diet?

P: I’m going to a new school next year and I’m going to be going to 3rd grade with my granny and I’m going to try to lose weight to get ready for the school year for the 3rd grade.

C: So that’s one of your goals to lose weight before 3rd grade for the new school. What would you like to do next?

P: Well, I like to run and play games. I like to play tag and things that you have to run around.

C: So let me summarize what you’ve told me so far. So it sounds like you have some goals and one big one coming up is you’re going to a new school and you and granny are going to do this together and go on a diet together and do exercising together which includes walking around

Granny: I got some health problems that cause me to not be able to do a lot of exercise and the diet is working with the diabetes.
P: Maybe the bad parts of changing would be when you’re working out and doing things you get tired quickly and you’re asthma starts to act up. Maybe the good parts are you get to meet new people and have fun with them and do activities with them and then be ready for the school year next year. Okay.

08

C: Tell me about why you are here. What brings you in today?

P: Uh… (talking to mom) is it for the bladder thing?

Parent: no, LEAP program.

P: Oh the LEAP program.

C: What are your goals?

P: Um to lose pounds.

C: So have you heard of the expression pros and cons?

P: No.

C: So kind of means like the good and bad, so like the pros and cons of going to school would be like the goods parts, pros, would be learning things and you get to hang around with your friends and things like that. The bad parts, cons, you don’t feel like going that day cus’ you’re tired or you don’t feel like doing the school work.

P: Mmm Okay.

C: So in your opinion what are the good parts of being part of the clinic or increasing your physical activity. What are the good parts?

P: Well that’s it basically. Losing weight, helping my metabolism, and healthy eating.

C: Okay. So what are the bad parts? Things that would be hard for you.
P: Well I don’t like to sweat.
C: So that would be hard.
P: And it gets pretty hard when I get to a certain point in losing weight. I get tired.
C: Sounds like you have tried losing weight before and you get really tired.
P: I will work out until I really can’t move. I’ve done that before- it hurts too.
C: So what do you want out of this?
P: I want to be smaller. I don’t want to be skinny or anything- I just don’t want any body fat.
C: So you just want to lose some pounds, you just don’t want to get super skinny?
P: Yes.
C: Okay. So it sounds like your main goal is to lose weight and there is the good and bad and the good for you is obviously losing weight and hopefully getting a better metabolism and eating healthier and the bad part is you don’t like to sweat when you exercise and sometimes you work so hard and your body hurts. Alright so what would you like to do next?
P: Um I don’t know join like a dance club or something or sport.
C: Okay that would be cool. Do they have anything like that at your school that you know of?
P: IDK because I’m going to a different school.
C: What school?
P: Bowsher
C: Tell me why you are here? Why did you come here today?

P: I was forced. No I’m kidding. I had an interest in the LEAP program, I wanted to come and see what it was like.

C: What would you say in regards to the LEAP program or in terms of physical activity- what would you say your goals are?

P: I want to have fun and lose pounds.

C: alright so in a lot of things we do there’s the good and the bad. So have you ever heard of the expression pros and cons?

P: Mm hmm.

C: So for example the pros and cons of going to school. The pros or benefits- you are learning things, you get to hang out with your friends and it might be fun sometimes. The bad parts, cons, would be you’d have to take tests and they might be hard, you may not want to go to school one day b/c you’re tired, and maybe you just don’t feel like doing work. So what do you think are the good parts of losing weight and increasing your physical activity might be?

P: I could have more stamina.

C: Anything else?

P: No.

C: What about the bad parts- what would be the hard parts?

P: Umm actually sticking to it.

C: That’s a good one. Have you tried to before?

P: Kind of.
C: Let me summarize what you’re told me so far. You came here today b/c of your interest in the LEAP program. How did you hear about it?

P: The doctor’s office.

C: And you wanted to check it out and your goals are to have fun and maybe lose some weight and the pros, benefits, in changing your behavior would be better stamina and maybe the hard part would be actually sticking to it once you start. What would you like to do next?

P: I like the program so far and would like to keep with the program.

C: Tell me why you’re here.

P: B/c I want to be healthier, I want to lose weight.

C: In terms of physical activity, what are your goals?

P: I want to lose weight and I want to be able to wear more clothes and to always be doing activities longer not getting tired as easy.

C: Have you heard of the phrase pros and cons?

P: Yes.

C: It means the good things and the bad things about something. For example going to school, there’s pros and cons and for someone maybe a pro would be to learn things and hang out with your friends and sometimes maybe it’s fun. The cons, or the bad parts, if you’re tired and you still have to go to school and you don’t feel like doing work. What do you think are the pros or good parts of changing?

P: I will be healthier, a better chance to live longer and stuff like that.
C: What about the bad parts, hard parts?

P: Actually motivating yourself to do it, not always having someone to motivate them.

C: So motivation is a big part.

P: Yes.

C: Okay sounds like your goals right now include losing weight, being able to have more options with clothing, and to not get so tired when you’re doing activities. And the good parts about changing are you would be healthier, help you live longer and the bad parts might be being motivated and continuing to do it on your own. So what would you like to do next?

P: Trying to motivate others to do the same.

C: Tell me why you are here.

P: Yeah for the healthy center.

C: In terms of physical activity and eating better, what are your goals? Do you know what that means? What do you want?

P: Playing.

C: What else?

P: I don’t know.

C: That’s Okay. Have you ever heard of the term, pros and cons?

P: No.

C: It means the good and bad for example going to school there are good parts and bad parts. So maybe the good parts would be you get to learn things, you get to hang out with
friends, and get to do fun things. The bad things- maybe you’re tired one day and you
don’t feel like doing the homework or you don’t feel like going to school. So those are
the good and bad. So what do you think the good parts are of being more active?
P: Going to school and I see my teacher and doing work with her.
C: What about with exercising? What are the good parts?
P: Working out with my granny and my cousins.
C: Okay what about the good parts about working out?
P: Exercising.
C: What are the bad parts of working out?
P: Jumping up and down.
C: Any other bad things?
P: No.
C: Okay let me see. It sounds like you came here to be healthier.
P: Yes.
C: And you like to play. The good parts of working out are you like to work out with
your granny and with your cousins. You like to exercise sometimes. Okay, do you have
any questions from me?
P: No.
C: What do you want to do next?
P: I want to work out on mats and use weights.

C: Tell me why you’re here.
P: I was given a test to figure out whether or not I had diabetes.

C: In terms of coming here today, what are your goals?

P: To lose weight and be healthy and to be normal in weight.

C: Have you heard of the term pros and cons?

P: Yeah.

C: It means the good and bad. For example going to school, the good parts might be you get to hang out with your friends, learn new things, and it might be fun. The bad parts might be maybe one day you’re really tired and you don’t want to do the homework or you don’t want to go to school and just not feeling it that day. So what do you think the good parts are about changing your physical activity or how you are eating?

P: When I’m at school all I really eat is chicken salads b/c that is what I prefer to eat. I really don’t eat a lot of food like that. My gym teacher encourages me to eat healthy. Sometimes the gym teacher eats lunch with me and my friends and she’ll encourage us on what to eat. First I took offense to it, then her and my mom talked about it. She’s actually helping and I can’t be so defensive over it and she taught me how to eat at a balanced rate and how to exercise.

C: Wow. Okay sounds like you spend a lot of time with her. Is that why in school…

P: Yeah I lose weight.

Parent: The campus is so big. It is in New Albany- outside of Columbus. It is a K-12 school. Now it is the summer she doesn’t do these things anymore. On campus, she had to walk across campus to get to the gym teacher.

C: So at school, you had to move around. Going to class to class, meeting your gym teacher who was encouraging you.
Parent: That is what is causing the weight fluctuation. Her weight will go down during school year, then it will go right back up in the summer.

C: So it sounds like it’s a pattern.

Parent: Now the weight is staying. So we’re going to have to do something now where she can learn to get the weight off and keep it off. To be healthy, not for beauty, but to be healthy.

P: I know I’m pretty, I just want to get healthy.

C: That’s a good goal. So, let’s go to the opposite end. What are the bad parts of changing, what would be the hard parts?

P: Seriously I’m really adamant when it comes to school starts, sometimes I’m in the wrong, like goof around, but when it comes to my grades I take it seriously. When it comes to having a goal I like to get there and get it done. So during school I had structure.

Parent: so what’s the bad part about basically eating and watching your weight?

P: Oh because I can’t eat hot popcorn. Because I crave for a Rally’s burger. I would make my own diet and sushi diet. That would be good. If you had your own sushi diet, you wouldn’t gain weight- maybe from the rice.

C: So it’s the cravings that are hard.

P: Yes.

C: It sounds like you came in today b/c you had a test to figure out if you had diabetes and that concerns you about your health. Your goals are to lose weight, to be healthy, and the good parts are in school you have that structure and it you had a really good role
model. It sounds like your gym teacher was encouraging you and you two had a really
good relationship.

Parent: The gym teacher helped her recognize she needed to lose weight without hurting
her feelings. She helped her see how unhealthy it was. And so it happens during the
summer. This is my first summer off. Typically they would be home with their
grandmother and now I see the habits. I didn’t see them before. She eats a lot and
watches TV.

P: I’m on vacation. I’m on vacation.

Parent: No that’s not vacation. We need to make some changes. During the summer she
eats differently. Your body also changes when you get older.

P: Granny doesn’t help though b/c she’s always telling me to eat more.

Parent: I told her (grandmother) that there needs to be some changes. I don’t like the junk
food around. People tell me I’m big. I’m big because I had 2 kids. When granny goes to
the store, she buys whatever the kids want. Her idea of going to the store is buying
bologna sandwiches, chips, and pop. That’s the total opposite of what I would buy.

P: Chicken salads to chicken sandwiches.

Parent: 013 cried when the doctor said diabetes.

P: Yes. It scared me.

C: The bad parts or the hard parts might be the cravings, the wanting to eat something we
know we shouldn’t.

P: It’s not like sweets, it’s like chips.

Parent: You guys eat out a lot, Chinese, McDonalds
P: Have you ever had shrimp fried rice? Chicken broccoli is awesome, I love it. It’s the sauce that makes it that good.

C: What would you like to do next?

P: I would like to lay off of junk food and restaurants b/c I like to eat out and it’s not even about what the food is. I just like eating out. When I think about it, I need to go back to what I’ve been eating- chicken salads and just eating healthy foods period.

C: Sounds like in school you had that structure and you stuck by it. You may lose direction when on summer vacation.

P: When I was at school I ate healthy lunches so I wasn’t so hungry so much and I would eat less at dinner. But now that I’m at summer and I don’t have that structure, when I wake up in the morning I just eat.

Parent: So what it is- you’re sleeping late.
Appendix B

Parent Interviews

How did your child like coming to the obesity clinic?

Parent (014): She liked it

What did your child like about it?

Parent (014): I can tell now when she talks about food and health, healthy food choices, can remember healthy food choices, she likes that, she understands carbohydrates turn into sugar/fat. She also liked the dance classes.

What didn’t you like about your child attending the clinic?

Parent (014): Her personality, some days wouldn’t want to leave the home, don’t want to go I’m tired, nothing in particular disliked just didn’t feel like going. Mom would make her go, a lot of time mom would go with her (and husband) and would love it, walk around, wanted to stay around and help.

What would make the clinic/intervention even better?

Parent (014): I don’t know, sometimes would change up, variety, healthy food choices, different snacks to try, really enjoyed. Don’t know what would do differently.

Change in motivation from beginning/baseline to now or end of program?

Parent (014): Really wanted to do good, had to stop abruptly because of evening classes, not sure if change in motivation.

Did child go to LEAP clinic sessions alone or with someone (who)?

Parent (014): Sometimes she went with mom and dad. Mother is primary person to take her. Couple of times, dad liked coming.

Is your child into sports?

Parent (014): Not into sports, would be nice but not interested. Likes dancing, ballet.

Has your child always been overweight?

Parent (014): Has been for several years.
Is your child aware of problem?
Parent (014): She is aware of the problem.

What are the family’s typical habits? Fast food?
Parent (014): That has changed, now doesn’t want the fries, may get milk instead of the pop, sometimes mom has to remind her about better choice.

Does your child eat frozen meals?
Parent (014): Does like healthy choice meals, lately not so much, been a month since she had it.

Does your child eat sweets?
Parent (014): She loves ice cream, sugared drinks, loves those things, loves pasta.

Does your child get teased due to weight?
Parent (014): A lot of times kids say things, school has been decent about not allowing bullying, she gets shy and shuts down so she can avoid things.

Are there any parent health issues?
Parent (014): Dad has diabetes for two years, high blood pressure, obesity issues as well, very tall so looks different, being a girl more troublesome.

Social Validity:

Was this an acceptable intervention for your child’s overweight/obesity problem?
Parent (014): Yes.

Was the intervention effective in changing your child’s problem?
Parent (014): Somewhat, wasn’t able to come after a bit.

Would you suggest this clinic to other parents/children?
Parent (014): Yes.

Do you think your child’s obesity problem was severe enough to warrant use of this
clinic intervention?

Parent (014): Yes.

Would you be willing to have your child participate in this clinic again?

Parent (014): Yes.

Did you like the procedures used in the clinic intervention?

Parent (014): Yes- loved it! She liked it, mom loved it, mom had to be motivator, child would rather watch television.

Did the intervention quickly improve your child’s attitude about living a healthy lifestyle?

Parent (014): Yes, quick awareness, something had to get better. The doctors explained certain things, what causes it.

Did the intervention produce a lasting improvement in your child (the child’s healthy behaviors remained improved after the intervention was discontinued)?

Parent (014): Yes, but wants a magic potion. Asked for liposuction, media, see before and after pictures. Thinks in 5 minutes can change. Have food arguments every day, it is a battle.

Did the intervention influence you (as a parent) to increase your exercise/healthy eating habits?

Parent (014): Yes (oh yeah), because try those healthy recipes given to them. Changed a lot of different things, hearing different things and getting information, gradual changing, didn’t change over night.

Did the intervention produce enough improvement in your child’s healthy lifestyles (exercising/healthy eating) so that his/her problem is not as severe as it was prior to the intervention?

Parent (014): Somewhat, still obese but more apt to listening about better choices and understanding a little bit stronger.

Overall, was the intervention beneficial for your child?

Parent (014): Yes (oh yeah), yes, yes.

Child/Family Changes after the Clinic Intervention:
What changes did you notice in your child after going to the clinic?

Parent (014): Equipment, very interested in using it, get it out and work it, good idea, dumb bells, stretch bands, knows how to use them. Won’t get them out everyday anymore, even in 5 minutes, would show more, how to do it.

Did the intervention increase your child’s physical activity/exercise?

Parent (014): Her awareness, as far as her doing it, a little bit more yes. Mom “Lets go for a walk, let’s do this”, relating to physical activity.

How many days per week is your child exercising/active?

Parent (014): At least 2 days (dance), sometimes more. Plays Wii dance game, works up a sweat. Almost every day she plays, swims, and walks.

How many minutes per day is your child exercising/active?

Parent (014): At least ½ hour a day.

Did the intervention decrease your child’s bad eating habits (e.g., less sweets, chips, pop, snacks less, asks for less ‘seconds’)? How?

Parent (014): Only if I intervene, will know it’s wrong and put half of it back. Before she would not care and argue more, now more aware of what she’s suppose to be doing, won’t argue with me anymore, will put it back. Food argument on a daily basis, portion control. Mom tries to remember, has not lost any weight, has actually gained weight (maybe due to getting taller); weight is 208 (tall 5’4”).

Did the intervention increase your child’s good eating habits (e.g., veggies, fruits, etc.)? How?

Parent (014): Yes. More aware, a little bit of both, reminders and more aware. Hear her talk about when friends or cousins come over, glad to hear it, knows but doesn’t do it all the time. Taste more in control than her mind.

Did your child’s mood improve after the intervention (less negative remarks about self/weight, higher activity level, less depression)? How?

Parent (014): On those evenings she was content, it did improve. Improved mood for wanting to go, on days didn’t want to come, when done she was happier. Hope can start again, will make a call to clinic to see if she can go back, liked to do it with her so it helps, real good. People made a difference.
How did your child like coming to the obesity clinic?

Parent (06): Really enjoyed it- new experience for him, found it very beneficial, came about 6-7 times.

What did your child like about it?

Parent (06): Talked to him after the program: Like that they gave treats, incentive, exercise, different exercises, liked the whole program. Stretch bands, rope, continued to use after the program, have to make him do everything- probably follow through about a month. Still picking up his weights every now and then. Understanding portion control. Conscious about what’s good and bad and not eating too much. Have to support him- sugar problems, before becomes full-blown diabetic, keep reminding.

What didn’t you like about your child attending the clinic?

Parent (06): Wouldn’t say didn’t like, follow up- with weighing, but no other follow up. Show him how to actually make a snack, making right choices.

What would make the clinic/intervention even better?

Parent (06): Hands on making snacks, have a buddy system, a few other kids at school could have benefited from it. Have a card to give to other parents. Get to exercise with other kids.

Change in motivation from beginning/baseline to now or end of program?

Parent (06): Felt like the program wasn’t long enough. 1 day a week, took him awhile to understand, once started to like it, it was over.

Did child go to LEAP clinic sessions alone or with someone (who)?

Parent (06): Mom went with him to sessions, stayed to watch sessions, sometimes reading.

Is your child into sports?

Parent (06): Enjoys playing basketball, does karate but doesn’t think he likes it.

Was your child always overweight?

Parent (06): Not always, started in about 4th grade due to insulin, not because overeating, being treated for this- on meds (Metformin).
Is your child teased in school about weight?
Parent (06): Kids at school being bullied he was sometimes teased.

Is your child aware of problem?
Parent (06): Think so, doesn’t talk much about it, knows wants to be slim, very much still aware.

What are the family’s typical habits?
Parent (06): Eat dinner together as a family, breakfast together in summer time.

Does your child eat fast food, frozen meals, sweets?
Parent (06): Ate a lot of bread, pizza, chocolate, carbohydrates.

Are there any parent health issues?
Parent (06): Grandmother had diabetes, dad and mother have high blood pressure in later years.

Overall, what other concerns do you have about your child?
Parent (06): He can get involved in some sort of social group, now that he is going into teens, only child, support. Would like LEAP to have some sort of mentoring, eat oatmeal, apples, the effects of fast food. Positive, at least said didn’t want to go, mom would forget some of the time, by the time get home have to rush and he wanted to, likes the treats and prizes.

Social Validity:
Was this an acceptable intervention for your child’s overweight/obesity problem?
Parent (06): Yes.

Was the intervention effective in changing your child’s problem?
Parent (06): Yes.

Would you suggest this clinic to other parents/children?
Parent (06): Yes (really would).

Do you think your child’s obesity problem was severe enough to warrant use of this
Clinic intervention?

Parent (06): Yes.

Would you be willing to have your child participate in this clinic again?

Parent (06): Yes.

Did you like the procedures used in the clinic intervention?

Parent (06): Yes (like the nutritionist sit and talk, very personable and knowledgeable).

Did the intervention quickly improve your child’s attitude about living a healthy lifestyle?

Parent (06): Yes.

Did the intervention produce a lasting improvement in your child (the child’s healthy behaviors remained improved after the intervention was discontinued)?

Parent (06): Yes.

Did the intervention influence you (as a parent) to increase your exercise/healthy eating habits?

Parent (06): Yes (really did but it was short, once got info kind of left, it would be good if longer).

Did the intervention produce enough improvement in your child’s healthy lifestyles (exercising/healthy eating) so that his/her problem is not as severe as it was prior to the intervention?

Parent (06): Yes (say that because had to remember, intervention to allow getting blood work, informational- caught fact that had insulin problems, in that aspect thank them. Grateful for that.

Overall, was the intervention beneficial for your child?

Parent (06): Yes.

Child/Family Changes After the Clinic Intervention:

What changes did you notice in your child after going to the clinic?

Parent (06): Think so, more conscious of asking for things he knew shouldn’t have, even
if asked for pizza- I know going to say maybe just one or twice, they said cant have a lot.

**Did the intervention increase your child’s physical activity/exercise?**

Parent (06): Not sure if it did that or not.

**Did the intervention decrease your child’s bad eating habits (e.g., less sweets, chips, pop, snacks less, asks for less ‘seconds’)? How?**

Parent (06): Yes consciously, made him aware, not ask for it as often, strategize, I know had it so not going to ask for it for awhile.

**Did the intervention increase your child’s good eating habits (e.g., veggies, fruits, etc.)? How?**

Parent (06): Yes, verbalized it, this is good- we’re eating this, salad- he talked about more. Happy that already did that, moderation but only child, mother- gave in.

**Did your child’s mood improve after the intervention (less negative remarks about self/weight, higher activity level, less depression)? How?**

Parent (06): Think so, brought up his self-esteem that being practice, was teased, felt good, mom look at my stomach, still enforcing good eating habits. Loves to swim, got back into swimming.

Parent of children 09 and 010

**How did your children like coming to the obesity clinic?**

Parent (09/010): They really like it. They enjoyed it- feel like they learned a lot as well.

**What did your children like about it?**

Parent (09/010): Child 09 liked working on the machines, child 010 liked the basketball classes and weight training.

**What didn’t you like about your children attending the clinic?**

Parent (09/010): Actually weren’t anything didn’t like, really enjoyed program.

**What would make the clinic/intervention even better?**

Parent (09/010): Early prevention, reaching kids younger, when started only teens in the group, reaching out to older individuals.
Change in motivation from beginning/baseline to now or end of program?

Parent (09/010): Motivated both of them, still very active right now, still going out and playing basketball, swimming, weight training. Motivated them a lot, drinking more water, eating less, weight loss: unsure of weight when started, noticed lost weight, losing some inches.

Did your children go to LEAP clinic sessions alone or with someone (who)?

Parent (09/010): I was there, in room with them.

Are your children into sports?

Parent (09/010): Yes, child 09 not really organized, going outside, likes it. Child 010 is big into sports, football last 2 years, this year football and basketball.

Were your children always overweight?

Parent (09/010): Noticed for both in 4th grade.

Are your children aware of problem?

Parent (09/010): Yes.

What are the family’s typical habits? Fast food? Frozen meals? Sweets?

Parent (09/010): Yeah occasionally, fast food 3 times a month, don’t get on weekly basis.

Do your children get teased due to weight?

Parent (09/010): No.

Are there any parent health issues?

Parent (09/010): Dad (husband) is diabetic, paternal grandparents, high blood pressure and heart disease, maternal grandparents high blood pressure and diabetes, husband was told he needs to lose 25 pounds.

Social Validity:

Was this an acceptable intervention for your children’s overweight/obesity problem?

Parent (09/010): Yes.
Was the intervention effective in changing your children’s problem?

Parent (09/010): Yes.

Would you suggest this clinic to other parents/children?

Parent (09/010): Yes.

Do you think your children’s obesity problem was severe enough to warrant use of this clinic intervention?

Parent (09/010): Yes.

Would you be willing to have your children participate in this clinic again?

Parent (09/010): Yes.

Did you like the procedures used in the clinic intervention?

Parent (09/010): Yes.

Did the intervention quickly improve your children’s attitude about living a healthy lifestyle?

Parent (09/010): Yes.

Did the intervention produce a lasting improvement in your children (the child’s healthy behaviors remained improved after the intervention was discontinued)?

Parent (09/010): Yes.

Did the intervention influence you (as a parent) to increase you exercise/healthy eating habits?

Parent (09/010): Yes.

Did the intervention produce enough improvement in your children’s healthy lifestyles (exercising/healthy eating) so that his/her problem is not as severe as it was prior to the intervention?

Parent (09/010): Somewhat.

Overall, was the intervention was beneficial for your children?
Child/Family Changes After the Clinic Intervention:

What changes did you notice in your children after going to the clinic?

Parent (09/010): Attitudes towards exercise, change in the weight, looked at food chose what they ate. Child 010-really helped him change with exercise, already into sports, enhanced it. Child 09-became a little more cautious on what he ate and how much he ate.

Did the intervention increase your children’s physical activity/exercise? How?

Parent (09/010): Yes, more so child 09 than child 010. Child 010 was already into sports, child 010 did a lot more swimming, child 09 increased playing basketball. As brothers- did well going together, helped motivate each other, more helping each other.

How many days per week are your children exercising/active?

Parent (09/010): Child 09-4, child 010-6.

How many minutes per day are your children exercising/active?

Parent (09/010): Child 09-45, child 010-60.

Did the intervention decrease your children’s bad eating habits (e.g., less sweets, chips, pop, snacks less, asks for less ‘seconds’)? How?

Parent (09/010): Yes, they actually cut pop out completely, now drink juice, water, milk, healthier snacks (granola can get that now and they eat it).

Did the intervention increase your children’s good eating habits (e.g., veggies, fruits, etc.)? How?

Parent (09/010): Always good with veggies and fruits.

Did your children’s mood improve after the intervention (less negative remarks about self/weight, higher activity level, less depression)? How?

Parent (09/010): Helped with their self-esteem.

How did your child like coming to the obesity clinic?

Parent (07): Loved coming to the clinic but wouldn’t follow through with anything-activities or diet or anything when came home.
What did your child like about it?

Parent (07): Liked being there and being with the other kids and the activities going on. Mother’s death- going to counselor, psychiatrist, home. Gained quite a bit of weight since going there… weighs 198, before 170. Constant climb- can’t get her to eat right and steals food.

What didn’t you like about your child attending the clinic?

Parent (07): She likes everything about it- but when she walks out those doors exercise and eating habits decline.

What would make the clinic/intervention even better?

Parent (07): I really don’t know. When first signed up thought there was going to be more times dealing with food and diet- more time talking to them about food and diet. Something that would reinforce what trying to do at home and really doesn’t like to do exercise.

Change in motivation from beginning/baseline to now or end of program?

Parent (07): She would still say she would want to come but not motivated to do anything outside of program. Not motivated to follow through with program. There was a problem getting child 07 to therapy appointments. Will soon have a case worker to work with her at the home, help to get her to appointments, and things.

Social Validity:

Was this an acceptable intervention for your child’s overweight/obesity problem?

Parent (07): Yes.

Was the intervention effective in changing your child’s problem?

Parent (07): No.

Would you suggest this clinic to other parents/children?

Parent (07): Yes.

Do you think your child’s obesity problem was severe enough to warrant use of this clinic intervention?

Parent (07): Yes.
Would you be willing to have your child participate in this clinic again?
Parent (07): Somewhat.

Did you like the procedures used in the clinic intervention?
Parent (07): Somewhat.

Did the intervention quickly improve your child’s attitude about living a healthy lifestyle?
Parent (07): No.

Did the intervention produce a lasting improvement in your child (the child’s healthy behaviors remained improved after the intervention was discontinued)?
Parent (07): No.

Did the intervention influence you (as a parent) to increase you exercise/healthy eating habits?
Parent (07): Somewhat.

Did the intervention produce enough improvement in your child’s healthy lifestyles (exercising/healthy eating) so that his/her problem is not as severe as it was prior to the intervention?
Parent (07): No.

Overall, was the intervention beneficial for your child?
Parent (07): Somewhat.

*Child/Family Changes after the Clinic Intervention*

What changes did you notice in your child after going to the clinic?
Parent (07): No changes.

Did the intervention increase your child’s physical activity/exercise?
Parent (07): No.

Did the intervention decrease your child’s bad eating habits (e.g., less sweets, chips, pop, snacks less, asks for less ‘seconds’)?

Parent (07): No.

**Did the intervention increase your child’s good eating habits (e.g., veggies, fruits, etc.)?**

Parent (07): No.

**Did your child’s mood improve after the intervention (less negative remarks about self/weight, higher activity level, less depression)?**

Parent (07): No.