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The Effect of Shapedown on Habits and Self-Esteem for Overweight and Obese Children

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The Effect of SHAPEDOWN on Habits and Self-esteem for Overweight and Obese Children

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Abstract

Obesity in children is increased in the United States and globally which creates both physical and psychological health risks and co-morbidities affecting the development of positive self-esteem (Sinton & Birch, 2005; Whetstone, Morrissey, & Cummings, 2007). The development of poor self-esteem in children increases the risk of problem behaviors such as aggression, crime, teenage pregnancy, drug and alcohol use, tobacco use, and eating disorders (Brook et al., 2007).

Treatment of childhood obesity is multifaceted, requiring behavioral and lifestyle changes for both child and family to achieve a healthy weight (De-Santis-Moniaci & Altshuler, 2007; Plourde, 2006; Ritchie, Crawford, Hoelscher, & Sothern, 2006; Spear et al., 2007; Vaughn & Waldrop, 2007; Wofford, 2008). Therapeutic intervention must enlist the support of the family to reshape children's perception of him- or herself (Harter, 1999).

One method shown to result in positive improvements in attaining healthy weight and lifestyle with children is family-based behavioral treatment (FBBT). The purpose of this study was to evaluate the effect of SHAPEDOWN, an interventional FBBT program, on self-esteem and lifestyle habits and family lifestyle habits. The theoretical models for this research was Bandura's social cognitive theory (1999), and the conceptual framework was based on "Familial Approach to the Treatment of Childhood Obesity; Parent and Child Collaboration" (Golan & Weitzman, 2001).

A convenience sample of 12 children and 11 parents were recruited from elementary schools and referred by pediatric primary care providers. The data collection measures included a revised self-esteem scale (Harter, 1985), and the Children's Habit and Family Habit inventories. The inventories were administered pre- and post- a SHAPEDOWN intervention for healthy lifestyle and weight management. Descriptive and inferential statistics were used to describe the study sample and variables. Pearson product moment correlation and dependent group' t-test was used to analyze the data.

Although there were no statistically significant results, correlation demonstrated trending toward the positive effect of SHAPEDOWN and it relationship with children self-esteem and lifestyles habits for families and children. The study was limited by attrition and sample size. This study highlights the continued need to explore the barriers associated with effective provision of treatment for overweight children.

This dissertation is dedicated to

Marcos

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Chapter 1: Introduction

In the United States today, there are increasing numbers of children who will become obese adults. Despite improvement in scientific knowledge regarding nutrition, lifestyle factors, and health, the current prediction is that the youth of today, on average, may live less healthy and shorter lives than their parents (Cheskin, 2006; Daniels, 2006). Obesity is a complex process leading to chronic disease and poor psychological adjustment (Hinds, 2005). Not only does obesity create physical health risks and co-morbidities, obesity in childhood increases the risk of depression and poor self-esteem (Sinton & Birch, 2005; Whetstone, Morrissey, & Cummings, 2007). The development of poor self-esteem in a child increases the risk of problem behaviors such as aggression, crime, teenage pregnancy, drug and alcohol use, tobacco use, and eating disorders (Brook et al., 2007; Sinton & Birch, 2005).

Treatment of childhood obesity is multifaceted, requiring behavioral and lifestyle changes for both child and family to achieve a healthy weight (Davis et al., 2007; De-Santis-Moniaci & Altshuler, 2007; Plourde, 2006; Ritchie, Crawford, Hoelscher, & Sothern, 2006; Spear, et al., 2007; Vaughn & Waldrop, 2007; Wofford, 2008). Therapeutic intervention must enlist the support of the family to reshape the child's

perception of him- or herself (Harter, 1999). One method shown to result in positive improvements in attaining healthy weight and lifestyle with children is family-based behavioral treatment (FBBT). The purpose of this study is to evaluate the effect of SHAPEDOWN, an interventional FBBT program, on self-esteem in obese children.

Background and Significance

Obesity is a worldwide problem, affecting children and adults across all socio-economic strata. Its incidence has been termed an "epidemic". Current data reveal that severe obesity is increasing more rapidly than mild obesity and that obese children become obese adults (Cheskin, 2006; Daniels, 2006). The scientific community has extensively documented the multiple factors promoting obesity. Education and anticipatory guidance for children and families are mainstays of prevention for obesity (Anderson & Butcher, 2006; Caprio, 2006; Inge, Zeller, Lawson, & Daniels, 2005; Nader et al., 2006).

In addition to the physiologic and metabolic effects of chronic obesity, overweight children are at greater risk for low self-esteem and being victims of aggression than normal weight youth. Although most overweight children and adolescents do not have psychiatric disorders (Mustillo et al., 2003), social stigmatization places the child outside social norms of acceptability, with maintenance of healthy body image and self-esteem a predominant struggle in obese children. In addition to decreasing

body satisfaction in adolescence and adulthood, constant dieting may lead to lower self-esteem due to the cyclic nature of losing and regaining weight (Gilchrist & Zametkin, 2006). Self-esteem may be positive in middle-school-aged children. As they enter adolescence, however, boys and girls with obesity show significantly poorer levels of self-esteem than do children with normal weight. These children often experience problems with social interactions and relationships (Janssen, Craig, Boyce & Pickett, 2004).

Franklin, Denyer, Steinbeck, Caterson, and Hill (2006) studied a sample of 2749 Australian children ages nine through twelve in utilizing a self-esteem scale and body shape perception silhouettes scale (Candy & Fee, 1998). Research showed that obese children had lower perceived athletic competence, worse perception of physical appearance, and significantly lower sense of self-worth than their normal weight peers. S on these measures improved following weight loss treatment but remained below those observed in normal weight teens. Janssen et al. (2004) found negative social and psychological ramifications included being less liked, rejected, and being victims of bullying by peers, family members, and teachers among 5,749 Canadian 11 to 16-ear-old schoolchildren. Similarly, Stradmeijer, Bosch, Koops, and Seidell (2000) found low self-esteem related to physical appearance and athletic competence among 143 children aged 10 to 16 years. Whetstone, Morrisey, and Cummings (2007) found a correlation between

weight perception and depression among a sample of sixth through eighth grade children (N = 5,174) in 27 public schools in North Carolina. In this sample, girls were found to have a two-to-four times greater risk for decreased self-worth. Using a risk behavior survey, the authors found that perceived weight status was significantly associated with thinking, planning, or attempting suicide.

It is important to understand the multidimensional impact of obesity on biophysical and mental health domains in the development of healthy adults. Although not all overweight children are affected, researchers have identified the risk of psychological distress as well as poor biomedical outcomes. Numerous researchers have investigated the concept of self-esteem and its impact on a child's coping, motivation, and energy levels (Harter, 1999). According to the Terror Management theory (Chen, Chao-Hsing, & Kennedy, 2007), a higher level of self-esteem and self-competence provides a buffer against anxiety, improving a child's ability to achieve personal goals and affecting health and behavior. As Harter (1990, 1999) noted, obesity contributes to a sense of lowered self-competence. By targeting obesity, childhood self-esteem and functioning may be improved.

Two theoretical models of self-worth include those of James and Cooley first described in the late 1800's. In 1890, James proposed that it is from success in various domains that a child derives his or her sense of self-esteem. He further explained that

those children who fall short of their own standards and ideals experience low self-esteem (Singer, 2007).

According to Harter (1999), inadequacy in domains deemed unimportant by an individual does not adversely affect self-esteem. One strategy children use from this perspective is to seek positive confirmation from parents and significant others with regard to their self-worth. Cooley emphasized the role of the opinion of significant others in shaping the self (Bretherton, 1991; Evans, 1989; Harter, 1999; Linville & Carltson, 1994). Parental involvement and family support and encouragement in achieving changes in dietary management and physical activity are essential to successful lifestyle adjustment and healthy self-esteem (Borra, Kelly, Shirreffs, Neville, & Geiger, 2003; Singer, 2007).

Given the current trend of obesity among school-aged children, examination of interventions to promote healthy lifestyle improvement is important to the future health of this generation. Obesity has multidimensional impacts on biophysical and mental health, and the importance of environmental and family support must be considered when introducing and modifying effective healthy lifestyle changes.

Results from this study may contribute to the practice of nursing by providing support for continued family-based behavioral treatment programs as an intervention for improving childhood self-esteem and lifestyle habits changes in management of

childhood obesity. This study may advance nursing science by building upon the theoretical relationship between self-esteem, lifestyle habits changes, and family-based behavioral treatment, providing evidence for childhood obesity management strategies.

Family-based Behavioral Treatment

Family-based behavioral treatment (FBBT) has shown success in weight management among children with moderate and severe obesity, demonstrating significant decrease in percentages of overweight children and long-term improvement in fitness level, cardiovascular risk factors, and psychological well-being (Epstein, Paluch, Roemmich, & Beecher, 2007; Golan, Kaufman, & Shahar, 2006). The family-based behavioral treatment model is grounded on parental management promoting habit change combining diet, exercise, behavioral change strategies, and family participation. Behavioral treatment combines both goal- and process-orientations combined with skill building tools to incorporate new behaviors.

According to Wadden, Crerand, and Brock (2005), there are three basic components of behavioral treatment: self-monitoring, stimulus control, and cognitive restructuring. Documentation as a form of self-monitoring (food or activity diary) may include writing down the types, amounts, and caloric value of foods and the amount of physical activity. Journaling provides an opportunity for reflection and highlights areas in which changes are needed. Record keeping can include information about times and

emotions associated with eating. Self-monitoring can reveal food patterns of which families may have been previously unaware. Record keeping provides a target for intervention. One example may be routinely consuming excessive calories from sodas or juices. Parents may be unaware of the impact of high-sugar fluid intake. Once identified, this behavior can be modified by substitution of healthier foods and behavior change. Behavior change may include eliminating unhealthy foods and stocking up on healthy products in the pantry. Self-monitoring has been found to correlate with long-term weight loss because it tends to heighten awareness of consumption patterns related to food intake (Wadden, 1995).

Stimulus control techniques help families manage cues associated with eating. These strategies aim to change signals within the family environment that may promote habits involved in overeating. Within the FBBT program, some strategies may include limiting eating in fast food restaurants to monthly events associated with pleasant family interaction, decreasing exposure to problem foods in the cupboard, and providing precut vegetables that are easily visible when a child opens the refrigerator door. Portion control strategies may include using a smaller plate at mealtimes to decrease portion sizes. In order to increase physical activity, keeping an activity calendar on the refrigerator and scheduling active family adventures rather than sedentary ones, for example, watching TV, might provide the stimulus needed to be active (Wadden et al., 2005).

Cognitive restructuring consists of teaching positive thinking and modification of irrational thoughts. Negative thoughts that undermine motivation for weight control efforts generally include the impossibility of successful weight loss, unrealistic eating and weight loss goals, and negative self-evaluations. Structured group exercises and role-playing provide opportunities for children and families to learn to reframe negative thoughts. For most overweight children and families, weight loss is a slow process that may lead to disappointment. Cognitive therapy can help families accept and value efforts to improve their lifestyle and health choices (Wadden, Foster, & Brownell, 2002).

Behavioral treatment advocates for small changes rather than large ones, with incremental steps taken to achieve complex goals. Behavior treatment is process-oriented and helps children and families decide what they want to accomplish. Making small changes gives children and families successful experiences to build upon rather than attempting drastic changes that are often unrealistic. Skill building tools, include creating new strategies and removing barriers, are important learned behaviors. Children are assisted to set goals and self-monitor with developmentally appropriate reinforcement. Skills include specifying measurable goals to allowing for clear assessment of progress. An example is the goal of walking 10,000 steps a day and using a pedometer to monitor and encourage this behavior.

Behavioral treatment is generally structured with weekly meetings for an initial period of 10 weeks or more. Meetings may be offered by private dieticians, health care providers or psychologists, or may be part of a university-based clinic. Treatment is often provided to groups of 10 to 20 individuals over approximately 90 minutes. Group sessions provide social support and role modeling. Weekly weigh-in is often a motivator for participants. Group therapy has been found to promote greater weight loss than individual therapy among adults (Renjilian, Perri, & Nezu, 2001); and group treatment is also more cost effective. One established criterion for success in adult weight loss programs is a 5% to 10% reduction in initial weight (Flegal, Carroll, Ogden, & Curtin, 2010; World Health Organization, 2000). Numerous FBBT models are in use for treatment and several are discussed in the literature review that follows. One program that has shown success is the SHAPEDOWN intervention. Adaptation for the current investigation is discussed in the following section.

SHAPEDOWN

SHAPEDOWN (registered trademark) is a FBBT program developed by faculty of the University of California, San Francisco, School of Medicine to improve self-esteem and teach safe and gradual weight loss for children. The SHAPEDOWN program format consists of ten weekly two-hour individual or group sessions. Sessions are designed to provide basic healthy lifestyle instruction. The intent of the program is to

build on the strength of the family by providing family support to create and improve an active and healthy lifestyle. The program focuses on common factors promoting children's overeating and inactivity. Parents learn to sharpen their limit setting skills to promote and foster their children toward a healthier lifestyle. Important skills include role-modeling and guiding children to accept increased responsibility for personal nutrition and activity.

Purpose of Study

The purpose of this study was to determine the effect of the SHAPEDOWN program to support lifestyle changes for both children and families and improve self-esteem among children aged 8 to 12 years. This study was designed to test the hypothesis that children who complete a FBBT intervention will have improved self-esteem.

Theoretical Framework

In order to examine the effects of family based behavioral treatment on childhood self-esteem, habits, and obesity, it is essential to use a theoretical framework to guide and enlighten the research. A theoretical framework provides an innovative and precise organization of ideas that project a provisional, focused, and methodical view of phenomena (Chinn & Kramer, 2004). Theory evaluation includes reflection and critique, providing insight into the utility for application in practice (Meleis, 2007). The following is an analysis of the theoretical framework used to guide this research, including conceptual definitions.

The concepts under study include development of self and self-esteem in individuals. The significance of self and self-esteem provide the basis for healthy psychosocial achievement for the child. The influence of the family on development of the child is discussed. Family-based behavioral treatment as a method for promoting positive self-esteem for children is discussed. The theoretical framework of Bandura's (1999) social cognitive theory utilizes self-efficacy to overcome the environmental and psychological impediments to unhealthy lifestyle that result in childhood obesity. Application of an adaptation of the Familial Approach to the Treatment of Childhood Obesity model developed by Golan and Weizman (2001) provides individual steps to achieve the goal of self-efficacy.

Theories of development of self. Historically, the process of individual conceptualization traces to 1644 when Rene Descartes published the *Principles of Philosophy*, with the idea that if a person had doubts, he was thinking, and if he was thinking, then he must exist (Newman, 2008). Speculations concerning the nature of the self and the development of consciousness of self have long been a significant part of psychology. Late 19th and 20th century theories regarding the philosophy of self will be briefly reviewed. Childhood development of self and its relationship to self-esteem and social cognitive theory will also be discussed.

The social self. Near the end of the 19th century, psychologists James, Cooley, Mead, Erickson, and Rogers became important contributors in the discussion of self-concept development (Paranjpe, 1998). Human action began to be viewed as being socially situated, a product of personal and situational influences. William James proposed the existence of self as a process with two basic components, distinguished separately in language only as the "me" self and the "I" self. The "me" self embodies the empirical experience and characteristics of the unique individual, for example, one's body, social relationships, and spirituality. The "I" self embodies an individual's consciousness of existence, feelings, or thought. Developmental changes within an individual are reciprocal and essential between the development of the empirical me-self and the thinking I self. As an example, James (1890) wrote, "we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry, or fearful... (p. 300)". The two elements, one of the physical manifestation joined with the thoughts and feelings within the individual, become a conceptual framework in which the individual eventually comes to see him- or herself as a person.

James divided the me-self into three components: the physical or material self, the social self, and the spiritual self. He categorized the material self as including one's body and material assets (family, possessions). The social self reflects the vision of self as seen

by others. The spiritual self, one's introspective feelings about self, is considered the "inner core" and the most enduring foundation of the three components.

The source of the social self is the capacity to think of oneself as a thinker and includes thoughts, temperaments, and personal morality. James considered the social self to be developed in social relationships and thought an individual might have as many social selves as there were people around him or her (Bretherton, 1991; Evans, 1989; Harter, 1999; Linville & Carlston, 1994). He thought of the social me-self as a composite of the three levels of the self, the physical, social, and spiritual. James identified that the me-self might consist of an actual and idealized version. The ideal me is the self-image toward which an individual strives. Self-worth is determined by the discrepancy between an individual's actual and potential "mes".

Development of individual self-esteem/self-worth, according to James, was ultimately based on perceptions the cognitive I-self held regarding achievements and the ability to successfully attain them. James hypothesized that if one perceived an achievement as important and did in fact succeed in that achievement, he or she would have high self-regard. Lack of success in an area deemed important, however, would generate low self-esteem. Whether positive or negative, self-esteem is an individual's self-evaluation (Mendelson & White, 1985). James viewed attainment of success as an

influence on "good" or "bad" self-esteem only if the individual considered attainment important (Bandura, 1999; Harter, 1999; James, 1890).

The "looking glass" self. Charles Horton Cooley and others, including George Herbert Mead and James Mark Baldwin, further embraced James' theory of the importance of social interaction in the development of self (1895 thru 1934). According to Cooley's "looking glass self", the development of a sense of self is based on how an individual imagines that others think of him or her. As an individual develops, internalization and self-regard occurs through social interaction, continually evolving to adulthood.

Baldwin, in 1897, spoke of the "alter" (the common interaction between self and other) and the ego as being socially modified to produce a child's' individuated self-definition. An individual's sense of self emerges through social experiences, assimilation, and accommodation of innate temperament to attain another's approval [both contextually and reciprocally] (Bretherton, 1991; Harter 1999).

In contrast to James' perspective of active comparison of aspirations and perceived successes, developmentalists who followed felt that antecedents to self-worth were socially derived and determined by the interaction of assimilation and accommodation. Childhood imitation and modeling through play and perceived reactions of others were seen as the basis for development of self-esteem. Children are eventually

able to refine or internally accommodate experiences to better fit their external reality, providing the child with his or her construct of self (Maier, 1969).

Delaney (2006) noted that children are constantly learning from others how to think about themselves and their world. Symbolic interactionism influenced theory regarding the self-development by social construction through interactions with others. Adoption of the opinions of significant others became the important criterion in the development of the individual self, influencing self-feelings and contributing to self-concept and self-worth formation. Mead said, "We appear as selves in our conduct insofar as we ourselves take the attitude others take toward us" (Harter, 1999, p.19).

Behavioral theories. With the period of Modernism and a shift toward behavioral approaches and the importance of empirical data in the early 20th century, concepts revolving around cognitive development of self became unpopular. The emphasis turned to the functional analysis of behavior, relegating ideas of self to correlation with behaviors. With technological and mechanical advancement, values such as objective evidence, reason, and utility became an important focus. Popular thinking turned toward development of an individual within a framework of family. Scientists began to examine the additional qualities of mother-infant interactions and societal influences to produce a working-model person who was more homogenous and functional in society. Bowlby's 1973 attachment theory provided the framework for transmission of social selves based

on secure or insecure relationships (Stevenson-Hinde, 2007). Rather than dwelling on esoteric constructs of self, themes that contributed to the popular empiric trends of the time gained importance. Thought processes became grounded in personality attributes that were utilitarian and measurable. Valued empirical personality traits included reliability, trustworthiness, genuineness, autonomy, and stability (Bretherton, 1991).

Beginning in the 1950's, with increased interest among developmentalists such as Piaget, significance in cognitive processes reemerged. Mental representations of the self became a popular cognitive construct again. Gergin, and others, Alport, Jung,and Maslow, placed emphasis on the "integrated self" and the creation of multiple selves across a variety of social contexts (Harter, 1999). Alport believed that all aspects of an individual held value in the formation of inward unity, and behaviors expressed the effort to maintain the integrity and unity of self. Epstein, Wing, Koeske, Andrasik, & Ossip (1981) developed the "unity principal", that is a basic need of individuals to maintain coherence of the conceptual system that defines the self. Others argued the importance of adjustable behavior across interpersonal relations and situational contexts leading to discussion of the authenticity of self (Harter, 1999).

Adaptation. Popular recent theory on the development of self addresses the importance of both cognitive and social influences during childhood. Self-development begins at birth and has predictable stages (Bretherton, 1991; Maier, 1969). Verbal

representations of self become possible once language develops, leading to cognition growth and more elaborate and complex self-structures, and eventually, self-thinking, either positive or negative. Development is influenced by the thoughts of and interactions with significant others within the child's environment with individual differences emerging through internalization, creating both positive and negative outcomes.

Childhood developmental literature currently addresses the importance of healthy adaptation (positive self-esteem) in the development of behaviors such as autonomy, self-efficacy, and formation of interpersonal relationships and intimacy. Inadequate development of these attributes creates a negative sense of self (Harter, 1999). Over the past century, the importance of childhood self-esteem in relation to self-efficacy in adulthood has emerged. The influences of the child's home and family environment are considered especially significant to future success in achieving life goals. Influences contributing to self-esteem include perception of physical and mental attributes, modified by societal environment surrounding the family, including parental interactions, media, and interpersonal relationships.

Social cognitive theory. In keeping with the theme of cognitive influence, Bandura (1969) developed the social cognitive theory. He theorized that previous life experiences and their perceptions influenced the future actions of individuals. Social imitation and modeling create opportunities for learning through observation (Price &

Archbold, 1995). Bandura (1986) described modeling as a much more complicated process than simple mimicry. His conceptualization of modeling focused on the observer abstracting the rules and structure of a behavior, rather than merely copying what has been observed. Once the child acquires the rules and structures, he or she can apply and use that knowledge to generate new patterns of behavior beyond personal experience. Modeling can have the effect of reducing or strengthening inhibitions related to pre-existing behaviors. If a child observes a model's action resulting in negative consequences, he or she is discouraged from using that pattern of behavior. Conversely, observing behaviors with positively valued consequences encourages adoption of similar behaviors. Learned behavior assimilated within the context of self and within a positive environment, transfers new patterns of behavior, positively reinforcing learning. Success with new achievement reinforces the learner in exposing him or herself to increasingly complex developmental hierarchical tasks, leading to self-efficacy, the basic cognitive mechanism governing human function and the "fundamental basis for all behavioral change" (Bandura, 1999; Evans, 1989).

Bandura explained that the child who is able to master cognitive skills develops a growing sense of cognitive efficacy. High individual self-efficacy predicts increased persistence in seeking solutions, increasing levels of cognitive achievement, and increased interest in an activity (Cervone & Scott, 1995). Children who view themselves

as having positive traits (i.e., "I am smart"; "I am good"), based on their interactions with, and perceptions of, significant others in their social environment, attain positive personal evaluation, evolving into global self-esteem (Bandura, 1986; Harter, 1999).

In Bandura's theoretical model of human function, the nature of self-personhood is "self", defined as an interacting triad of behavior, cognitive and personal factors (temperament), and environment. By increasing behavioral competencies and skills in dealing with situational demands and by altering adverse social conditions, psychosocial function is improved (Evans, 1989).

Bandura's theory reflected James's concept of self in that he held that behavior is dominated by two major influences, both efficacy expectations and outcomes. James had previously proposed the concept of the potential or ideal self and the immediate and actual real self. Our internal expectations are self-imposed and attainment of the "ideal self" leads to higher self-esteem. Perception that one is capable of achieving an outcome, despite problems that may occur in the process, is an important construct in the child's belief system. Measurement of self-efficacy positively predicts performance and development of adjustment skills, including changing one's habits and behaviors, and can be adapted to weight management strategies and interventions (Price & Archbold, 1995).

Conceptual Model

For a child, the importance of parental support and guidance in behavioral change is fundamental. Parents directly role model activities of daily living and provide the home environment for the child. Involvement of family is basic to promoting engagement in change.

Bandura's social learning theory, introduced more than 35 years ago, is the basis for a family-based behavioral treatment model for management of childhood obesity developed by Golan and Weizman (2001). By incorporating the concepts of modeling by significant others and the contextual importance of the family home environment, the researchers developed the Family Approach to the Treatment of Obesity: A Conceptual Model.

Parents are the primary role model for their children regarding childhood health and dietary habits (see Figure 1) (Epstein, Valoski, Wing, & McCurley, 1994; Golan & Weizman, Haddock, & Shadish, 2006; Haddock, Shadish, Klesges, & Stein, 1994). Parents are empowered to promote healthful eating and activity. Parenting skills are taught to enhance daily practices in raising their children, improving communication and avoiding mixed messages, and functioning in a positive, constructive, and flexible manner directed at children's behavior rather than personal attributes.

In Golan's model, the intervention focuses on parents as the instigators of change, emphasizing healthy lifestyle, rather than weight reduction. With its roots in social cognitive theory, this approach empowers the very people who are strongly affected and provides them with creative mechanisms, enabling action in areas of their lives over which they have influence (Bandura, 1999). Golan, Weizman, Apter, and Fainaru (1998) found that focusing on the parents as the main change agent improved intake of healthy foods, with greater weight loss, than when children were the targeted agents of change. The model proposes inclusion of adults in the educational efforts as they learn to improve their parenting behavior and make changes in their home environment to assist the obese child to develop better eating and activity habits. Improved weight status of the child is expected to result from improved parenting skills and nutritional and environmental changes, with role modeling and imitation of parental actions an important component of the intervention.

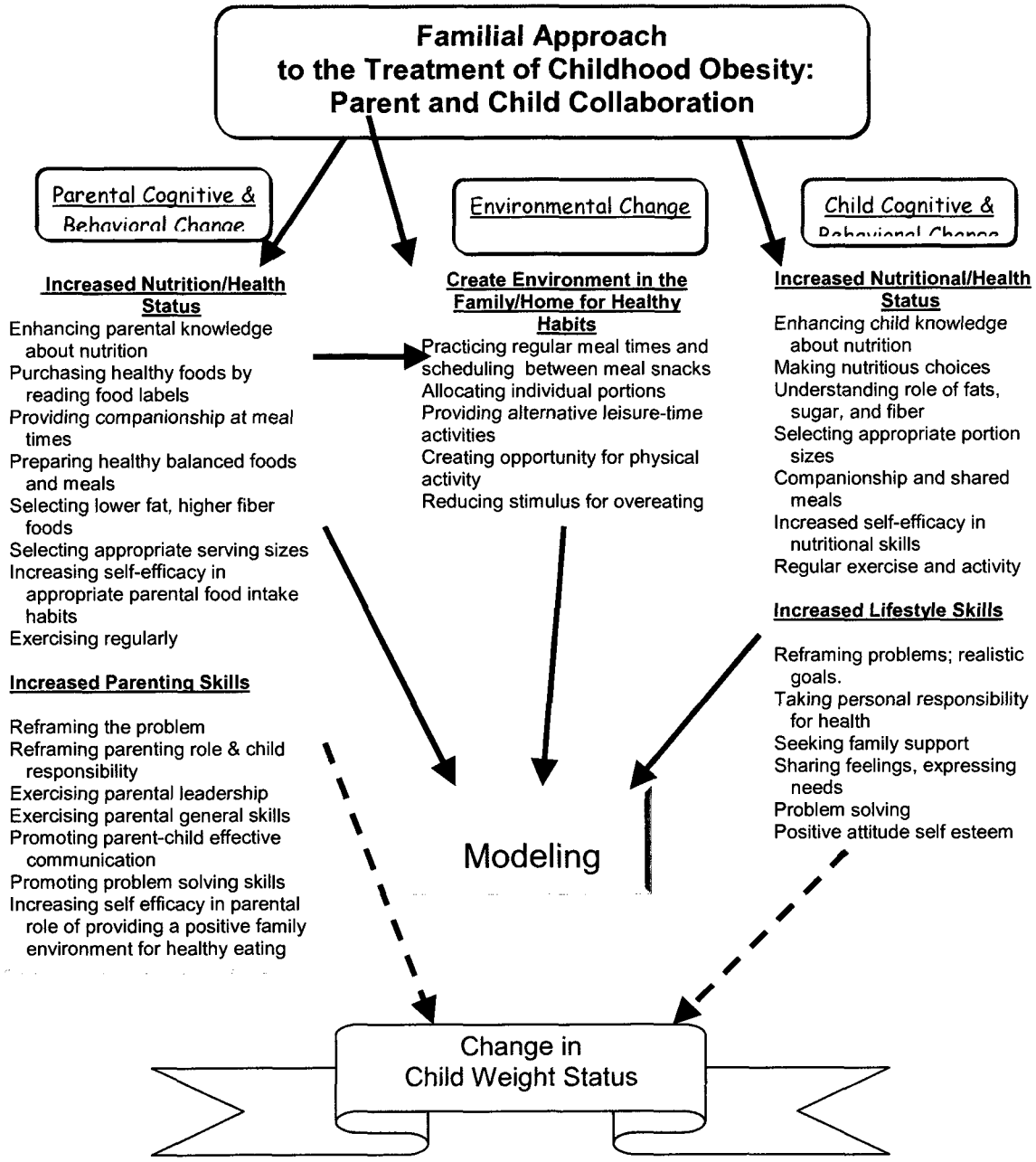

Figure 1: Model: Adapted from Golan & Weitzman, 2001.

In discussion regarding further application of the model, Golan and Weizman (2001) theorized that a collaborative child and parent intervention might be successful in achieving healthier lifestyles and weight management in children. Modification of the conceptual framework reflects this adaptation. Including the child in this model involves increased education regarding nutrition and healthy lifestyle choices at the appropriate developmental level to further reinforce and model learning. Evans (1989, pp. 6) quoted Bandura:

> "Most peoples' images of reality on which they base many of their actions are shaped by what they see and hear rather than their own personal experiences. If we relied solely on direct experience, we would have a very limited experiential base for acquiring many of our attitudes, beliefs and competencies."

Parents will continue to be the main source of modeling in adopting new behaviors by presenting a healthy eating style in the home and social environment, modeling healthy selection and consumption of foods, and engaging in regular physical activity. Including children as collaborators in the adapted model reinforces what they are learning at home.

The conceptual model developed by Golan & Weitzman is based on the same constructs that the SHAPEDOWN intervention teaches both the child and the parent(s) through behavior modification and cognitive therapy. The SHAPEDOWN intervention is based on the philosophy stressing healthy lifestyle attainment incorporating the individual

needs of the child and family. The program addresses underlying contributions to the weight problem by teaching parents and children methods that improve family interaction, parenting skills, communication, and feelings recognition and establishing attainable goals that promote long-term change. The family-based behavioral treatment model is grounded on parental management promoting habit change combining diet, exercise, behavioral change strategies, and family participation. Behavioral treatment combines both goal- and process-orientations with skill building tools to incorporate new behaviors.

Summary

Nationally, there is an increase in the number of children who are overweight or obese. Studies indicate that those children grow into obese adults. Overweight children are more vulnerable to depression, stigmatization, and poor physical and mental health outcomes. Schoolchildren are at a time in their life when they are formulating a global sense of self-worth, important to their functioning as healthy adults. Bandura's social cognitive theory links learning with modeling by the adults in the child's life. In terms of creating healthy lifestyle changes within the context of the home and family, a family-based behavioral treatment for childhood obesity is proposed to promote positive role modeling and learning behavior that will result in improved weight and health status, including positively promoting self-esteem. This study was designed to evaluate self-

esteem in school-aged children from third through sixth grades (8 to 12 years of age) before, upon completion, and two months following participation in the SHAPEDOWN family-based behavioral intervention program for weight management and healthy lifestyle promotion. A quasi-experimental, descriptive, correlation design with repeated measures was used to examine the relationships between program completion, self-esteem, and weight-related behaviors in an underserved low-income population of children. Collection of data using a longitudinal design was designed to describe changes over time with the eventual goal of establishing causality (Polit, Beck, & Hungler, 2001), predicting the value of the intervention, and strengthening recommendations for future intervention.

Chapter 2: Literature Review

The purpose of this chapter is to provide a critical analysis of the current literature linking self-esteem in children who are overweight or obese and completion of a family-based behavioral treatment program for weight management. Relevant literature is presented establishing the relationship between childhood obesity and self-esteem. The second section of the chapter will briefly discuss current treatment modalities for childhood obesity.

Childhood Obesity: The Scope of the Problem

Obesity in a child 18 years of age or less is defined as having a body mass index (BMI) equal to or greater than the 95th percentile for age and height and refers to excessive body fat in relation to lean body mass (Institute of Medicine [IOM], 2005; Krebs, et al., 2007). The Centers for Disease Control (CDC) developed BMI reference data using five national health examinations from 1963-1994 and five supplementary sources in the United States (Kuczmarski, et al., 2000). A child with a BMI at or above the 85th percentile is diagnosed as overweight, referring to excess weight in relation to height, and is at risk for obesity (He & Beynon, 2006). Other classifications include underweight (below the 5th percentile), normal weight (5th to 84th percentile), and a newly

recognized category of severe obesity (greater than 99th percentile). BMI age for weight percentiles are used as a screening measure for the child's weight (Martin, 2009).

Another method used to categorize weight status is percentage overweight, calculated using the following formula: 100 X (actual weight – desirable weight)/desirable weight. Desirable weight for children is based on the 50th percentile for weight for gender, age, and height from the CDC growth charts (Golan, et al., 1998). Twenty percent overweight is equivalent to a BMI at the 85th percentile. There is a greater probability of obesity in adulthood as well as adverse socioeconomic outcomes when a child has a BMI greater than the 85th percentile (Krebs et al., 2007).

Being obese (BMI greater than the 95th percentile) as a child increases the lifetime risk of cardiovascular disease, respiratory disease including asthma and sleep apnea, stroke, hypertension, metabolic syndrome and Type 2 diabetes, gastroesophageal reflux disease, liver disease, gallbladder and pancreatic disease, constipation, and skeletal disorders (Krebs et al., 2007; Martin, 2009). Obesity can also lead to a decreased quality of life (Friedlander, Larkin, Rosen, Palermo, & Redline, 2003; Hughes, Farewell, Harris, & Reilly, 2007; Schwimmer, Burwinkle, & Varni, 2003; Swallen, Reither, Haas, & Meier, 2005; Zametkin, Zoon, Klein, & Munson, 2004), and a shorter lifespan than their parents (Davis et al., 2007).

Research has shown that children with obesity experience stigmatization, teasing, and bullying by peers and adults, resulting in increased rates of depression and poor self-esteem (Braet, Mervielde, & Vandereycken, 1997; National Association of Pediatric Nurse Practitioners [NAPNAP], 2006; Stice & Berman, 2001; Strauss, 2000; Strauss & Pollack, 2003). Hesketh, Wake, and Waters (2004) examined the relationship between BMI and self-esteem in a prospective cohort study with 1,157 5- to 10-year old children. Overweight/obese children reported a lower self-esteem score at both time points. Self-esteem in the overweight children was found to be even lower ($p < 0.001$) when reevaluated three years later. Similarly, Strauss, Smith, Frame, and Forehand (1985), found obese children to be less liked, and more often rejected, by their peers compared to a matched control group of non-obese children. Overweight/obese children demonstrated more conduct problems, lower overall self-concept, and lower self-concept related to their physical appearance and perceived themselves as more depressed.

Miech and associates (2006), reviewing the U.S. National Health and Nutrition Examination Survey (NHANES) data from 1971 to 2004, reported a significant association between poverty and overweight in adolescents aged 15 to17 years. McCullough, Muldoon, and Dempster (2009), utilized Harter's Self Perception Profile in a cross-sectional group of 211 8- and 9-year-old children, examining the relationship among the variables of SES, gender, self-perception, and weight. SES was shown to

have a significant effect on scores for social acceptance, but only for children who were overweight ($P \leq 0.0001$). These findings support previously reported data that disadvantaged children in general have reduced levels of self-worth. Poor self-esteem appeared to be exacerbated in overweight children. Health intervention for obesity requires adaptation and must take into consideration socioeconomic disadvantage.

Adults who have been obese as children may have poorer psychological, social, academic, and economic outcomes than those who exhibited normal childhood weights (Gortmaker, Must, Perrin, Sobol, & Dietz, 1993; Robinson, 2006). Carpenter, Hasen, Allison, and Faith (2000) reviewed an American population-based study of 40,086 adults' ages 18 years and older interviewed as part of the 1992 National Longitudinal Alcohol Epidemiologic Survey. The researchers found a significant association between overweight and major clinical depression as well as correlations with suicidal tendencies and attempts. Although the mechanisms underlying these associations are unknown, there may be a relationship to the stigma of obesity in Western culture.

Children and adolescents with a BMI greater than the 95th percentile are more likely to become obese adults (Hughes & Reilly, 2008; Whitlock, Williams, Gold, Smith, & Shipman, 2005). Health interventions for childhood obesity should have priority as increased risk of poorer physical and psychological health persists into adulthood. Review of the literature regarding treatment modalities for childhood obesity reflects the

importance of obesity prevention and management for promoting improved overall health.

Parenting styles. Studies have shown that children's eating habits and their environment influences food choices, and that the family plays an important role in both the development and prevention of weight problems in children (Epstein et al., 1994). It is the parent's role to maximize the family's health. Parents do this by controlling the food environment, imparting appropriate eating habits and activity patterns, and through role-modeling healthy eating behavior.

Parenting skills have been shown to contribute to eating problems. Johnson and Birch (1994) found that parent's may attempt to control a child's behavior rather than regulating the obesiogenic factors in the home environment. Authoritative parenting skills have been most consistently effective in initiating and maintaining lifestyle changes in children (Golan, Kaufman, & Shahar, 2006). Baumrind (1971) developed a model of parenting styles that includes classification into four groups: authoritative, authoritarian, permissive, and neglectful. Parental sensitivity within the relationship and expectation for their child's maturity and self-control differentiate among styles.

Those parents with an authoritative style have high expectations for their child's maturity and self-control. Parents demonstrate high levels of emotional warmth, involvement, and sensitive acknowledgement of their children's worth. The authoritative

style has been associated with improved child outcomes including higher academic achievement, increased self-regulatory ability, use of adaptive strategies, and fewer risk-taking behaviors.

Authoritarian parents are those with strict disciplinary styles, expecting high levels of child self-control, while providing minimal emotional support. This type of parenting has been associated with obesity among children (Rhee, DeLago, Arscott-Mills, Mehta, & Davis, 2005).

Having low expectations for self-control in a setting of high emotional sensitivity is consistent with a permissive style of parenting. Children parented in the permissive style exhibit positive levels of self-confidence, but lower levels of self-control, as evidenced by higher drug-use and problematic school behavior.

Parents who exhibit a neglectful parenting style demonstrate low emotional involvement and laxity in discipline and rule setting. Characteristic childhood outcomes include poor school achievement and higher rates of depression and smoking.

Rhee and colleagues (2005) studied the relationship between the four parenting styles and overweight status among first graders. In a sample of 872 children, they found the authoritarian parenting style to be more closely associated with the risk of obesity than the authoritative style (OR: 4.88; 95% CI 2.15-11.10; $P < .001$).

Interventions with behavioral therapy that incorporate family involvement have been found to be more effective in decreasing overweight status in children than those programs that do not involve parents. Behavioral modification methods based on social cognitive theory are applied to the treatment of specific maladaptive behavior patterns, including obesity. A behavior-based approach allows families to increase understanding of healthy diet and activity, increase their ability to recognize behaviors negatively affecting health and exercise, and develop effective parenting techniques (Drohan, 2002).

Treatment of Childhood Obesity: An Overview

For children whose BMI is greater than the 95th percentile for age and gender, initial management begins with screening and specialty referral for treatment of obesity-related co-morbidities. Interventions for children with co-morbidities are intensified. Controlling the nutrition and activity environments includes managing eating and activity behaviors, using behavioral-cognitive strategies to establish new norms for eating and activity. Evidence-based research supports the promotion of physical activity in obesity treatment, with both physical and psychological benefits (Floriani & Kennedy, 2007). Intervention strategies used to help moderate excess weight include setting goals, monitoring behavior, rewarding success, problem solving, and improvement in parenting skills (Barlow, 2007; De-Santis-Moniaci & Altschuler, 2007; NAPNAP, 2006).

Goal setting includes assisting families and individuals to establish incremental achievable goals for behavior change. Monitoring behavior includes tracking intake and activity. Rewarding strategies involve reframing and focusing on small successes rather than failure. Problem solving includes identification of specific problem areas and planning, discussing, and implementing related changes within the family.

Obesity management interventions include primary care and specialty care medical models and behaviorally based lifestyle and obesity management. Lifestyle and behaviorally-based models fall into several broad categories including community-based, school-based, and family-based intervention modalities (Summerbell et al., 2008). This review will reflect treatment interventions used primarily with children 8 to 12 twelve years of age.

Primary care providers. Primary care providers (PCPs) are generally the first to diagnose weight issues in children (American Academy of Pediatrics, 2003; Barlow, Richert & Baker, 2007). Although diagnosis of obesity sounds relatively straightforward, with management guidelines well delineated, PCPs describe many barriers to effective management and encounter minimal success. According to Barlow and associates (2007), parent or child identification occurs in only 10% of children who are overweight. Because the early clinical manifestations of obesity-driven pathological changes and insulin resistance are often not present with concrete symptomology in the pediatric

population, PCPs must have a high index of suspicion, and these concerns can be difficult for parents to understand or accept (Weiss & Kaufman, 2008). Many providers express difficulty discussing the subject of obesity with families due to the sensitivity of the topic and concern regarding adversely affecting the clinician-patient relationship. (Walker, Strong, Atchinson, Saunders, & Abbott, 2007).

Walker and colleagues (2007) explored the views of 18 pediatric health care providers regarding their role in childhood obesity. The providers expressed a belief that it was their role to raise the issue of the child's overweight status, but that ultimately obesity was a social and family problem. PCPs acknowledged the use of the BMI and growth charts to provide a nonjudgmental assessment to help parents begin to understand the problem and motivate them to positive actions. Issues in the family may be numerous, including poor home environments with low family commitment to change. Pediatric providers further identified that office settings are not generally conducive to providing the time required to counsel and motivate families about nutrition, physical activity, and behavior change (Barlow, Richert, & Baker, 2007). A lack of training and resources, lack of evidence for effective interventions, parental attitudes, and the "American lifestyle" were also cited as barriers and concerns for PCPs (Gately et al., 2005; Larsen, Mandleco, Williams, & Tiedeman, 2006; Small, Anderson, Sidora-Arcoleo, & Gance-Cleveland, 2009).

Twelve percent of pediatricians (N = 356) in one study reported high self-efficacy in obesity management, and 39% believed that physicians could be potentially effective in childhood weight management (Perrin, Flower, Garrett, & Ammerman, 2005). Larsen and associates (2006) found that only 73% of pediatricians polled reported an awareness of the American Academy of Pediatrics guidelines for obesity prevention. Cook, Weitzman, Ailinger, and Barlow (2005), reviewed medical records for 32,900 ambulatory visits made by 2- to 18-year-olds from 1997 to 2000 and found that among children with BMI's at the 85th percentile or greater, only 78 % had been diagnosed as overweight or obese. AAP guidelines recommend additional screening upon diagnosis of obesity, including blood pressure evaluation, diet history, and activity assessments. Cook et al. (2005) found that among the medical records of children diagnosed with obesity, 61% documented blood pressure screening, 88% included dietary counseling, and 69% included activity recommendations reflecting somewhat limited PCP compliance with the guidelines.

O'Brien, Holubkov, and Reis (2004) reported grimmer statistics in a retrospective medical record review of 2,515 health supervision visits for children aged 3 months to 16 years. Ten percent of the children were identified in the review as being obese, yet only 53% of the PCPs documented obesity in the diagnosis, 69% obtained adequate diet

histories, 15% documented activity level and TV viewing hours, and only 39% documented an obesity finding in the physical examination.

PCPs engage in weight control strategies including promoting healthy eating and activity, minimizing use of restrictive diets, and referral to dieticians, specialists (pediatric endocrinology), and specialty clinics, when available. Specialty obesity clinics for children are located in large U.S. cities with academic medical centers, with only 60% to 70% of hospitals providing this service. PCPs have identified a need for additional training and guidance in motivating patients and families to make and maintain recommended behavioral changes (Barlow, Trowbridge, Klish, & Dietz, 2002).

In a nonrandomized, clinical trial in multi-primary care office settings, 15 pediatricians and 5 registered dieticians measured outcomes of an office-based motivational interviewing intervention. The cohort demographics included a mean age of 5.3 years (3- to 7-year-old children), BMI at the 85th percentile but less than the 95th percentile, and/or at least 1 parent having a BMI of 30 or greater. In this study, parents were required to be English speaking and children with chronic medical disorders were excluded. In the sample of 91 children, 57% of the children met the criteria for BMI at the 85th percentile, but less than the 95th percentile. Forty-three percent were qualified by having one parent with a BMI of 30 or greater, even though the child's BMI was less than the 85th percentile (normal weight). Three groups were formed: a control group receiving

no intervention; a minimal intervention group, who received intervention from the pediatrician only; and an intensive intervention group, receiving intervention from both the registered dietician and the pediatrician. The main outcome measure, the percentage of change in BMI at the 6-month follow-up, was not significantly different among the three groups. There was a dropout rate of 50%. Ninety-four percent of parents reported that the intervention helped them to think about changing their family eating habits. In this pilot study, issues identified were recruitment and retention of parents, as well as the training required for the providers and for data collection (Schwartz et al., 2007).

Specialist referrals. A retrospective review of 587 children referred to endocrinologists from 1984 to 2003 found that an average of 4.3 (+/- 2.9) years elapse between PCP obesity diagnosis and referral, with an average age of 9.5 years at referral. A review of growth charts available for 251 children in this study found that 81% of these children became obese in their preschool years. Delayed referral after a prolonged interval of obesity further complicates management of co-morbidities (Quattrin, Liu, Shaw, Shine, & Chiang, 2005). Sabin et al. (2007) found in a cohort of 137 obese children, that the younger a child is at onset of treatment, the greater the weight reduction likely to be achieved. In a study of 153 non-Hispanic Caucasian girls, those girls who were overweight at age 5 were at risk for disinhibited eating and greater weight gain from

5 to 9 years of age, emphasizing the importance of early identification and intervention in childhood overweight (Shunk & Birch, 2004).

Research on pharmacotherapy for childhood obesity, although controversial, shows that use of medications early in the course of adiposity might prevent progression to greater obesity and co-morbidity (Freemark, 2007). Anecdotal results regarding the use of bariatric surgery for morbid obesity (BMI greater than 40) have been positive. Inge et al. (2009) examined eleven adolescents (BMI of 50 +/- 5.9 kg/m^2) who underwent gastric bypass surgery. All but one showed remission in type 2 diabetes mellitus. Significant improvements at one year follow-up included decreased BMI (-34%), fasting blood glucose (-41%), fasting insulin concentrations (-81%), hemoglobin A1c levels (7.3%-5.6%), along with significant improvements in serum lipid levels and blood pressure. In contrast, 67 medically managed adolescents demonstrated stable body weight, with no significant change in blood pressure or use of diabetic medications. This research shows evidence that bariatric surgery significantly improves the co-morbidities of morbid obesity and may be an effective method to reverse adverse health outcomes. The surgical sample represented a small cohort, and larger groups need to be studied for longer periods of time. The provision of treatment for an overweight child clearly goes beyond the confines of the primary care setting in the current management climate (Jonides, Buschbacker, & Barlow, 2002; Woo, 2009).

Additional interventional strategies. The outcome evidence for childhood obesity treatment is weak. Recommended intervention strategies are designed to decrease sedentary behaviors, increase physical activity, improve nutrition, and build self-esteem among overweight children (Barlow, 2007).

Various interventions are utilized to promote healthy lifestyle and weight management. Interventions include community- and school-based programs and family-based interventions. These treatment models and their effectiveness are discussed below.

Community-based strategies. Several studies have focused on after-school programs and residential treatment settings, such as weight-loss summer camps. An in-depth review of the literature revealed five community-based randomized controlled trials designed to reduce weight in overweight children. These studies were child-focused and one included parents in some aspects of the intervention. In one study, a sample of 185 children ages 9 to 18 years of age (mean 13.9 years) attended a residential weight loss camp for 14-42 days (mean 29 +/- 11 $\neq$ 42). The program provided a structured environment, including 6 hours of "fun" daily physical activities, moderate dietary restriction, and four educational sessions each week.

Participant campers had significantly reduced BMI, lost body fat, decreased hip/waist circumference, and decreased systolic and diastolic blood pressure (Gately et al., 2005). A comparison control group examined for anthropometric statistics at baseline

and at the end of the summer, in which they did not receive intervention, showed significant increases in many of the outcome measures. This was an expensive intervention costing approximately $700 per child per week, provided in a setting not widely available to many children and families.

A second community-based intervention was undertaken in Austria in 1999 and compared two groups (a total of 30 obese children) in which both groups received dietary advice with one group receiving physical/strength training (treadmill, stationary bike, and running) over 12 weeks. Fat-free body mass was assessed and significantly increased in participants involved in the fitness program (Schwingshandl, Sudi, Eibl, Wallner, & Borkenstein, 1999). Though limited and not widely available, structured nutritional and activity programs may positively affect childhood obesity at the time of the intervention. There were no long-term follow-up results reported.

Two after-school programs, both combining behavioral skills building, have shown significant improvements in weight and BMI in overweight children compared to control groups. Pilot studies with small samples (23 and 12 children, respectively), involved overweight children with mean ages of 15 and16 years. Both studies utilized parental involvement as well as nutritional education and support, group and individual counseling, and physical activity to reinforce weight management skills (Fletcher, Cooper, Helms, Northington, & Winters, 2009; Melnyk et al., 2007). Fletcher et al.

(2009) found a decrease in BMI, waist circumference (> 4 inches), and positive behavioral changes as documented in the daily entries of the participants' food journal. Melnyk et al., (2007) noted a significant reduction in BMI in study participants compared to teens in the control group. Both studies appear promising as effective methods to reduce overweight in children.

Speroni, Tea, Early, Niehoff, & Atherton (2008) evaluated the effect of a community hospital-based intervention in children aged 8 to12 years with BMI's at or above the 85th percentile. The study group consisted of a convenience sample of community members who responded to advertisements soliciting participation. English competency was required. Participants paid a $100 fee. Outcome measures included BMI scores and waist circumference at baseline, week 12, and week 24.

A physical fitness trainer led one-hour exercise sessions weekly for 12-weeks. Weekly group discussions included lifestyle choices emphasizing active behaviors and best food options. During weeks 1, 4, and 8, the exercise sessions were of 30 minutes duration to accommodate a 30-minute nutrition presentation. Parental attendance was encouraged, but not required for the nutritional component (76% attended). Self-monitoring was encouraged with daily food diaries. Children received pedometers and were encouraged to record their daily steps. The sample size consisted of 32 participants.

The average age was 10 years; 69% were Caucasian. Fifty percent attended sessions at baseline, week 12 and week 24 and completed the time-point outcome measures.

Results included an "overall" reduction in BMI between baseline and weeks 12 and 24 (-0.4, and -0.6, respectively). Overall mean BMI percentile also decreased at these time points (- 0.6 and -0.9, respectively), as did overall waist circumference (-0.5 inches and -0.7 inches, respectively). BMI percentage change was doubled in the "at risk for overweight" group (85th percentile but less than 95th percentile) compared to the obese group (greater than the 95th percentile).

A limitation to study validity was the high attrition rate. Sixty-eight percent of the participants attended only half of the sessions, with only 50% completing all BMI measures. Contributing factors may have included participant ability to attend study sessions due to family social and professional time constraints.

Community-based programs may be an effective method of managing some overweight children. Benefits include the ability to target an additional population that might not participate in an after-school program for fear of stigmatization. Challenges identified include retention of subjects and consistent parental involvement due to scheduling difficulties, family, and employment commitments. Suggestions for additional studies incorporating long-term follow-up of outcomes are recommended. This type of

program may be adaptable to streamlining with a focus on individual pockets of diverse ethnic and cultural groups within multicultural communities.

School-based programs. Widely instituted and studied, school-based intervention models have been popular due to their effectiveness in targeting large populations with mass education. A review of the literature for the past thirty years (1989 through July 2009) found 48 school-based obesity interventions reported. Primary aims of the studies addressed obesity prevention as opposed to management by providing health and nutritional education. Outcome measures for school-based interventions varied and included physiological changes (BMI, overweight percentages and triceps skin fold thickness, blood pressure, and cholesterol changes). Other outcome measures included students' nutritional knowledge, physical fitness and physical activity parameters, modification of sedentary activity (primarily television time), as well as measurable changes in food choices. One study measured parental readiness to change. There was some level of parental involvement reported in approximately half of the studies. The extent of parent involvement included:

1. Nutrition education through home and school association meetings, weekly nutrition workshops, discouraging sending sweets to teachers at holidays, and reducing the amount of unhealthy food sold at parent fundraisers (Foster et al., 2008); healthy snack and meal planning and increasing fruit and vegetable

servings (Eisenmann et al., 2008); family education about nutrition and exercise and motivational skills for goal attainment (Hawley, Beckman & Bishop, 2006; Kain et al., 2004; Sahota et al., 2001); and family fun nights and workshops (Caballero et al., 2003);

2. A parent survey regarding attitudes toward health and eating, physical activity, and fitness knowledge (Hawley et al., 2006; Warren, Henry, Lightowler, Bradshaw, & Penvaiz, 2003);
3. Newsletters and brochures with advice for healthy eating and recipes; fruit and vegetable preparation; promotion of parent-child interactions and activity; student homework assignments; and opportunities for taste-testing new menus (Cason & Logan, 2006; O'Neill & Nicklas, 2002; Sallis et al., 1997);
4. Teacher and parent training, modification of school meals, and development of school-action plans to promote healthy eating and lifestyle activities over one year (Sahota et al., 2001).

Of those school-based interventions involving parents, modification of the quality of meals and physical activity were the most frequent components. Nutritional education focused on the addition of lower fat foods and fruits and vegetables. Physical activity interventions focused on increasing time, frequency, and quality of activity.

It is somewhat difficult to analyze the aggregate outcome data from these studies. There was a wide range of research methodologies and a variety of measures for data reporting. Over the years included in the meta-analysis, the focus has been on promoting physical activity within the schools. Knowledge and behavior related to food and lifestyle choices and measurable changes in food choices (fat, sodium, and soda consumption and calorie and fiber intake) were popular outcome measures. Physiological outcome measures centered mainly on changes in blood pressure, BMI, and comparison of rate of weight increase between intervention and control groups as a predictor of future weight status. There were as many studies with nonsignificant outcomes as there were with significant outcomes.

Eighty-three percent of the twenty-three studies conducted before 2004 reported a lack of significant findings. Most recent studies, from 2004 through July 2009, reported outcomes based on physiological parameters, physical activity changes, and food knowledge and behavior results. A brief discussion of these more recent studies follows.

Public health recommendation for reducing risk of overweight and obesity in children has concentrated on using percentile ranks for normal growth as a way of evaluating a child in relation to his or her peers (Ogden, Flegal, Carroll, & Johnson, 2002). Several studies examined the effect of school-based intervention on the number of students who became overweight at follow-up. In a school based intervention consisting

of nutritional education and parent out-reach, Foster et al. (2008) reported a 50% reduction in the number of students (grades four though six) who became overweight two years following the intervention. The intervention group had a 7.5 % increase in overweight status as compared with the control group, which had a 14.9%, increase (OR: 0.85; 95% CI: 0.74 to 0.99; $P < .05$).

Coleman, Tiller, and Sanchez (2005) reported that the rate of increase in risk of overweight or obesity for girls in the 3rd grade was 2% for an intervention group compared with a much higher 13% in the control group. This intervention within a low-income, 93% Hispanic population of third grade children (n = 473 control, 423 intervention) successfully decreased the trend toward overweight status among the intervention population.

Veuglers and Fitzgerald (2005) compared 5th grade students at three schools (N = 5,517). One school served as a control group and did not receive an intervention. Two schools received interventions. Participants at one school were given healthy school menu options, and students at another school (second group) combined healthy menu choices with a program to increase physical activity. Those students in the school receiving the most intensive intervention decreased the rate of overweight children by 95% (CI 0.41 [0.32, 0.53]). These findings also correlated with a significantly greater intake of fruits and vegetable 95% CI [1.23(1.07, 1.40)].

In a similar study, Sanigorski et al. (2008) found a significant decrease in BMI *z* score in an intervention group (-.11, -0.21 to -0.01; $p = .004$) at 3-year follow-up (2003, N = 1001, response rate 58%, and follow-up 2006, N = 833, response rate 84%). At baseline, there were no differences in BMI z-scores or proportion of overweight and obese children between the two groups. Interestingly, these authors compared children in both intervention and control groups, and found that those children in the intervention group with low SES, had significantly lower weight gain than those children in the control group with low SES (BMI z-score -0.12, $P = 0.006$).

Measurement of physical activity in school-groups receiving education was used as an outcome in four studies reporting significant data over the past 5 years. Coleman et al. (2005) measured aerobic fitness in children. Children were randomly selected for participation from an intervention or control school group of volunteers. Intervention school participants received physical, nutritional, and health education integrated into the school curriculum. Control group children did not receive any intervention.

A nine-minute timed run based on a nationally standardized formula provided assessment of individual aerobic fitness levels (Looney & Plowman, 1990). Findings showed that intervention and control schools had the same rate of passing in the third grade and control schools had higher rates of passing in fourth grade. However, by the fifth grade, intervention schools had higher passing rates. By the sixth grade, both schools

had equivalent passing rates. Effectiveness of the physical fitness programs appears to fluctuate.

In a rural Kansas convenience sample, 65 sixth grade students and their parents participated in an intervention consisting of nutrition, activity, and behavior modification skills. Hawley, Beckman, & Bishop (2006) demonstrated a significant increase in physical activity as reported in families as a whole ($p < .010$), but this effect was not seen among the schoolchildren, based on self-report.

Cason and Logan (2006) reported a significant improvement in physical activity knowledge and behavior among 130 fourth graders following a school-based intervention. A decrease in sedentary behavior (television and electronic device hours) was noted. Similar findings were reported by Haerens et al. (2006) when using a computer-based program among 7^{th} graders (N = 258) over a two-year period. Children received a fitness test and personalized intervention for physical activity utilizing computers. Physical fitness was measured at two time points (the beginning of the second intervention year and after the second year of the intervention) and showed significant improvements [(< .05) and (< .001), respectively]. This evidence continues to support the effectiveness of school-based programs in improving understanding of the importance of physical activity in the maintenance of healthy lifestyle.

Improvements in nutritional knowledge and behavior were measured as outcomes in several school-based interventions. Cason and Logan (2006) reported increased fruit and vegetable consumption among an intervention group. Haerens et al. (2006) reported a significant reduction in fat intake in an intervention group (.04), and Hawley et al. (2006) reported a significant change in family attitude regarding the importance of healthy eating ($p < .05$). This data continues to support the positive efficacy of school-based dissemination of healthy dietary knowledge.

There is merit to school-based interventions. Healthy eating and physical activity programs provide an opportunity to enhance the future health and well-being of children and families. These programs have the potential of reaching almost all children and are socially beneficial in efforts to enhance learning and health during critical periods of growth and maturation. They can lower the risk for chronic disease and help establish healthier behaviors and improved eating habits.

As the preceding research demonstrates, school-based programs may be a positive tool for improving health behaviors and providing education regarding obesity prevention based on nutrition and activity. Aspects of program duration, frequency and intensity, targeted age of participants, level of involvement of students, involvement of parents, the school, and the community were highly variable among the studies. There are many explanations for reported changes. Those variables might include an intervention school

having a better infrastructure for change than a control school, different parental health practices in intervention schools, or unexplained difference among schools related to risk of obesity. Methodological limitations include inadequate sample selection and size coupled with high attrition rates. The theoretical basis for school-based interventions was described in approximately half of the studies (1989 to 2009), but was used intermittently to rationalize the results.

Few school-based programs have had statistically significant outcome data on children's health other than self-reported health behaviors. Clinical significance and efficacy versus statistical relevance is difficult to address based on the variability of outcome measures and methods for data collection. Standardization of outcome measures and studies designed to address the most important issues are needed to determine the level of intervention required to achieve a reduction in child overweight and obesity prevalence. School-based interventions may be effective in promoting education, but individually focused interventions may be more effect for overweight children.

Family-based behavioral interventions. Interventions with parents and children as a dual focus have shown positive results in promoting lifestyle changes. Cognitive and behavioral interventions provide education and insight on varying aspects of self-management to effect change in weight. A literature review located 20 peer-reviewed

articles from 1980 through 2008 reporting on studies focusing on overweight or obese children aged 6 to 12 years.

Although content may vary, each FBBT (family-based behavior treatment) program combines nutritional and physical activity education with behavioral modification. The terms "behavioral treatment", "lifestyle modification", and "behavioral weight control" are used interchangeably. This approach to obesity management encompasses three principal components: diet, physical activity, and behavior therapy. The primary aim is to provide skills to promote new habits in children and families (Wadden et al., 2005).

Some programs focus behavior modification on parents as they learn new parenting skills in managing the home environment. According to Epstein, Meyers, Raynor, & Saelens (1998), 50% of parents who are involved in a child's weight management program are themselves overweight or obese. Many programs include helping parents learn to manage their own health and nutritional needs. Significant changes may not be seen in parental BMI improvements, but it is thought that changes in children's BMIs are directly related to behavior changes role-modeled by their parents. Despite parental failure to change personal behaviors and BMI, weight regain in the child is not always seen at intervention follow-up. This suggests that a child may have a better chance of maintaining changes in body composition than an adult (Epstein et al., 1981).

Epstein, Wing, Steranchak, Dickson, and Michaleson (1980) studied 13 parents and 15 of their overweight children (greater than 20% overweight, equivalent to the 85th percentile BMI) ages 6 to12 years in a FBBT. Recruitment consisted of public media announcements and primary care referrals. Participants were randomly assigned to an intervention or control group. Both groups received family-based nutritional education consisting of dietary modification, including calorie restriction, and aerobic exercise and calisthenics/stretching instruction. In addition, the intervention group received behavioral modification skills training. Strategies included contingency contracting in which families received a return on an initial $65 deposit during seven treatments and six follow-up sessions. Interventions included self-monitoring with a food diary, social reinforcement including praise for changes and positive choices in eating and exercise, and instructions to reduce environmental stimuli that might prompt eating. Families also received therapist contact via phone calls during the intervention. Those participating in the behavior modification treatment had consistently greater weight loss than with those in the nutritional only program ($p < .05$).

In 1981, Epstein, and colleagues repeated the prior study with 76 families recruited through PCP referral and media advertisement. Participating families were randomly placed into one of three groups, stratified by the child's weight and percentage overweight based on age (5 to 9.5 years and 9.6 to 12.5 years), their percent overweight

ranges (20%-39%, 40%-59%, and 60%-79% for both samples). The three groups consisted of parent-child target (group 1, n = 30 children and 21 parents), child target (group 2, n =26 children and 20 parents), and nonspecific target (group 3, n = 30 children and 28 parents). Each group received a 14-session treatment program including 8 weekly sessions followed by 6 sessions distributed over the next 6 months at 2, 2.5, 4, 5, 6.5, and 8 months after the beginning of treatment. Final follow-up occurred 13 months after termination of treatment at 21 months. The three groups received identical diet and nutrition education, self-monitoring using a food diary, exercise instructions, social reinforcement, contingency management, and therapist contacts.

Contracting and contingency management varied among the groups. Contracting was used to promote adherence. Initially parents deposited $65 at the beginning of the program. $5 was returned at each session, depending on parent and child weight loss (group 1), child weight loss (group 2), or attendance (group 3). Each week the parent and child in groups 1 and 2 received a new teaching module, consisting of a self-contained lesson presenting new information, examples to work through, a reading quiz, and a self-quiz for performance evaluation. At the beginning of each session, each participant was required to pass the quiz (at 90%) before the next module was provided encouraging contingency management. Group 3 participants received the information in a lecture and question-and-answer format, receiving new information at each meeting.

Outcome measures included heights, weights, skinfold measures, and 7-day food diary analysis. Findings demonstrated marked decreases in weight and percentage overweight for participants in all three groups. All groups experienced significant weight reduction, and at the 2-year follow-up, were still significantly less than pretreatment values ($p < .01$).

There was a strong relationship between parent and child overweight change during the first 2 months of treatment (r (46) = .39, $p < .002$). At the end of the next 6 months of treatment, this effect was even stronger ($r(46) = .53, p < .002$). However, the parent and child differences were not related at 21 months (r (46) = .13, $p > .10$) suggesting successful initial weight loss when entire families receive treatment, but not during the follow-up. In the first group, 100% of the children who achieved non-obese status at 8 months were still non-obese at the end of 21 months, significantly more than groups 2 and 3 ($p < .05$). Parents in all three groups showed poorer weight loss maintenance than their children, suggesting that children have a better chance of maintaining changes in weight than adults.

Examination of the 7-day pre- and post-treatment diet diaries showed an overall decrease in food intake. Results also related the amount and types of food consumed (caloric density per average serving) to weight loss. Those participants who made the

biggest changes in caloric consumption had the greatest weight loss during treatment ($p <$ .001).

Epstein and colleagues (1985) compared an intervention incorporating parent management to promote habit change, nutritional education, and exercise education to a control group receiving equal education and attention, but not behavioral principals. School nurses and primary care providers recruited the nineteen 5- to 8-year-old, obese participants. Children were randomly assigned to one of two groups. The intervention group was behaviorally oriented, receiving parent management techniques and social learning principles, while the control group received equal education and attention, but without behavioral principles. Both groups began with an intensive program including three meetings per week for 5 weeks (two morning treatment sessions for children and one evening session each week in which parents and children participated separately), and nine monthly maintenance sessions. The group that received FBBT, consistent with the two studies previously reported, showed better weight loss and relative weight change than the control group ($p < .05$) at the 4 month assessment. Post hoc analysis showed significant differences between groups for percent overweight and BMI at 8 and 12 months. These results were attributed to improved eating habits and self-control in the treated children (based on mothers' reports using standardized questionnaires) compared to the control group.

Epstein, Valoski, Wing and McCurley (1994) evaluated several of these programs using 10-year outcome follow-up data (1980, 1985). Results were significant for change in percentage overweight decrease when parental involvement, dietary, lifestyle and exercise changes were included in the treatment programs. Intervention groups generally maintained their effects and the control groups showed a more rapid return to baseline levels, or even greater obesity. Limitations for all study samples were nondiverse ethnicity, with mainly Caucasian, middle-income families from a single setting participating in studies.

In 1985, Israel and Shapiro hypothesized that addressing parents' child management skills might improve behavior change in their children resulting in improved weight management. Thirty-three children aged 8 to 12 years (mean age 11 years, 4 months) and their parents were recruited by primary care providers and school nurses and through local newspaper announcements. Inclusion criteria included being at least 20% overweight (equivalent to or greater than the 85th percentile). Parents were initially assessed regarding their children's eating behaviors and knowledge of role modeling and social learning. This was followed by delivery of a general, non-health related parenting skills training prior to beginning a behavioral weight management program for their obese children. Outcomes included weight, height, and triceps skinfold measures, obtained at the beginning and end of treatment and at one-year follow-up.

An advanced graduate student in clinical psychology delivered the treatment sessions to parents. Two co-therapist graduate students assisted in conducting meetings and made between session telephone calls to assist parents with individualized needs and motivational support. Participants were randomly assigned to one of three groups: weight reduction only (WRO, n = 12 children); weight reduction and parent training (PT, n = 12 children); and a waiting list control group (n = 9). The WRO and PT groups received identical treatment, except that PT group attended two additional hour-long Systematic reinforcement of parenting skills were reiterated during the ensuing treatment program. Intervention participants attended nine weekly 90-minute sessions of the weight reduction program.

The families participated in separate parent and child groups. Food and activity journals were utilized for self-monitoring. Depending on the child's age, the responsibility for monitoring was divided between parent and child in such a way as to promote active child participation. After the final weekly session, parents and children returned for weighing and brief problem-solving discussions at 1, 2, 4, 6, 9, and 12 months. There was a gradual phase out of telephone support. Waiting-list controls were seen for measurement at the beginning and end of the weight reduction program. After serving as controls, they were offered treatment in the next cycle of the study. There were two measurement points for the control groups, and 8 for the intervention groups.

There were no significant changes in skinfold data. Children in both intervention groups significantly decreased pounds ($p = .001$) and percentage overweight ($p < .001$) from week 1 to week 9. Between weeks 1 and 9, WRO children showed more pounds lost (mean = 5.42 pounds) than PT children (mean = 4.83 pounds), and PT children were superior to controls (who gained a mean of 2.56 pounds). Both intervention groups had gained weight at the 1-year follow-up period, with no differences in gains between the groups. This was not unexpected since the children were in a period of expected growth. However, PT children had nonsignificant decreases in percent overweight ($p < .045$) during follow-up, whereas the WRO children increased in percent overweight ($p < .001$). In other words, at the end of the one-year follow-up, 8 of the 11 (1 lost to attrition) PT children maintained or decreased their percent overweight, and only 2 of 9 WRO children exhibited this pattern. Four of eleven PT children attained non-obese status, but only 1 of 9 WRO children reached non-obese status. Few programs actually address the parent as change agent, and this study supports the need for continued attention to the multiple parental behaviors that may influence a child's weight loss effort.

Epstein, Paluch, Gordy, Saelens, and Ernst (2000) added problem solving as a variable in assessing the impact of a behavioral weight control program. Problem-solving skills were taught to both the parent and child, or only to the child along with the standard FBBT intervention described in previous studies. Seventy percent of the children in this

study were Caucasian, and 30% either Hispanic or African American. Sixty-seven children were stratified by gender and degree of parent and child obesity, and then randomized to one of three groups. The group classifications included group 1, standard FBBT (parent and child) without problem solving; group 2, problem-solving skills added to FBBT and taught to both parents and children; and group 3, problem solving taught only to the children. Findings included a significant decrease in BMI ($p < .03$) in Group 1 as compared to groups 2 and 3. This evidence suggests that the addition of the technique of problem-solving to FBBT intervention may not alter treatment effectiveness.

Flodmark, Ohlsson, Rydén, and Sueger (1993) examined the effect of family therapy for childhood obesity among 3 groups of 10- and 11-year-old Swedish children. Children (N = 1,906) were screened at school for obesity. Forty-nine children were defined as obese by BMI standards. Forty-four agreed to participate in the study and received skinfold thickness measurements. The children were randomly assigned to one of two treatment groups. Both treatment groups received comparable dietary counseling and medical checkups for a period of 14 to 18 months. The experimental treatment group received family therapy (n = 25), and the conventional treatment group (n =19) did not. A control group consisted of 50 untreated obese children who had been identified at a second screening. These children did not receive treatment. The treatment program began

6 months after screening, so the children were approximately 14 years old at the 1-year follow-up.

Conventional treatment consisted of counseling by a dietician, exercise encouragement, and regular visits to a pediatrician with an interest in weight problems. Dietary restrictions included 1500-1700 calories per day and a reduction of fat intake to less than 30% of calories. The family therapy group received the same regimen of dietary counseling and medical checkups as the first group, but also they received six family therapy sessions with the pediatrician and a psychologist over a 1-year period.

The increase in BMI for the family therapy group was less than in the conventional treatment group, and less than the control group at the end of treatment (= .042 and = .022, respectively). Similar significant findings were seen in the reduction of skinfold thickness (three skinfold measures: = .03 and = .005 and = .002). At the 1-year post-treatment follow-up, the mean BMI differed significantly between the family therapy and the untreated control groups (= .046). There was a significantly smaller increase in BMI in the family therapy group than in the untreated control group (= .022). The untreated control group was unavailable for comparison of skinfold thickness. Physical fitness was measured before treatment and at the 1-year follow-up. The family therapy group demonstrated significantly better physical fitness results (= .047). This

study continues to verify that family therapy is a valuable tool in the treatment of childhood obesity.

Jiang, Xia, Greiner, Lian, & Rosenqvist (2005) tested a school–based educational intervention for parents and their obese children. Both groups were small (n = 33 and 35, for intervention and control groups, respectively). The intervention was held over a 2-year period and participants were seventh graders at outset. Significant outcomes among the intervention group included improvements in systolic and diastolic blood pressure ($p \leq .05$), HDL ($p \leq .01$) and cholesterol ($p \leq .04$). BMI was significantly reduced in the treatment group (from 26.6 to 24; mean change = 2.6, 95% CI 2.06 to 3.18, $p < 0.001$) but did not change significantly in the control group (26.1 to 26.0).

Levine, Ringham, Kolarchian, Wisniewski, and Marcus (2001) assessed the acceptability and feasibility of family-based intervention for severely obese children. Twenty-four families with children 8 to 12 years old ($N = 24$) who were greater than or equal to 160% of their ideal body weight (BMI > 99th percentile) participated in 10 to 12 sessions of behavioral intervention. Height and weight data were collected at each treatment session and during a follow-up visit at 4 to 13 months post-treatment (mean = 7.8 months). Outcome variables also included measures for depression and eating attitudes.

One third of families did not complete treatment. Children who completed treatment lost a significant amount of weight and reported significant improvement in depression, anxiety, and eating attitudes. The authors demonstrated that lifestyle changes learned during the treatment decreased the speed of weight gain among participants compared to the control group at follow-up. They did not find any obvious iatrogenic effects among the children. Qualitative follow-up with those families who did not complete the program might inform future interventions.

Golan, Weizman, Apter, and Fainaru (1998) challenged the traditional model of family-based behavioral treatment and undertook a study to examine the effect of having the parent as the sole agent of change in childhood obesity. Based on Bandura's theory of social modeling, parents were taught behavioral techniques and environmental modifications to assist their children in developing better eating and activity habits. Sixty obese children aged 6 to 11 years were assigned randomly to the experimental group (parents as agents of change) or the control group (children as agents of change). Parents completed a sociodemographic questionnaire, a family eating and habits inventory, and the Parenting Authority Questionnaire (based on Baumrind's parental prototype). The intervention included hour-long support and educational sessions by a dietician: 14 sessions for parents in the intervention group and 30 sessions for the children in the control group. Of note was a nine-fold greater dropout rate in the control group

compared to the experimental group. Mean percentile weight reduction was significantly greater (< .03) in the children in the experimental group compared to the children in the control group. The results supported the hypothesis that parents, as sole agents of change, may be superior to the conventional family-based parent/child model.

Golan, Kaufman, and Shahar (2006) repeated the study to investigate the reliability of the parent only versus parent-child model using a family-based, health-centered orientation. Training incorporated skills regarding eating, activity, and authoritative parenting style (defined as loving, but firm, with expression of needs and feelings, and the provision of emotional nurturance) in the . One hundred and two families replied to an advertisement in the local press. Thirty-two families met the inclusion criteria for having a child 6 to 11 years of age and more than 20% overweight (BMI greater than the 85th percentile). The children were divided into three age groups: children aged 6 and 7 years, 8 and 9 years of age, and 10 to 11 years of age. The participants were randomized into two research groups: group 1 (parents only) and group 2 (parents and children). Thirty-two mothers and twenty-seven fathers participated in the program. There were 14 families in the parent-only group (17 children), and 18 families in the parent and child group (with 20 children). Children's gender and BMI status were equivalent between the two groups.

Sixteen one-hour support and education sessions were held for each group. Sessions 1 to 10 were held weekly; the next four sessions were held biweekly, and the last two sessions occurred monthly. The program lasted 6 months. In addition, 45-minute individual sessions were held monthly with each family for 6 months. A follow-up meeting with outcome measurements was held 12 months following program completion.

A dietician and a family therapist administered the program. Both programs were similar in content, although the program with children was adapted by discussing the same issues in a developmentally appropriate manner. Program content consisted of an emphasis on healthy eating patterns, decreasing exposure to obesiogenic foods, establishing routines for family meals, portion control, increasing physical activity, decreasing sedentary behaviors, and self-monitoring of food and activity levels. Parents in both groups learned coping skills to foster and encourage an authoritative style, one in which the adult determines foods to be offered and the child determines the amount eaten. Parents were encouraged to de-emphasize thinness and focus on addressing their and the children's emotional needs by expressing feelings and promoting a nurturing attitude.

Improved attendance was noted for parent-only group members, with 80% attending all sessions compared to 55% in the parent-child group. Weight loss for children at the end of treatment was significant in the parent only group ($< .05$). The

percentage overweight of mothers and fathers did not change significantly in either group. At 1-year follow-up, reduction in percentage overweight and BMI *z* score remained significant in the parent only group (= .045; = .025, respectively). The parent-child group showed a nonsignificant increase on both measures. Both groups increased their physical activities and decreased sedentary behaviors and eating between meals. A 22% reduction in the overall obesiogenic habits in the household, reported by both child and parent (= .01; = .02, respectively) occurred in both parent only and parent-child groups. There was a statistically significant negative correlation between permissive parenting style and changes in BMI in both groups (parent only < .01; child and parent < .03). The more permissive the mother, the less change occurred in the child's BMI.

This study showed that children who attended behavior modification sessions with their parents, lost less weight than those whose parents were the main agent of change, confirming previous findings (Golan et al., 1998). These data also support Epstein et al.'s (1985) data from 21 years earlier that parents and children given information in separate groups demonstrate superiority over the child-alone condition. Targeting both parenting styles and lifestyle variables may result in change that is more effective for overweight children than a program aimed at nutritional and activity changes alone. Findings support improved program attendance for interventions when the parent is the focus (Epstein et al., 1994; Golan & Weitzman, 2001).

Golley, Magarey, Baur, Steinbeck, and Daniels (2007) examined the effectiveness of parent skills training as a key strategy for the treatment of overweight children in Australia. Media publicity and school newsletters recruited families for the study. One hundred and eleven overweight children aged 6 to 9 years where randomly stratified by gender and age into three groups. Groups consisted of a parenting skills group, a parenting skill combined with lifestyle support group, and a wait-listed control group. Both interventions were delivered to parents only, with parents having the sole responsibility for attending sessions and implementing lifestyle change. Families were encouraged to implement change at the family level, not at the child level.

The parenting portion consisted of a standardized general parenting program based on child development theory and social learning principles designed to promote parental competence in managing their children's behavior. The program consisted of four weekly, then three monthly 15 to 20 minute individual telephone sessions discussing techniques to adapt dietary and activity behaviors in children. The parents in the parenting skills and lifestyle support group sessions completed the same parenting session as the parenting group, followed by biweekly, then monthly sessions focused on lifestyle knowledge and skills including nutritional and activity modifications, roles and responsibilities related to eating, managing appetite, self-esteem, and teasing. The wait-list control group received telephone calls during the study as a retention strategy. A

dietician who had developed the lifestyle education component and undertaken accredited training for the parenting component conducted all interventions.

Outcome variables were measured at baseline, 6 months (program completion) and 12 months. The measures for the children consisted of an 18–item demographic questionnaire, socioeconomic status, BMI *z* score, waist circumference, child's blood pressure, parent weight (assessor-measured or self-measured), fasting blood glucose, total cholesterol, high-density lipoprotein cholesterol and triacylglycerol levels. Parents completed a parent satisfaction questionnaire.

Over 12 months, pre- and post- BMI *z* scores for children were reduced by 9% in the parent group receiving intensive lifestyle intervention, 6% in the parenting skill only group, and 5% in the wait-listed group (girls only, = .02). Forty-five percent of children in the wait-listed control group increased in BMI *z*-scores over 12 months, compared to 19% and 25% in the parent and intensive lifestyle group and parenting only group respectively ($P = .03$). The pattern of change for waist circumference mirrored that described for BMI *z* score. There were no differences for metabolic variables and blood pressure between study groups at baseline or 12 months. Although clinically relevant, the weight status changes from this study were modest compared to previous studies (Epstein et al., 1994, 2000). This study shows the need for effectively teaching parenting skills in

order to prepare them to implement lifestyle changes. This study also highlights the importance of follow-up management.

Janicke, Sallinen, Perri, Lures, Huerta, and Silverstein (2008) assessed parent-only (PO) and family-based intervention (FB) for pediatric weight management in an underserved rural setting in the United States. The methodology employed included a 3-arm controlled clinical trial with 93 overweight or obese children, aged 8 to14 years and their parent(s). Families were randomized to a behavioral family-based intervention, a behavioral parent-only intervention, or a wait-list control group.

The primary outcome measure was change in children's BMI. For both intervention groups, weekly group sessions lasting 90 minutes were held for 8 weeks, then biweekly for the next 8 weeks. Nutritional education was focused on identification of calorie-dense foods to teach dietary habits and guidelines. Food diary methodology was used to monitor intake for both child and parent. Weekly daily dietary goal setting was established at each group session including limiting consumption of high fat/high sugar foods and increasing fruit and vegetable intake. Utilization of the food guide pyramid was encouraged to develop a balanced diet. Physical activity increase was promoted with a pedometer-based step program, with encouragement to increase daily steps over the course of treatment. Self-monitoring and individualized goal setting was based on participants' progress and preferences. Parent and child dyads participated in

simultaneous but separate groups. The parent and child were brought together at the end of the session to develop goals for the week with specific plans to implement these goals. In the PO group, only the participating parent(s) attended.

Seventy-one children completed post-treatment (month 4) and follow-up (month 10). At month 4, children in the PO intervention had a decrease in BMI *z* score, however the difference was not significantly different from children in the control group. No significant difference was found between the family-based intervention and the control group. At month 10 follow-up, children in the PO and FB intervention groups showed greater decrease in BMI *z* scores compared to the control group (MD, 0.115; 95% CI, 0.003 to 0.220; and MD, 0.136; 95% CI, 0.018 to 0.254, respectively, < .05). No difference was found in weight status change between the PO and FB intervention groups at either assessment. This study supports the effectiveness of parent-involvement programs regardless of child involvement in an intervention to improve children's overweight status. In addition, this study examined the effectiveness of a weight management intervention for families in an underserved rural area. This may serve as a model for translational application within diverse communities.

Hughes et al. (2008) utilized a family-based intervention in a primary care setting in the United Kingdom to evaluate its effect on BMI *z* scores relative to standard dietetic care among overweight children. The design consisted of an assessor-blinded,

randomized, controlled trial involving 134 children 5 to 11 years of age with baseline BMIs greater than or equal to the 98th percentile. Inclusion criteria included having at least one parent who perceived the child's weight as a problem and excluded children who had an underlying medical cause or serious comorbidity. Community health care providers, dieticians, and school nurses referred children. Children were randomized into intervention and control groups.

Dieticians trained in behavior change worked with families on a one-on-one basis to deliver the intervention program, which consisted of eight appointments, seven office-based and one home visit, over a 26-week period. The family-centered approach included children and family taking control of their own lifestyle changes. Initial identification of barriers led to problem solving and goal setting. Change and motivational skills were taught. Children were encouraged to increase their activity time, modify their diets, and decrease sedentary behavior (including decreasing television, video game, and computer time) to less than two hours daily. The focus for change was on behavior rather than weight.

Those families in the control group received typical dietetic care. This involved three to four appointments with a pediatric dietitian over a 6 to 10 month period, with a total patient contact time of approximately 1.5 hours. Advice was mainly directed toward the parent rather than the child. This care did not reflect best practice, was very low

intensity, and concentrated on dietary change with minimal focus on physical activity or sedentary behavior. There was no behavioral component for the control group participants.

The primary outcome measure was BMI *z* score. There were no significant differences between the intervention and control group for BMI *z* score from baseline to 6 and 12 months. Both groups showed significantly smaller increase in BMI *z* scores when compared to their baseline scores at 6 and 12 months ($< .01$). Weight gain was significantly less for the intervention group than the control group from baseline to 6 months ($= .04$), but this effect did not continue at 12 month. This intervention showed positive effects for those who complied with the program, but children continued to gain more weight than is considered healthy. Statistically, of the 69 participants who were assigned to the intervention, 44 (63.8%) attended over 75% of scheduled appointments. Of the control group, 70.8 % attended at least 75% of scheduled appointments.

Maintenance of weight loss is a challenge marked by relapse (Epstein et al., 1994, 2000; Golley et al., 2007; Hughes et al., 2008; Janicke et al., 2008). The waning effects over follow-up suggest the need for the bolstering of weight management treatments to sustain effect. Weight maintenance interventions include behavioral skills maintenance (BSM) or social facilitation maintenance (SFM) treatment. The BSM approach is based on the premise that weight loss maintenance requires specific strategies for continued

permanent life-style change. This method focuses on continued motivation and small changes in eating and physical activity to continue to support weight maintenance. Children and parents are taught to use cognitive restructuring to manage eating and activity, and to handle high-risk situations (Wing, Tate, Gorin, Raynor, & Fava, 2006).

The SFM approach is based on the premise that relapse results from the absence of adequate social and environmental support. Parents are guided to support their children in social relationships and address body image concerns that might inhibit engagement in physical activity with peers. Families also learn strategies to manage teasing or criticism and solidifying children's social networks to maximize efficacy in promoting behavioral changes (Birch & Davison, 2001; Wadden, Butryn, & Byrne, 2004).

Wilfley and associates (2007) examined the efficacy of the previously discussed weight maintenance approaches. Participants included 204 healthy 7- to 12-year-old children, each with a beginning BMI 20% to 100% above the median BMI for age and gender. In addition, each child had a least one overweight parent. These children completed 5 months of weight loss treatment. One hundred and fifty children volunteered to continue with the weight maintenance intervention. Progression into maintenance was not contingent upon weight loss. The weight at which the child entered maintenance formed their 3-pound maintenance range.

Children were randomized into one of three maintenance groups. These groups consisted of behavioral skills maintenance (BSM), social facilitation maintenance (SFM), and a control group. Control group participants were followed for weight checks only and on the same schedule as the intervention group participants. Outcome measures included percentage overweight and BMI *z* score and were obtained at randomization, and 1- and 2-year follow-up. The maintenance interventions consisted of identical duration and amount of contact (16 weekly sessions).

Children receiving either intervention maintained weight better than those assigned to the control group at short-term follow-up, nearing significance ($P = .07, .25$, pooled vs. control at 1- and 2-year follow-up). Significance from baseline (prior to weight loss) and 2-year follow-up was found between the intervention and control groups (= .04). The addition of maintenance-targeted treatment improves short-term efficacy of weight loss treatment for children relative to no maintenance treatment.

Results continue to support the effectiveness of FBBT as an intervention in pediatric obesity, but highlight the importance of continued support to maintain weight loss. Maintenance may require extended periods past the 2-year follow-up mark as indicated by Epstein et al. (1994). FBBT is significantly more cost-effective than individual treatment (Goldfield, Epstein, Kilanowski, Paluch, & Kogut-Bossler, 2001; Mellin, Slinkard, & Irwin, 1987).

In addition to moderate weight loss, positive emotional and behavioral improvements have been reported (Myers, Raynor, & Epstein, 1998). Findings suggest that parents of overweight children may be hesitant to discuss issues regarding weight status for fear of further diminishing their child's self-esteem regarding their appearance. (Borra et al., 2003; Stradmeijer, Bosch et al., 2000). Children self-identified the importance of parental involvement and encouragement, as well as providing role-modeling behaviors "because if parents encourage you and actually say 'oh, good job'... children would know they care, if parents don't care, why should the children". This statement and others were expressed in a focus group with 12 children and mothers and fathers (12 each) (Snethen, Beauchamp-Hewitt, & Petering, 2007, p. 369) and support the value of family and parent involvement in weight management programs. In nine FBBT studies that reported percent overweight and BMI, six noted significant changes (Epstein et al., 1980, 1981, 1985; Golan et al., 1998, 2006; Israel, Stolmaker, & Andrian, 1985).

In summary, family-based behavioral intervention programs affect a smaller population of overweight children than community-based and school-based interventions. They are intensive, requiring commitment and time during off-school hours for both parent and child. Attrition rates have been reported as a significant issue (James et al., 2008). Childhood interventions may need to continue with maintenance programs for long-term efficacy. The family-based interventions often do not collect knowledge-based

changes as outcome measures as do school-based interventions, but with obvious changes in weight, the knowledge may be assumed to be effectively assimilated and applied within the context of the family.

Childhood Obesity and Self-esteem

Harter (1999) in her classic book "The Construction of Self" noted that self-esteem and perceived self-worth have a direct affect on a child's coping, motivation, and energy levels. Individuals, who have high-perceived self-efficacy set higher personal goals for themselves, have a stronger commitment to their personal goals, and experience increased success in achieving their goals. Those who have positive expectations and self-worth valuations believe they will have good outcomes in their efforts The effect of self-esteem in children and its influence on future self-efficacy and success as adults is considered important in the development of the self (Bandura, 2004).

Self-esteem in obese children may be a factor in successful completion of weight management interventions. Researchers have discovered negative attitudes toward obesity in children as young as 5 years of age (Goodman, Richardson, Dornbusch, & Hastorf, 1963; Lerner & Gellert, 1961). In a group of 135 Canadian children, with 15% of children having a BMI status greater than the 85th percentile, identifiable social and cultural perceptions of being overweight were already established (Ball, Marshall, & McCargar, 2005). Twenty children aged 8 to14 years (14 boys) describe bullying ("being

called names"; "You're fat...slow...ignorant....useless") leading to unusual and retaliatory behavior at school, for which they were labeled as having problem behaviors. They desire to be "normal" and "fit in"; "I feel different and terrible, like I'm not like everyone else". Only two of these children related future health implications as a reason to lose weight, but the social issues related to their weight were seen as motivating their desire to lose weight (Murtagh, Dixey, & Rudolf, 2006).

Strauss (2000) found that obese children, in comparison to a matched group of non-obese children, were less liked and encountered greater rejection by their peers. In addition, obese children exhibited a greater frequency of conduct disorders, lower overall self-concept, a lower self-concept regarding their physical appearance, and considered themselves depressed.

Banis et al. (1988) studied a group of children identified by primary care providers as obese and free of medical problems, including psychopathology. Thirty children, aged 7 to 12 years, 50% of whom were male, and 27 of their mothers participated. The average percent overweight was 55% to 61%. Among the children, 50% were Hispanic, 33% African-American, and 17% Caucasian. Low socio-economic status predominated, and most mothers had not completed high school. There were two control groups of children and parents, a non-obese "normal" (free of psychopathology) population and a non-obese mental health clinic-referred group of children. Mothers

completed a psychological and social adjustment scale, the Child Behavior Checklist, and children completed the Self-Perception Profile for Children. The Family Environmental Scale was used to assess family psychosocial functioning and interaction style.

Results were significant and consistent with Strauss's (2000) earlier findings that obese children have lower self-concepts compared to non-obese children, and that they were more depressed and rejected and less liked by their peers. Families in this study had significantly similar findings to distressed families in psychosocial functioning, in which interactions are more negative. Poorly functioning families have been found to have greater conflict, less organization, and poorer diets (Kintner, Boss & Johnson, 1981).

These findings suggest even greater barriers to implementation of weight management for an overweight child. Intervention for childhood obesity is complicated; it requires long-term commitment and parental involvement and supervision. These findings may explain the difficulty in beginning and sustaining a weight management program. Israel and Shapiro (1985) found that this barrier might be modifiable with behavioral weight management programs in which the parent is also learning skills that will improve psychosocial function of the child and the family.

Statistics have shown a relationship between self-esteem and overweight status in children. General decreased global self-worth has been reported in obese boys and girls in comparison to non-obese peers (Ball et al., 2005; Braet & Van Strien, 1997; Franklin et

al., 2006). Similarly, there is a negative correlation between obesity and perceived social standing with peers (Strauss & Pollack, 2003), and children who perceive that their overweight status hinders their social interaction have lower self-esteem (Granleese & Joseph, 1994; Pierce & Wardle, 1997). There are also relationships between emotional overeating and negative feelings of self-worth and between eating styles and problem behavior (Strauss, 2000; Ball et al., 2005). In addition, younger onset of psychiatric symptomatology has been reported in obese adults (Mills & Andrianopoulous, 1993).

In an evaluation of test-retest reliability of Harter's Self-Perception Profile for Children (Granleese & Joseph, 1994), scores for the global self-worth subscale at age 8 correlated highly with scores at age 11 ($n = 24$; $r = .61$) and did not change over time.

These findings suggest that perceptions of self-esteem may not change markedly over time. However, overweight children have demonstrated improved self-perception and self-esteem following weight management interventions, even those who do not lose significant weight (Gately et al., 2005; Pierce & Wardle, 1997; Sacher et al., 2005).

According to Bandura's social cognitive theory, children need to believe they are able to be successful in order to be motivated to achieve desired outcomes. Parental attention, time, involvement, and belief that their children can develop physically and emotionally into healthier adults may be the missing piece in successful weight management for children. Social support and guidance increase the potential for success.

Children who are unable to make changes in their environments may become dependent and fail to learn effective coping abilities (Bandura, 1999).

It would be incorrect, however, to assume that all obese children have low self-esteem. According to Harter (1999) some overweight children who perceive their athletic ability to be poor, rate themselves positively academically. Younger children may not associate obesity with self-esteem because they have not reached the developmental stage when they relate their body image to self-esteem (Harter, 1999; Maier, 1969; Mendleson & White, 1985). Children are able to recognize obesity as young as 5 and 6 years of age. Correlation of obesity with being "bad" and "ugly", representing moral failure, an inability to delay gratification, a mark of poor self-control, and self-indulgence are part of our culture (Hesse-Biber, 1996; Gortmaker et al., 1993). Improvement in depression and anxiety in overweight children has been reported following FBBT (Levine et al., 2001).

School-based programs are generally large sample studies that have taken place in public school settings. Parental support is not a focus, possibly because parents cannot engage in programs due to family functioning issues, socioeconomic barriers or due to unrecognized psychosocial variables. These barriers to participation remain unexplored in the literature.

Sample sizes for studies for the present literature review showed that school-based programs included, on average, 1,200 students. For those studies using the FBBT,

the average sample size is 61. Large homogenous groups of children represented in the school-based populations may create a disadvantage when identifying those individuals requiring the greatest need for change. Percentages of children with weight issues are much smaller than the overall school population. Overweight children may have significant barriers to identification and participation, as discussed in the previous section.

Many of the programs do not actually document anthropometric statistics, but rather measure cognitive changes that might not be comparable to "hard" data. FBBT programs are small, more controlled with measurable variables, and though follow-up has been limited, there are positive results reported up to10 years following intervention (Epstein et al., 1994). Cultural diversity consideration is necessary when addressing role modeling as key factor for learning. Individual home variables in the school-based population are diverse and programs may have limited transferability across cultures.

The focus of school-based programs is on the prevention of overweight and obesity. Provision of baseline education for children is the expectation for the school system. School-based programs are generally incorporated within the curriculum, over the school year, with limited parental involvement, if any.

FBBT programs, on the other hand, are intensive and family-involved with a focus on behavioral strategies to improve family functioning and lifestyle. Unfortunately,

by the time the child reaches the elementary school environment family-eating practices are firmly established. The school setting should not be the place for intensive management of children who are overweight. Further stigmatization and maladaptive behaviors are likely to be the outcome of these efforts. Stigmatization does occur when a child is teased about their shape, weight, or general appearance, with teasing being a mediating factor for development of negative body images (Kostanski & Gullone, 2007). Individualized treatment for children and families is beyond the scope of the public school system.

Recent researchers have questioned the importance of involving children as the focus of weight management intervention. Although this question has yet to be decided, the importance of the parent as the change agent in the child's environment is obvious. Review of the literature reveals the need to begin obesity prevention in the early months of a child's life when feeding practices are established. For those children who become overweight, identification and treatment should begin as soon as possible. These issues become one of public policy and health care resources that will not be solved through the school system.

Summary

In a summary of obesity treatments, studies show that a multidisciplinary family-based approach has demonstrated improvement in weight status during the intervention

and at follow-up. Education within school settings regarding healthy nutrition and physical activity is important and may contribute to an overall decrease in the incidence of childhood obesity for future generations. For treatment of children who are overweight, programs that are more intensive are required. Identification and referral to family-based behavioral treatment programs will provide primary care providers with a more effective method of intervening in the obesity cycle. Replication of FBBT in varying populations and settings, use of innovative methods to promote parenting skills and behavior modification, and continued evaluation of interventions and their effectiveness is recommended to decrease the potential negative effect of low self-esteem. The aim of this study was to evaluate a FBBT intervention on the self-esteem and habit changes of school-aged children and their families with hope of further developing community specific models to treat childhood obesity. Learning about self-esteem in overweight children can assist in providing interventions at appropriate times in child development.

Chapter 3: Methodology

This study evaluated self-esteem with Harter's revised version of the Self-Perception Profile for Children (SPPC) in overweight children aged 8 through 12 years enrolled in a SHAPEDOWN intervention program. Changes in child and family habits were assessed using the Children's Habit Inventory and the Family Habit Inventory.

The concepts under study include self-esteem and lifestyle habits within the context of the family. The focus of the intervention is lifestyle habits including the dietary and nutritional environment and activity adaptations within the family. These concepts have been identified as particularly salient when promoting healthy lifestyle interventions for children who are overweight or obese. Children who have greater levels of self-esteem and personal regard are thought to have higher self-efficacy. Self-efficacy, according to the social cognitive theory, may be an important motivating factor in a child's ability to achieve personal goals, positively influencing their behavior and health.

The family approach, represented in the theoretical model depicted in Figure 1, has an emphasis on parent and child collaboration. Within a family-based behavioral treatment intervention, parents are taught basic nutritional knowledge and the importance of daily physical activity. They learn to adapt their home environment to promote appropriate foods and healthier meals. They also learn parenting skills and techniques

that improve communication. Children also learn about healthy nutrition and activity, and are taught skills that emphasize positive decision-making. By providing a supportive family environment and role modeling behaviors to promote child's adaptations, the family provides a positive framework for lifestyle changes. Supporting children increases his or her self-esteem. Improved self-esteem, associated with a healthier level of psychosocial health, may foster steps toward achievement of the goals of healthy weight and lifestyle choices.

The purpose of this chapter is to describe in detail the methodology for this research. This section will begin by addressing the specific research design, and the hypotheses under investigation. These are followed by descriptions of participant sample, sample size, and recruitment procedures. Human study protection procedures guiding the research are addressed. Data collection strategies including measures and procedures are reviewed. Finally, methods used for data analysis are presented.

Design and hypothesis

The intent of this study was to evaluate self-esteem and change in eating and activity habits in third through sixth graders (8-12 years of age) before, immediately after, and 2 months following a Family Based Behavioral Treatment (FBBT) program for weight management and lifestyle change. The FBBT program was SHAPEDOWN. There are four developmental levels of SHAPEDOWN, applicable to the educational, social,

and emotional stages of the child. One or both parents and/or primary guardian are required to attend and actively participate (Mellin, Slinkard, & Irwin, 1987; Johnson & Mellinl, 2003). Family members and children learn cognitive and behavioral changes that may promote and support healthy lifestyle decisions and actions. Creating a healthy environment in the family and home based on parental role modeling provide a foundation for changes. Families learn improved communication techniques to resolve conflict and foster self-esteem. Children learn methods to reframe problems and make realistic goals. Children develop a more positive attitude regarding their bodies, ways to seek family support, and methods to stop peer teasing.

A quasi-experimental, descriptive correlation design with repeated measures was used to examine the degree of relationship between program completion, self-esteem, and weight-related behavior in an underserved low-income population of children. A time-series design planned to study the relationship of the intervention program on self-esteem utilizing the standardized Self Perception Profile for Children (SPPC) to measure the dependent variable of self-esteem. Family and children habit inventories were used to determine changes in those measures. The SPPC and the child and family habits inventories were administered at three separate time points: prior to the beginning of the intervention (T1); immediately following the intervention (T2); and at 2 months following the intervention (T3). The time series design allowed comparison of the same

individuals over time by examining the differences in the measures before and after the intervention (Polit et al., 2001).

The purpose of this study was to determine the relationship of a family-based intervention to promote changes in lifestyle and self-esteem among children 8- to 12-years of age. This study was designed to test the hypothesis that there is a relationship between SHAPEDOWN and lifestyle habits and self-esteem, promoting future positive life-style choices, ultimately having a positive effect on their emotional and physical health and well-being. Specific hypotheses included:

1. Children who complete SHAPEDOWN will demonstrate healthier lifestyle habits.
2. Parents who complete SHAPEDOWN intervention will demonstrate improved lifestyle habits.
3. Children who complete SHAPEDOWN will demonstrate improved self-esteem.

Sample

The study sample consisted of a purposive self-selected group of elementary school children and their families, recruited from several different sites. Inclusion criteria included children to 8 to 12 years of age. Children were overweight or obese as determined by their parents and primary care providers. This group of children had been previously diagnosed as "at risk for overweight" or "overweight" by their primary care providers. Determination of weight status was based on having a body mass index at the

85th percentile or above. The program consisted of a FBBT SHAPEDOWN intervention conducted in southern California.

The SHAPEDOWN program was offered to parents at school sites with children in the sample group ages and grades who wished to participate in the family based support group. Additional sample recruitment occurred at several local primary care pediatric sites via poster advertisement in the waiting area. Interested children and families were given information about the program in a handout. Inclusion criteria for all subjects included a commitment to attend the support group each week for 1- 2 hours per week for 10 weeks, the ability to provide assent, and obtain parental consent to participate in this research.

Sample size. To determine the minimum sample size required for this study, it was necessary to select the desired power and effect size. In determining the appropriate sample size, the following factors were considered: the desired level of significance, the power of the test, the population error variance, and the effect size.

The level of significance is defined as the probability of making a Type 1 error (rejecting the null hypothesis when it is true). The three hypotheses are that completion of SHAPEDOWN intervention will have a positive effect on lifestyle habits (child and family) and on self-esteem. If the null hypotheses are rejected (rejection of the hypothesis that there is no relationship between completion of SHAPEDOWN intervention and

habits and self-esteem changes) the assumed conclusions will be that the alternative (here opposite) hypotheses are possible. Rejection of the null would provide evidence that there is a relationship between SHAPEDOWN and habits and self- esteem. Statistically rejecting the false null hypothesis is identified as the power of the statistical test (1-*B*). The null hypothesis for this study is that there is no relationship between SHAPEDOWN and lifestyle habits and self-esteem (Hinkle, Wiersma, & Jurs, 2003).

To minimize both Type I error (rejecting a **true** hypothesis) and Type II error (not rejecting a **false** hypothesis), the level of significance (*a*) is established a priori. In behavioral science research the consequences of making a Type I error are considered minimal. In this study, if completion of a SHAPEDOWN program does not improve self-esteem and lifestyle habit change, the consequences are probably not highly detrimental. However, the consequences of making a Type II error, or not implementing the intervention (SHAPEDOWN) that may be useful in improving self-esteem and lifestyle habit change, is considered more serious. Therefore, identification of the sample size producing the probability of a small Type II error was the basis for the strategy.

For this study, dependent variables consisted of lifestyle habits and self-esteem. The numbers of independent variables measured influence effect size. For the purposes of this research, a level of significance (*a)* .05, a power of .80, and a desired effect size of .10 standard deviation have been selected. Using sample size tables provided by Cohen

(1988) for a two-tailed, non-directional hypothesis, the minimum number of participants needed for this study was estimated at 25 children. The parent may include one or both parents, and there may be fewer parents if they have more than one child involved in the program.

Possible dropout rates must be taken into account (Shott, 1990).

$nI1$= initial sample size

$n1$ = final sample size after losing subjects

0.10 = 10 % estimation of drop out among SHAPEDOWN participants

$PD1$ = the proportion of children who will drop out or .10

The formula for estimation of sample size considering a 10% drop out rate =

$nI1 = n / 1 - PD1 =$ 25 / 1 – 0.10 = 25 / 0.90 = 27.7 or 28

The estimated initial sample size for this study was estimated at 28 participants.

Recruitment. The SHAPEDOWN provider/investigator at the two school sites recruited participants to enroll in the intervention. Two school principals at private parochial schools were contacted regarding the SHAPEDOWN intervention and study proposal in order to establish interest in conducting the program at their schools. Upon receiving their support, permission was obtained to distribute a parent and school announcement. The flyer advertising the intervention was sent to all school families via usual school channels. The school secretary maintained a sign-up sheet for interested

parents. Information and overview of the program was presented to the teachers at a faculty meeting prior to beginning the intervention to educate them about the intervention should they receive inquiries from families or children.

Due to unexpected sampling size limitations, several other sites were subsequently developed to obtain intervention and study participants. At one elementary school site, no participants were recruited. A pediatric primary care site, consisting of six pediatricians and three pediatric nurse practitioners, was approached. After learning about the intervention and the study aims, the PCPs (primary care providers) agreed to refer patients who had expressed an interest in a weight management/healthy lifestyles program from their patient population. SHAPEDOWN posters advertising the interventions were placed in examination rooms and waiting areas. Parents who requested information were given a brochure and directed to contact the researcher. An additional pediatric primary care site also agreed to advertise the intervention and distribute informational brochures to interested families. It was the responsibility of parents from both primary care sites to contact the researcher to enroll in the intervention.

A wellness center was also contacted, and the director agreed to advertise the intervention and study. Posters were displayed at this site, and interested families were given a brochure with information to contact the researcher. The wellness center also

hosted the participant groups on site. Families from the two primary care office sites joined those at the wellness center.

An initial meeting was held for interested parents, providing information regarding the intervention program and study, with an open forum for questions and answers. A fluent Spanish-speaking graduate advanced practice-nursing student provided information in Spanish. The researcher presented information regarding the self-esteem assessment and habits inventories at the initial orientation meeting. Each parent was offered a parent consent form to sign (Appendix A). Upon obtaining written informed parental consent, information was provided to the parent to give to their child. The child received a developmentally appropriate brief overview of the self-esteem study and habits inventory research with an assent form (Appendix B). The researcher was available to meet with parents and children individually as needed regarding the study. Full verbal and written disclosure explaining the intent of the research was provided for each student and parent. Students were advised that they would receive information regarding SHAPEDOWN in groups as the intervention progressed. The students and parents were advised of confidentiality of all responses and data collected, with assurance that only the researcher would have knowledge of participant identification.

Eligibility for participation was determined by parents' willingness to support their children's activity and attendance at the intervention, as well as a commitment to

participate in a parent group to learn about FBBT and SHAPEDOWN. Children who participated were also overweight (BMI greater than or equal to 85th percentile). The children's PCP had previously advised parent's of their child's overweight status.

The commitment for participation included the duration of the 10-week SHAPEDOWN intervention program as well as a 2-month follow-up period after the intervention was completed. Written and informed assent/consent was obtained from each participant and each participant's parent or legal guardian. Students and parents were informed that willingness to participate would not affect their participation in their school, academic programs, or the SHAPEDOWN intervention program.

Protection of Human Subjects

External review and approval of the ethical aspects of the proposed study was received from the Institutional Review Board of the University of San Diego prior to data collection. Written and informed assent/consent was obtained from each child participant and each participant's parent or legal guardian. The study focused on a significant topic that had the potential to improve prevention and management of obesity in children and minimize the long-term effects of obesity in adulthood.

Potential Risks. Potential risks to participants included mild physical discomfort, fatigue, or boredom during the data collection process. Negative emotions or distress might have resulted from self-disclosure, introspection, fear of the unknown or

interacting with an unknown researcher, fear of eventual repercussions, or embarrassment regarding questions asked. The purpose of the research was explained to the parents and children. . The child's/parent's right to refuse participation, to withdraw at any time during data collection, and not to answer a question was discussed prior to requesting informed consent. Anticipated time involvement beyond the intervention to complete study questionnaires was estimated at approximately 1 hour at three different times and was disclosed. The SHAPEDOWN program was held at the same time each week; times varied by site and convenience for the site participants, but was consistent once established in the first week. There was no interference with academic participation at school sites. Participants were assured that their participation or nonparticipation or their refusal to answer questions would have no effect on their involvement in SHAPEDOWN.

Risk Management Procedures. Confidentiality was the highest priority to ensure protection of human subjects. Written consent and assent was obtained prior to beginning data collection. Verbal assent was obtained prior to each data collection point with reassurance that the child could stop at any point desired. An oath of confidentiality was implemented at the start of each intervention session and questionnaire administration. Students who were involved in SHAPEDOWN were not, nor would be, announced publicly and only the researcher and their families knew about their participation. Only

the researcher knew which students participated in the research study and of those who did not complete data collection.

Confidentiality of responses was assured using coding and numbers for participants. Data collection tools were free of names or identifiers. ID codes were assigned to link data at times one, two, and three. Codes were kept separately from the names of individuals. Data were stored in a locked file cabinet and password-protected computer file, and will be kept for a minimum of five years prior to being destroyed. Only the researcher and her advisor have access to the data. There were no costs incurred by participants.

Due to the personal nature of support groups, risk management involving emotional and behavioral issues arising due to participation was important. The researcher was available for support and intervention as needed throughout the SHAPEDOWN intervention for both students and their families. Subjects were assessed at each session for potential risks, for example fatigue (or for any other reason), and the participant could terminate the task at any time to rest or re-schedule. The subject could discontinue participation in the study. The number for the San Diego Mental Health Hotline, 1-800-479-3339, was provided to participants on the Consent Form for further emotional support, if needed.

All participants were informed that their agreement to participate in the self-esteem and habits inventory study would in no way influence their participation in the intervention program, their school day, or compromise their confidentiality.

Potential Benefits. Potential benefits included gratification in being able to share their thoughts and feelings with a nonjudgmental and friendly person, increased knowledge about themselves or their conditions, and satisfaction that the information provided may help others with similar concerns.

Risk/Benefit Ratio. The risks and benefits of participation in the SHAPEDOWN intervention and the self-esteem and habits research were examined. The researcher and dissertation committee agreed that that the benefits of participation outweighed the risks.

Expense to Subjects. The only cost to participants was the time required to participate in the SHAPEDOWN intervention, approximately one and one-half hours weekly for 10 weeks, as well as an additional one hour at three times to complete the self-esteem, the CHI, and the FHI inventories.

Data Collection Strategies

Measures for data collection included a demographic data questionnaire (Appendix C), a subscale of the Self-Perception Profile for Children (Appendix E), which focused on the self-esteem outcome pertinent to this research, a Children's Habits Inventory (Appendix F), and a Family Habits Inventory (Appendix G).

Demographics. Initially, parents completed a survey containing demographic data (Appendix C).The demographic questionnaire was a self-reported instrument developed by the investigator to obtain information about personal characteristics to describe the study sample and determine its representativeness. Data included the child's date of birth, grade in school, gender, ethnicity, and family socioeconomic status. Demographic data were obtained once, at T1.

Self-Perception Profile for Children. Harter's Self-Perception Profile for Children (SPPC) (Harter, 1985) (Appendix D) consists of six subscales each containing six items. Items for each of the subscales are presented in the following order for the first six items of the scale, and then continue to repeat themselves in that order throughout the instrument: a) scholastic competence, b) social acceptance, c) athletic competence, d) physical appearance, e) behavioral conduct, and f) global self-worth. Translation and validation of the SPPC has been successful in Spanish and Chinese, and there are versions for children of different ages. A data coding sheet as well as a score sheet is available. The SPPC has established reliability in different cultural settings, including Chinese, Latino, Australian, Dutch, and Scottish populations, as well as within the United States (Hoare, Elton, Greer, & Kerkey, 1993; Stradmeijer, et al., 2000). Initial estimates of reliability, a measure of the internal consistency within each subscale, based on

Cronbach's Alpha, have demonstrated acceptable reliabilities ranging from .78 to .84 (Harter, 1985).

Items are scored on a Likert-type scale from 1 to 4 with 1 indicating low perceived competence and 4 indicating high perceived competence. The first three items within each subscale are worded so that the first part of the statement reflects high competence. The second three items are worded so the first part of the statement reflects low competency or adequacy. The child is first asked to decide which kind of child is most like him/herself. The child then decides if this response is only sort of true, or really true of themselves. The rationale is that some children (half) see themselves in one way, and the other half of the children sees themselves in another way. The question legitimizes choice, providing accurate self-perceptions rather than socially desirable responses (Harter, 1985).

Subscale means fluctuate around 3.0, above the mid-point of 2.5. Standard deviations fall between .44 and .85, indicating individual variation. Original sample data were obtained from groups of middle to upper-middle class children. For the purposes of this study's focus specifically on the relationship between self-esteem and lifestyle habits, the global self-esteem scale was administered to the children at T1, T2, and T3.

Children's Habit Inventory. The Children's Habit Inventory (CHI) (Appendix E) is a 60-item questionnaire comprising items representing weight-related behaviors

over the past week. One sample question or statement is: How often I eat. Respondents identify the frequency with which they engaged in the behavior by checking off responses (for example: "I had a second helping". Choices for each statement or question are often, sometimes, or rarely. Each frequency has a weighted score between zero and two. A total score is recorded. Total score range can be from 0 to 120, with zero reflecting very poor and unhealthy habits, and 120 strongly healthy habits. In addition, items can be grouped into 15 subscales, such as eating, talking, feelings, and sense of support. Reliability testing, with normal weight and obese adolescents, with Cronbach's alpha of 0.88 based on the total score has been reported. (Mellin et al., 1987). The CHI was administered to children at T1, T2, and T3.

Family Habit Inventory. The Family Habit Inventory (FHI) (Appendix F) measures 16 aspects of parents' weight-related behaviors including attitudes about their family and child. Behaviors were originally selected based on findings from 60 parents who completed the developmental test edition of SHAPEDOWN. Guidelines were developed based on current management practices for eating disorders in adolescent obesity intervention. The scores can range from 48, the poorest habits, to as high as 144, indicating healthy habits. The instrument has a reported Cronbach's alpha of 0.79 demonstrating acceptable reliability (Mellin et al., 1987). Questionnaires were completed

at baseline, 3 months (end of test group intervention), and 15 months (1 year after termination of the intervention).

Procedures. Upon return of the signed consent, and prior to beginning the intervention, each child completed the SPPC measurement tool and the Child's Habit Inventory (T1) in the presence of the researcher in a private area. The investigator read each question and provided explanation as needed for each student. Directions for administration of the tool were written clearly at the top of each instrument. Both tools were repeated at the end of the last intervention session (week 10), (T2), and eight weeks after completion of the intervention (T3) for those participants who completed the intervention. Repeated administration of the tool was consistent with description of the original administration format. Parents did not assist the children in completing the measurements.

At the wellness center, two separate sessions were held on two afternoons after school and parent work hours to accommodate family schedules. Parents completed consent and children completed assent forms. Self-esteem and habit inventories were completed in the same fashion with the elementary school population.

Data Analysis Strategies

Multivariate statistical analyses of the data are used to determine the relationship of the SHAPEDOWN intervention and lifestyle habits and children's self-esteem.

Multiple outcome measures are valuable in understanding the effects of the intervention, developing a more complete understanding of the phenomenon under study, and maximize the information gained within data analysis. For purposes of this study, descriptive and inferential statistics were used.

Descriptive statistics. Descriptive statistics were used to summarize the demographic variables of age, gender, child's grade in school, race/ethnicity, number of children in the family, and the number of individuals residing in the household, and socioeconomic status to identify central tendencies. The independent variable was completion of the SHAPEDOWN intervention. The dependent variables were based on the evaluation of change in total scores for self-esteem and child and family habits before and after the intervention. Originally, the methodological plan included an eight-week post-intervention assessment of the self-esteem and habit inventories, but due to attrition, this strategy was not considered feasible and was deleted from the study. Further discussion will follow in the data analysis and discussion chapters.

Descriptive statistics were used for initial data analysis for each dependent variable (self-esteem, and children and family habits) including measures of central tendency, variability, relative position, and the relationship between variables. Measures of central tendency utilized the mean of scores obtained for each variable, categorized,

and compared by pre- and post-intervention times. Variability was measured utilizing standard deviation.

Dependent variable total scores were also compared between T1 and T2 with paired sample *t*-tests. The planned time points, revised to include before and after intervention assessments, allowed comparisons of the dependent variables.

An alpha level of $p < .05$ was set. The Statistical Package for Social Sciences (SPSS version 17) was used to conduct the data analysis.

Inferential statistics. Inferential statistics were planned to draw conclusions regarding application within a larger group of children when assessing the effects of FBBT on self-esteem and lifestyle habits utilizing the concept of standard error. In other words, is the completion of SHAPEDOWN predictive of changes in the scores for self-esteem and lifestyle habits? The present null hypotheses in this study include:

1. There is no relationship between the completion of SHAPEDOWN and children's lifestyle habits.

1. There is no relationship between completion of SHAPEDOWN intervention and improvement in family's lifestyle habits.
2. There is no relationship between completion of SHAPEDOWN and self-esteem in children.

Inferences from this small sample were based on the comparing this sample to other samples previously studied. Based on these comparisons, the probability associated with the outcome inferences may be determined regarding the dependent variables. The distribution of the sample means, the standard error, is used to predict how this sample means differs if other samples from the same population were utilized. This provides an indication of how well the sample in this study represents the population from which it was selected. The smaller the standard error the greater the confidence in the inferences that are drawn based on sample data.

The level of significance was pre-established (*a priori*) as the probability for the hypotheses being incorrect was alpha = .05. If the null hypotheses are actually false, (there is a real difference between completion of SHAPEDOWN and the outcome variable of self-esteem and lifestyle habits) the null hypotheses will be rejected.

Summary

The research data analysis has been designed around the use of bivariate statistical evaluation. In this quasi-experimental interventional study, a significant difference between the dependent variables after the completion of the SHAPEDOWN intervention may result in some confidence in attributing causality to the independent variable. Descriptive statistics were used to summarize the data and sample. Inferential statistics

were applied to determine how likely it was that the intervention had an effect on the dependent variables.

Chapter 4: Data Analysis

The purpose of this study was to examine the effects of a SHAPEDOWN family-based behavioral treatment intervention on self-esteem and lifestyle habits changes in families and children. The hypotheses tested were:

1. Children who complete SHAPEDOWN will demonstrate healthier lifestyle habits.

1. Parents who complete SHAPEDOWN intervention will demonstrate improved lifestyle habits.
2. Children who complete SHAPEDOWN will demonstrate improved self-esteem.

Changes in dependent variables may reflect promotion of future positive life-style choices and ultimately have a positive effect on a child's emotional and physical health, and well-being.

Description of Sample

Eleven parents completed the demographic data information for their total of twelve children. Twelve children completed child assent forms. Twelve children and eleven parents initially agreed to participate in the SHAPEDOWN intervention. Table 1 provides an overview of the study participants enrolled from each site.

Table 1. Study Participants at Two Sites.

	Parents	*Children*	**# meetings attended**
Site 1 Elementary school	n = 5	n = 6	**8, 8, 8, 5, 2, 2**
Site 2 Wellness Center	n = 6	n = 6	**2, 9, 9, 1, 2, 6**
Total	**n = 11**	**n = 12**	**Mean = 5.2 meetings**

The families for this research were recruited through general advertisement to all children at two elementary schools, with an additional recruitment through two pediatric primary care provider sites. There were two intervention sites, an elementary school and a community wellness clinic. At each site, the researcher held an informational session for those interested in the healthy lifestyles program. Initial sample size consisted of five families with six children at the elementary school, and six families and six children at the wellness center. At time point one (T1), prior to beginning the SHAPEDOWN intervention, eleven parents completed the FHI, and 11 children completed the CHI. One child at the elementary school did not participate after signing the assent form, however his sibling did continue with the program. Six families and seven children completed intervention to time point 2 (T2 – the end of 10-week intervention) and the completed outcome measures.

Table 2. Measures Completed.

Measures	*Site 1*	*Site 2*	***Total***
SPPC			
Time 1	5	6	**11**
Time 2	4	3	**7**
Time 3	2	0	**2**
CHI			
Time 1	5	6	**11**
Time 2	4	3	**7**
Time 3	2	1	**3**
FHI			
Time 1	5	6	**11**
Time 2	3	3	**6**
Time 3	2	1	**3**

At time point three (T3 - eight-weeks following the intervention), three families and two children completed the outcome measures. As the study progressed, participant dropout was attributed to conflict in parent and child schedules due to parental work responsibilities and children's sports and scouting activities. All participants initially elected to participate in both the intervention and the study. Due to the low rate of response at T3, these data were not considered valid and not used in data analysis (Table 2).

Sample characteristics. All parents who participated were female, although one father also accompanied a child and mother for two weeks. Stated family ethnicity was 64% percent Hispanic and 36% Caucasian. Children's ages ranged from 8 to 12 years

old. The mean age was 9 years and 7 months. Seven children were female and four were male. Half of the sample reported incomes of less than $20,000 per year with the mean range of family income of between $30,000 - 35,000 dollars per year. The range of persons living in each household was from three to six, with a mean of 4.5 persons residing in the household. The mean number of children per household was 2.7. (See table 3).

Table 3: Sample Demographics.

Characteristics	n	Percent (%)	Mean
Child Age in Years			
8	5	45%	
9	1	9%	
10	1	9%	
11	1	9%	
12	3	27%	
Total	11		**9 y, 7m**
Child Gender			
Male	4	36%	
Female	7	64%	
Total	11		
Child School Grade			
1st	1	9%	
2nd	2	18%	
3rd	3	27%	
6th	4	36%	
7th	1	9%	
Total	11		**4th grade**
Family Race/Ethnicity			
Hispanic	7	64%	
White/Caucasian	4	36%	
Total	11		
Number of children in household			
1	2		
2	4		
3	2		
4	2		
Total			**2.73**
Number of person's living in household			
3	1		
4	3		
5	6		
6	2		
Total			**4.5**
Family yearly income estimate			
Less than 10,000	1		
10,000- 15,000	3		
16,000-20,000	0		
31,000-40,000	1		
41,000-50,000	1		
More than 50,000	4		
Mean Yearly Income			**32, 500**

Descriptive analysis of study variables.

Descriptive statistics are used to describe and summarize, organize, interpret and communicate the results of the data collected on the habits and self-esteem measures.

Variability is summarized by the range and standard deviation. The range provides a gross descriptive index of the distribution of scores for each measure. The standard deviation is calculated for every value in the distribution and represents the average deviations from the mean. The mean for each measure at each time point represents the average of the scores in the distribution. The standard deviation summarizes the average deviation of values from the mean. In a normal distribution there are three standard deviations above and below the mean and can rank and interpret the scores achieved on each measure.

Bivariate descriptive statistics related to each study variable are presented in Table 4. A paired-Samples *t* -test was used to determine the statistical significance between pre- and post-intervention means. The mean and standard deviation for each set of scores are reported as are the *t* scores, degrees of freedom (*df*), and the 2-tailed significance or *p* value.

Table 4. Bivariate Descriptive & Inferential Analysis of Study Variables.

Scale	TP	n	Range	Mean	median	SD	*R*	*t*	*df*	Sig. 2-tailed
Self-esteem	T1 T2	11 7	13 -19 6-20	15.71 15.57	16.50 18.50	2.19 5.28	.679	.095	6	.927
CHI	T1 T2	11 7	43-73 51-84	61.71 66.29	62.00 62.50	11.35 12.19	.748	-1.145	6	.296
FHI	T1 T2	11 6	98-117 90-110	105.17 102.00	103.00 102.00	7.76 7.16	.811	1.304	5	.249

Correlations are reported in table 6. The correlation coefficient is a statistic that indicates the strength and direction of the relationship between two variables for one group of participants. It provides a single numeric value to represent the relationship.

Correlation coefficients can range from -1.00 (perfect, inverse relationship) to 1.00 (perfect, direct relationship). The value of 0.00 indicates no relationship between variables. The Pearson *r* was computed to examine the relationship between variables. Interpretation of correlation is as either strong or weak relationships. The higher the absolute value of the coefficient (the value disregarding the sign) the stronger the relationship. A correlation of .80 is much stronger than a correlation of .20. The correlations will be examined in terms of their negative or positive relationships when indicated.

Table 5. Paired-Samples Correlations.

Variable	Age of child	Child ethnic	Fam $	SE T1	SE T2	CHI T1	CHI T2	FHI T1	FHI T2
Age of child		.299 .372 11	.586 .058 11	.004 .992 11	.457 .302 7	-.145 .671 11	-.376 .406 7	-.357 .281 11	-.340 .510 6
Child ethnic			.746 # .008 11	.153 .653 11	-.055 .906 7	-.376 .255 11	.072 .878 7	-.032 .926 11	.822 * .045 6
Fam $				.062 .857 11	.029 .951 7	-.312 .351 11	.727 .064 7	-.529 .094 11	.601 .207 6
SE T1					.739 .058 7	.220 .515 11	.458 .302 7	-.177 .602 11	-.026 .962 6
SE T2						.286 .534 7	.253 .584 7	-.169 .717 7	-.485 .329 6
CHI T1					.		.599 .155 7	-.223 .509 11	-.030 .955 6
CHI T2								-.576 .176 7	.212 .687 6
FHI T1									.685 .133 6

Top statistic = Pearson correlation
Middle statistic = Significance (2 –tailed)
Bottom statistic = sample size
#Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

Correlation examination is used in this study to examine the relationship between the dependent variables (habits and self-esteem) in order to consider inferential analysis.

Self-esteem inventory. The hypothesis examined was children who complete SHAPEDOWN would demonstrate improved self-esteem. The total score range was 13 - 19 and 6-20 at time points 1 and 2, respectively. The mean scores were 15.71 (*sd* 2.19) and 15.57 (*sd* 5.29). The standard deviation at time point 2 indicates a high variability among the scores. The difference between the two means was not statistically significant at the .05 level ($t = .095$, df 6, $p = .927$) (Table 5).

Each question in the self-esteem scale was evaluated and compared across the two time-points. Individual questions in the self-esteem scale had a weighted score of between one and four. The range of scores for each item was 2.29 – 3.00 (mean 2.57 *sd* .86) and 2.29 - 3.15 (mean 2.65 *sd* 1.00) at time points 1 and 2, respectively. Harter (1985) reported that the raw data range was 2.66 to 3.24 (2.85 *sd 0*.64) with that subscale mean fluctuating around 3.0, above the mid-point of 2.5. The sample study mean is lower than Harter's reported values, and the standard deviation reported reflects slightly higher variation in this study sample. Cameron (1999) noted that participation in a weight management program might put children at risk for lower self-esteem. The children investigated reported feelings of embarrassment and inadequacy with weekly weigh-ins. Harter noted that the original sample reflected data obtained from middle to upper-middle class children, a possible explanation for the average or mean scores being higher than the mid-point. However, lower mean scores may reflect the lower mean family income

of $30,000 – 35,000 per year (low-middle class), for this sample (Hinkle, 2003). This reflects previous data correlating poverty with lower self-esteem and overweight status in children (Strauss, 2000).

Table 6. Mean Scores for Individual Self-esteem Questions across T1 and T2 and Paired-Samples tests

Question	mean T1	SD	mean T2	SD	Paired-sample Correlation	Sig.	*t*	*df*	Sig. 2-tailed
#1	2.29	.95	2.43	1.13	.331	.468	-.311	6	.766
#2	3.00	1.15	3.15	1.21	.238	.608	-.258	6	.805
#3	2.71	1.11	2.29	1.11	.212	.649	.812	6	.448
#4	2.71	.95	2.57	1.40	.394	.382	.281	6	.788
#5	2.29	1.25	3.00	1.15	-.230	.619	-1.00	6	.356
#6	2.43	.98	2.43	.98	-.225	.628	.000	6	1.00
Mean	2.57	.86	2.65	1.00	*.739*	*.058*			

Children's Habit Inventory. The hypothesis addressed was children who complete SHAPEDOWN would demonstrate healthier lifestyles. The CHI was administered at two times to the sample of children who had completed the SHAPEDOWN intervention.

The total scores range of scores was 43-73 (T1) and 51-84 (T2). Total mean score 61.73 (*sd* 11.35) and 66.29 (*sd* 12.19), were not highly skewed from the median further reflecting a somewhat homogenous distribution. The difference between the two means

was not statistically significant at the .05 level (t = -1.145, df = 6, p=.296) (Table 5). Strength of the statistical analysis is poor due to the very low sample size.

Family Habit Inventory. The hypothesis examined was parents who complete SHAPEDOWN intervention would have improved lifestyle habits.

The range of possible scores for the Family Habits Inventory is 48, reflecting a low level of health habits, to a high of 148, indicating the healthiest habits. The total scores range of scores was 98-117 (T1) and 90-110 (T2). Total score means were 105.17 (*sd* 7.76) and 102.00 (*sd* 7.16) respectively at time points 1 and 2, respectively. (Table 5). There was no significant difference between FHI scores at T1 and T2.

Data Analysis and Discussion Related to the Research Aims

The major focus of this research was to describe the relationship between completion of a SHAPEDOWN intervention for overweight and obese children and its influence on children's self-esteem and habits and family habits. For each aim under consideration, the null hypothesis, completion of SHAPEDOWN had no relationship to changes in self-esteem and habits was not rejected.

Secondary Findings

BMI status. Analysis of children's weight status revealed at time point 1 with 11 children that the minimum BMI was 17.10 and the maximum BMI 33.20, with a mean of 26.77 (*sd* 5.6539) (Table 7).

Table 7. BMI scores at. T1 & T2.

BMI	n	Minimum	Maximum	Mean
T1	11	18.30	33.20	26.77
T2	7	18.80	32.70	26.84

At time point 2 there were 7 children who completed weight documentation, and mean results did not show improvement across the intervention.

Number of interventions attended. The number of interventions attended also reflects general positive trends captured by data analysis and may account for lack of overall statistical significance in habits and self-esteem scores. None of the children or families attended all 10 weeks of the intervention. Two families and children attended 9 times, 3 couplets attended 8 times, 1 pair attended 6 and 5 times each, 4 families and children attended 2 times each and 1 pair attended only one time. The average number of attended meetings was 5.2 for this sample, just half of the offered intervention sessions (Table 1). Factors most often cited for inability to attend included parental work schedules, children's sports and scouting activities, and family illness. Poor attendance may have attributed to lack of significance within study variables and highlights a significant factor for provision of family interventions for lifestyle changes.

Age of child. Correlations of the effect of child's age and instrument scores were examined in order to examine the potential for inferential analysis. Age and children's lifestyle habits correlations at time point 1 and 2 were -.145 (p = .671) and -.376 (p =

.406). Age and family lifestyle habits correlation at time points 1 and 2 were -.357 (p = .281) and -.340 (p = .510). These values were not statistically significant.

The correlation between age and self-esteem was not statistically significant. However, there is a positive relationship between the age of child and self-esteem. As previously presented in the literature review, the younger children may not associate obesity with self-esteem because they have not reached the developmental stage when their self-esteem is not yet related to their body image (Harter, 1999; Maier, 1969; Mendleson & White, 1985).

Limitations

The nonrandom nature of the study sample constituted a threat to the external validity of the study. Families that participated were a self-selected group. The poor attendance and the high dropout rate highly negate the value of the statistics. Interpretation of findings is limited. Application of the findings to other groups of children and families would require great caution.

The facilitator for the SHAPEDOWN program provided the intervention for the group as well as being the primary researcher. Interest in collecting data may have been influenced by a personal goal to complete academic credit toward a doctoral degree requirement. The researcher was a trained and practicing primary care pediatric nurse

practitioner, however, newly certified as a SHAPEDOWN provider. This study represented the first time the intervention had been initiated by this researcher.

There are inherent limitations on human studies and variables that cannot be anticipated. Assessing for readiness to make changes was beyond the scope of this research. Family conflicts, health habits, and ability to provide support to their children are not within the control of the investigator. Child temperament and ability to assimilate and apply new knowledge is variable. Knowledge of being involved in a study may affect the research variables for participants. This was a nonrandom, self-selected group and there was no way to control for the day-to-day problems that occurred. In terms of lack of true randomization, the study will inherently have less strength in the ability to make causal inferences.

Chapter 5: Discussion of Findings

This chapter includes a summary of the research design and method as well as the findings and conclusions, implications for nursing practice, education, administration, and recommendations for further research.

Summary of the Problem

The purpose of this quasi-experimental descriptive correlation study was to examine the efficacy of a SHAPEDOWN intervention program on elementary-aged schoolchildren. Measures specifically examined the relationship between self-esteem and children and family habits and the completion of the healthy lifestyle intervention. The theoretical framework for this study was based on the conceptual model: the Family Approach to the Treatment of Obesity (Golan & Weizman, 2001), and Bandura's social cognitive theory (1999). Research suggests that obesity is a complex process leading to chronic disease and poor psychological adjustment (Hinds, 2005). Not only does obesity create physical health risks and co-morbidities, obesity in childhood increases the risk of depression and poor self-esteem (Myers et al., 1998; Sinton & Birch, 2005; Whetstone et al., 2007). The development of poor self-esteem in a child increases the risk of problem behaviors such as aggression, crime, teenage pregnancy, drug and alcohol use, tobacco

use, and eating disorders (Brook et al., 2007; Sinton & Birch, 2005). Family-based behavioral treatment (FBBT) has been shown successful in weight management among children with moderate and severe obesity, demonstrating significant decrease in percentages of overweight children and long-term improvement in fitness level, cardiovascular risk factors, and psychological well-being (Epstein et al., 1994; Myers et al., 1998).

Summary of the Purpose

This study was designed to contribute to the evidence-based knowledge regarding management of childhood obesity. It was hypothesized that improved self-esteem coupled with improvement in healthy lifestyle concepts could enhance efficacy of weight management and improve pertinent interventions to enhance professional and family management for obesity.

This study addressed the following research aims:

1. To evaluate change in children's lifestyle habits after completion of SHAPEDOWN program.
2. To evaluate change in parent's lifestyle habits after completion of SHAPEDOWN program.
3. To evaluate change in self esteem in children after completion of a SHAPEDOWN intervention.

This study was designed to test the hypothesis that children who complete a FBBT intervention will have improved self-esteem, which will promote future positive life-style choices and ultimately have a positive effect on their emotional and physical health and well-being.

The relationship between study variables were explored using a descriptive correlation design. An initial sample of 12 children and 11 families self-elected to participate after receiving information from either an all school bulletin or a referral by their primary care provider. Informed assent and parental consent was obtained. The families were recruited through advertisement at two elementary schools, a primary care office setting, and a community wellness center. They were given information about the weight and healthy lifestyle management intervention and the research study in Spanish by a graduate nursing student or in English by the investigator. Initial criteria for inclusion included children 8-12 years of age and in grades 3-6. Additional criteria included children who had been previously diagnosed as overweight or obese by their health care provider. Family inclusion criteria included a commitment to attend the intervention support group each week for 1-2 hours for a ten-week period.

After parental consent was obtained, the children completed assent. The parent then completed a demographic data collection sheet and the Family Habit Inventory (Mellin et al., 1987). Children completed a self-esteem inventory entitled "Who am I"

(Harter, 1985) and a Children's Habit Inventory (Mellin et al.). The self-esteem inventory measures perceived self-competency. The habits inventories measure the level of healthy habits practiced as perceived by the child and parent, from poorest to healthiest levels. Questionnaires were completed at the beginning of the intervention (in the first week, T1), and after completion of the intervention (in the last week, T2). The total scores from the inventories were used to answer the research questions. Scores were compared to established available reliabilities.

Quantitative data analysis was completed using Statistical Package for Social Sciences (SPSS, version 17). Data were analyzed using descriptive statistics (means, standard deviations, and frequencies) to describe the sample and study variables. Pearson's correlations and Student's *t*-test were used to infer results of the research question and determine if a relationship existed between self-esteem, habits, and the SHAPEDOWN intervention.

Discussion of Results

In relationship to the aims regarding the relationship of children's and family lifestyle habits and children's self-esteem after completion of the SHAPEDOWN intervention, there was no statistical significance found. There was not a large enough sample to examine data trends.

The second aim evaluates the change in parent's perception of family lifestyle habits after completion of the SHAPEDOWN intervention. The range and means of were not statistically significant, but indicated that parents rated their family habits as less healthy after completion of the intervention (98-117, mean = 105.17, and 90-117, mean = 102.0, T1 and T2, respectively). This may reflect an increased awareness and ability to critically assess family habits after the intervention. Age of child and family income did not have a significant correlation, but at time point 2, child's ethnicity and its relationship to family habits was highly correlated and significant (.822, $p = .045$). It would seem that some parents showed an improvement in understanding the relationship between family habits and their child's overweight status.

The third aim was to evaluate change in children's self-esteem after completion of the SHAPEDOWN intervention. There was no significant improvement in self-esteem between time points (.739, $p = .058$).

An individual's evaluation of self-esteem reflects the perception he or she has of him or herself. Barber, Grubbs, and Cottrell (2005) examined 77 children between the ages of 8 and 12, 38 children who had been previously diagnosed with attention/deficit and hyperactivity disorder (ADHD) and 39 control participants without ADHD Those children with ADHD had significantly lower overall scores on the SPPC. These findings may suggest a difference in the way children with ADHD perceive themselves. This may

be true of overweight and obese children, the cumulative effect of years of low self-esteem and negative self-perception may have significant life consequences. Efforts should be focused on fostering self-esteem and positive self-perception with positive weight management and lifestyle behavior modification.

Results with this limited population did not show a significance correlation between the age of the child and self-esteem, in fact at time point one, they are almost perfected unrelated by *Pearson's* correlation (.004, $p = .992$), though this trend improved at time point 2 (.457, $p = .302$). Mean age for this sample was just over age 9.5 years, modestly supporting previous research that the relationship of age to self-esteem was found to be outside that that might occur by chance (Ball, Marshall, & McCargar, 2005; Braet & Van Strien, 1997; Franklin, Denyer, Steinbeck, Caterson, & Hill, 2006; Strauss, 2000).

Results from the study do not statistically support the researchers' hypothesis suggesting a relationship between improved self-esteem, healthy habits, and completion of the SHAPEDOWN intervention program. As the emphasis for improvement was directed at both parent and child, it may be that parental focus was greater toward their child than toward actual internalization of habit changes within the family. Importantly, key to parental change may be improved knowledge and understanding of the adverse

effects that obesity may have on the future health of their family and child. Perhaps this is a missing component requiring further exploration.

A major limitation of this study was the small convenience sample. Findings cannot be generalized to the greater population of overweight children.

Other Secondary Findngs. A familial approach to the treatment of childhood obesity is well supported in the literature. This study was conducted between September 2008 and July 2009. The main difficulty encountered was recruitment and retention of participants. The number of parents and children who initially attended the intervention markedly fell after the initial meetings. Recruitment of both children and their parents was challenging. It was difficult to engage a group of parents who would commit to study participation. Scheduling of parent meetings at a time when parents could meet regularly was an additional barrier.

There is much discussion regarding the targeted agent of change. Epstein, Wing, Steranchak, Dickson, and Michaelson (1980) and Flodmark, Ohlsson, Ryden, and Suegar (1993) reported a significant weight loss among children in a FBBT. However, they did not discuss attrition. Parent only FBBT groups have shown significant weight loss either as compared to those including the child or with the child as the focus of behavioral change (Golan et al., 2006; Isreal & Shapiro, 1985; Janicke et al., 2008). Attrition rates have been reported at between 24% and 80% and remain a significant limitation. Janicke

et al. reported a 24% dropout rate in a parent-focused program, with children attending but in a separate child-focused group. Levine, Ringham, Kolarchian, Weisniewski, and Marcus (2001), reported a 34% dropout rate in a parent-and-child-focused FBBT intervention. Attrition rates were reported at a nine-fold increase when children were the agent of change as compared to a parent-only FBBT focus (Golan et al., 1998). Golan et al. (2006) reported 80% attendance in a parent-only group compared to 55% attendance in parent-child groups. The question arises regarding administration of the intervention to parents alone or to parent-child dyads. Should the emphasis be on parental cognition and behavioral change as proposed by Golan and Weizman (2001)? An intervention may be more effective if there is an environment that provides parents an opportunity to focus on the parenting, behavior, and lifestyle changes. Consistent attendance throughout the intervention and at follow-up was a major limitation for this study and cautious interpretations of findings is recommended.

BMI changes were not a focus of this study, because it was felt that the study period was too short to reflect substantial and lasting improvements. In addition, there is the question of focus for lifestyle changes versus weight loss and resultant possible adverse psychological effects on children. Concern has been voiced in the literature regarding purposive weight loss and development of eating disorders and exacerbation of self-esteem issues (Strauss, 2000).

The investigator-facilitator may have also influenced the results of this study. While the facilitator had completed the SHAPEDOWN provider training and certification process, it was an initial experience at providing the intervention. A relative low level of experience with this specific program might have influenced the outcome.

The period for the administration of the program might have also been a factor in lack of association of variables. As shown by the difficulty in retaining participants, there may be many variables related to this factor. A time of day to meet was initially discussed with each group at the first meeting, reassessed, and discussed at subsequent meetings. An after-school meeting time might be a better period for the children. However, with parental work commitments, this may not be practical. Evening meetings often conflict with sports and extracurricular activities such as scouts, acting clubs, music lessons, and the needs of other members of the family. Several families had other children or family members with major health problems. Other parents had difficulty coming to meetings and obtaining childcare for younger siblings.

Implications for Theory

Role modeling, based on Bandura's social cognitive theory is one of the primary techniques for behavior modification. Providing parents with education in a supportive group setting and the opportunity to rehearse behaviors that are reproducible in the home environment may assist families to modify their lifestyles into healthier patterns. Parents

can teach children within the home self-monitoring and self-evaluation techniques to improve behavior. Creating therapeutic environments that improve parental self-efficacy are cornerstones to improving childhood obesity. Offering quick fix weight-loss advice without the reinforcement of education, lifestyle change, and self-monitoring are ineffective. Patients need regular health assessments, encouragement, and guidance to avoid progressive weight gain or recidivism (Sharma, 2009). Limitations discussed regarding the results from this study cannot be used to refute the accumulated body of knowledge supporting this theory.

Implications for Nursing Practice

This study was designed to test the hypothesis that children who complete a FBBT intervention will have improved self-esteem, positively promoting future life-style choices and ultimately having a positive effect on their health and well-being. Results from this study may contribute to the practice of nursing by suggesting that clinical practice support continued family based behavioral treatment program as an intervention for improving childhood self-esteem and lifestyle habits changes in management of childhood obesity with a focus on group retention. This research highlights some of the barriers associated with the effective provision of interventions for overweight children.

At the time of completion of this study, 66% of American adults were considered overweight or obese (National Institutes of Health, 2009). Childhood obesity has

dramatically increased over the last several decades and is now a high as 30% among some children. Obese children are more likely to become obese adults and adolescent obesity is more likely to persist into adulthood than childhood obesity (Hughes & Reilly, 2008; Whitlock et al., 2005). As the trend of obesity in the United States continues, nurses are well positioned as prime investigators for innovative and family-specific healthy lifestyle practices. Nurse practitioners are uniquely situated to provide child and adolescent obesity management services in this difficult and underserved area of child health. Diligent adherence to the principles of prevention and management guidelines, as well as application to specific population and individual needs, must be continually trialed with results disseminated. Knowledge of improved healthy lifestyle techniques will become increasingly important. Those techniques that are applicable for individual settings may not be applicable across multiple settings. Therefore, it is recommended that health care providers place special emphasis on maintaining most current evidence-based research and application within the specific settings and populations in which weight and lifestyle interventions are intended.

Early intervention in the cycle of overweight and obesity should be a priority. Low self-esteem has been found to develop early, and the effect may be life-lasting (Carpenter et al., 2000; Gortmaker, et al., 1993; Robinson, 2006). Younger children are more under the control and influence of their parents or caretakers. Education and focus

on healthy lifestyle choices should begin in the prenatal period and be reinforced at each well-child visit. Maintaining accurate height and weights and assessing BMI percentiles regularly can improve early detection of weight gain and create opportunities for prevention. Health care providers should consider assessment of self-esteem and coping strategies when caring for children and include the family in children's health care and education.

Recommendations for Future Research

Results from this study should be considered in conjunction with previous research. Future research is strongly recommended to address the specific population needs within the community. A larger sample would provide greater effect size and possibly improve levels of significance related to self-esteem and habits measures.

1. It is recommended that this study be replicated with an adequate sample of obese children. Difficulty with retention supports Golan's theoretical framework for directing the intervention to the parent as the agent of change. Parents in this study had difficulty attending.
2. The multiple difficulties facing single health care providers might be more effectively managed by working in teams, rather than individually. Accommodations to families might include a fitness or exercise specialist to take children to the park or engage in play activities so their parents can attend the intervention program.

3. Prior to repeating this study, an initial recommendation would include focus group investigation with parents of obese children who are interested in making changes in lifestyles. Key issues to incorporate might include:
    a. Parental understanding and belief in the overweight status of their child.
    b. Perception of overweight status as a problem that requires management.
    c. Parental perceptions regarding changes to improve overweight status.
    d. Methods of incorporating change consonant with their family lifestyles to best meet their family's needs. This would include location, timing, and length of intervention.

Conclusion

Results from this study contribute to the advancement of nursing science by building on the theoretical relationship between self-esteem, lifestyle habits and their relationship to childhood obesity management. Investigating individual support and social needs for families and their children being considered for a healthy lifestyle, weight management intervention should be considered prior to the delivery of an intervention. Assessment of readiness to change may be useful in identifying those families who are more likely to benefit from the intervention. The effect of repeated attempts to make small changes may important in the learning and change process for individuals and for researchers.

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APPENDIX A

PARENT/GUARDIAN CONSENT: Quantitative

To participate in the research study:
Effect of SHAPEDOWN on Habits and Self-esteem for Overweight & Obese Children

Dear Parent or Guardian,

You and your child are being asked to be a part of a research study that looks at how children who are overweight feel about themselves. This research study is being conducted by Susan Bonnell, a registered nurse, as part of her doctoral dissertation at the University of San Diego, School of Nursing. This study is not being sponsored the Archdioceses of San Diego. You and your child do not have to participate if you don't want to. Nothing about your child's schooling, grades, or anything else will change if you decide not to do this. Nothing will change in your child's involvement in the SHAPEDOWN Program, either, if you decide this is not for you.

What you are being asked to do:

Fill out the forms:

- First, you'll fill out a brief questionnaire that ask you questions about things like your gender, ethnicity, household situation, and income. This will take you about 5 minutes.
- Then you will fill out one questionnaire that asks about your family nutrition, activity, and feelings about these issues. This whole process will take about 30 minutes. It's best if you fill these out in a quiet, private place where you can concentrate.
- Attend weekly SHAPEDOWN classes with your child for ten weeks.
- Complete the questionnaire about family nutrition, activity, and feelings that you did before starting the program 8 weeks after the program has been completed.

What your child is being asked to do:

- Your child will attend a healthy lifestyle program (SHAPEDOWN) for ten weeks, meeting once weekly, after school, at your child's school will last about 60- 90 minutes.
- IN the week prior to beginning the program, Susan will ask your child if she or he would be willing to participate in the research portion of the program. Susan will start by giving your child a permission form (called an "Assent Form") for him or her to read and sign. Then Susan will give your child 2 forms to fill out. One form has 36 questions from which the child chooses answers that best describe themselves. The second form is similar to the form you will fill out regarding nutrition, activity and feelings in the past week, only in a version for kids to understand. It might take kids a bit longer (up to an hour) to fill these out, but Susan will be there to help them. Your child will be reminded that he or she can stop anytime they want to, or decide they just don't want to do this. There will be a restroom close by, and Susan will give your child a chance to take a break and visit the restroom or relax after finishing the forms.
- The form asking about your child's feelings about him or herself will be given again at the end of the ten week SHAPEDOWN program, and then again after 8 weeks of completion of the program. At the end of 8 weeks, your child will also complete the form about nutrition, activity, and feelings.

<u>You and your child's participation in this study are:</u>

Voluntary. You and your child do not have to do any of this. Nothing about your child's grades, his/her schooling, or involvement in the SHAPEDOWN Program will change if you choose not to do this. You and your child can decide at any time to quit.

Confidential. No names will be recorded or attached to the survey forms or data. All consent/assent forms will be stored separately from data. Only code numbers will be used

on data forms. All data will be kept in a locked file cabinet and only Susan Bonnell will have access. She will keep all the completed forms at least 5 years before destroying them. The results will be reported on a group basis, and neither your child's identity nor his or her school will ever be identified in reporting the results.

Potential Risks. If you or your child becomes tired while filling out the forms or participating in the study, you or he/she can take a break and rest. Sometimes when adults are asked things about health issues like nutrition, exercise, and personal feelings regarding these subjects, they feel emotions like anxiety. Also, sometimes kids feel anxious when asked about these things, too. If you or your child would like to discuss these feelings, you can call the **San Diego County Mental Health Hotline (1-800-479-3339) and the California Youth Crisis Hotline number (1-800-843-5200.)**

Further Information. If you would like to know more about this research study—before, during, or after your participation in it—you can call Susan at (619) 260-4545 or e-mail her at sbonnell@sandiego.edu.

You can also call her professor, Dr. Kathy James, at 619-260-4578 or e-mail her at kjames@sandiego.edu.

If you and your child would like to participate in this survey, please:

- Sign and date this form.
- Fill out the other 2 forms.
- Return them to Susan.

If you don't want to participate, simply throw all these materials in the trash.
Thanks for your time and consideration.

I have read and understand this form, and consent to the research it describes to me. I have received a copy of this consent form for my records.

_____ _____
Signature of Parent/Guardian Participant Date
_____ (Printed name of Parent/Guardian Participant)

_____ _____
Signature of Investigator Date

Appendix B

Child Assent Form: Quantitative

To participate in the research study:

Effect of SHAPEDOWN on Habits and Self-esteem for Overweight & Obese Children

My name is Susan Bonnell. I am a doctoral student in nursing at the Hahn School of Nursing and Health Science at the University of San Diego. I am inviting you to help me with my research project. I am studying kids that are your ages to try and find out how you feel about yourself, and what your nutrition and activity habits are.

The part I need your help with doing 2 things:

One is to fill out five questionnaires over the time period of the study (approximately 4 months). A questionnaire is a survey, like on TV where they ask people what they think about stuff. It's not like a test at school. You don't need to feel embarrassed if you can't answer the questions, or just don't want to. Nobody is going to grade it. Nobody will know that it is your questionnaire, because your name will not be on it, just a number. You will be asked stuff about yourself, then asked other stuff about health topics like exercise and nutrition and eating habits. It will probably take 30 minutes to fill out two forms the first time, 15 minutes for one form the second time, and another 30 minutes to fill out two forms at the end of the project. So, a total of 1 and ½ hour at most. If you decide there are questions you don't want to answer, that is perfectly OK. You can skip them. No one will be mad at you. I will not share any information that you give me with anyone. Any papers that I collect from you will be locked up in a safe place so that no one can see them except me. At some point I may talk to other nurses and doctors at meetings and write about what I find out in magazines for doctors and nurses, but I will never use your names or the name of your school.

The second thing I am asking you to do is to participate in a healthy lifestyle program lasting 10 weeks called SHAPEDOWN. Your parent will also attend the program for 10 weeks. The program for the children will meet after school, one day a week for ten weeks and will last about 1 ½ hour. It will involve fun activities that

increase your understanding of healthy eating and activities that will be helpful for you your entire life. You will also receive a pedometer to learn how to keep track of how active you are. It is a little device measure how many steps you take every day and how long you were active. I will give it to you for free, and you can keep it. The pedometer you will wear is a very small box that you will put on your belt or the waistband of your pants or skirt. It you decide you don't want to wear this, or if you start to wear it and then change your mind, it is ok. No one will be mad at you.

You do not have to help me with this project. You can say "No, thank you," and it will not affect your grades at school or your participation in the SHAPEDOWN program. No one will be mad or disappointed in you if you do not want to work with me on this research project.

If you do decide to work with me, you may get tired. You can take time to rest anytime or just decide to quit. You don't have to answer any questions or give me any information that you don't want to give me. Sometimes when kids think about stuff like their bodies, their eating and activities, or their feelings, they get upset or anxious. If you feel that way, be sure to let your parent/guardian know. They or you can call the San Diego County Mental Health Hotline at 1-800-260-4578 or the **California Youth Crisis Hotline number (1-800-843-5200)** anytime free.

If you have any questions about this study you can call me at home. My phone number is (619) 619-698-6454 and my e-mail is sbonnell@sandiego.edu. If you want to call my teacher, Dr. Kathy James, you can do that too. Her telephone number is (619) 260-4578 and her e-mail is kjames@sandiego.edu.

By signing my name here, I am saying: Yes, I want to do this.

_____ _____

Signature of Participant Date

Please print your name on this line.

_____ _____

Signature of Principal Investigator Date

APPENDIX C

DEMOGRAPHIC DATA SHEET

Date of birth: _____

School grade: _____

Gender (please circle): Female Male

Ethnic Background (please circle):

African-American Hispanic Asian White/Caucasian

Pacific Islander American Indian

Number of children and ages in family including this child: _____

Number of person's living in the household_____

Family yearly income estimation (please circle most appropriate):

Less than 10,000	21,000-25,000	
10,000-15,000	26,000-30,000	41,000-50,000
16,000-20,000	31, 000-40,000	more than 50,000

APPENDIX D

Administration of Quantitative Tools to Children Guide
Self Perception Profile for Children (ages 8-12)
And Child Habit Inventory

Hi, My name is Susan Bonnell. You can call me Susan. I'm a nurse and a student in the PhD program at the University of San Diego. In order for me to complete my studies, I am doing a research project. I'm really interested in how families and kids can be more healthy, so that's what this project is about.

Thanks for taking the time to be here today. I'm going to start by telling you a little about what we're going to do in this group. We're going to be here about 30 minutes. That's about as long as a morning cartoon show on television. First, I'm going to give you a permission form to sign that explains what we're doing. The official name for it is an assent form. When you sign it, it means that you're OK with doing this. OK, now I'll pass out the assent form. Everybody will get 2 of them: one for me, and one to keep. (researcher passes out Assent Forms and pens to all participants.)
Now, I'm going to read this Assent Form to you. Remember, that means it's a permission slip that means you're OK with doing this. Please stop me anytime you don't understand anything. (Researcher reads Assent Form slowly and clearly, and pauses between paragraphs to say: "Do you have any questions?").

At the end of the reading of the Assent Form, researcher says:

"Please ask me any questions or tell me that there's anything you don't understand. Just ask, it's OK." (researcher pauses.)

Researcher says: "OK, now please take the pen I gave you and sign it on the place where it says 'Participant.' Remember that signing here means it's OK with you to be doing this. Please pass the signed form to me, and be sure to keep the other copy to take with you.

OK, are we ready to start? Remember, you can stop anytime you want. You don't have to answer any questions you don't want to. You can be excused to go to the restroom anytime you want to, too.

I'm going to start by reminding you about something <u>really</u> important. Each questionnaire has a number on it, so please do not write your name of the paper. The number means that I have no way of knowing which of you answers questions or shares their information. That means that you never have to worry about what you write, because, I won't know who wrote the information. That keeps all of your information "confidential" and private just for you.

I am interested in learning about how children your age think and feel about themselves. I'm going to pass out a sample questionnaire for you to fill out. This is <u>not</u> a

test like at school. You don't need to be embarrassed if you can't figure out what it means or if you get a wrong answer. Nobody is going to know your answers except you. Please don't put your name on this form. This is all confidential. (Researcher passes out the PSCS instrument and a pencil to each participant.)

OK, I want to explain that you have two decisions to make for each statement that I read out loud. On the paper, you have two choices for each statement, one on the right and one on the left. First decide which kind of kid you are. Once you choose the answer on the right or the left, you decide how true this is for you. So, you do not check a box on each side, but first choose a side, then decide between the 2 boxes next to that statement. Choose only one of those boxes to decide how true the statement is for you. The choices are "really true" and "sort of true". So check off the box (only one) that best describes what you are like. Remember, this is not a test, and there is no right or wrong answers. Everyone of us is different from each other, and I am interested in learning about the differences between children.

After you fill it out, we will go on to the next statement that lets me know what you are like. I'd like you to tell me if they make sense to you or if there are words you didn't understand. Again, don't be embarrassed about getting some answers wrong. It's perfectly OK. I want to know what you really think..

(Researcher then pauses between statements until it appears all participants have finished filling it out before reading the next set of statements. When it appears that everyone is done, researcher continues until all 28 questions on the form are completed. form is completed.)

OK, is everybody done? Great. Collect the PCSC. Are there any questions? Does anyone need a stretch or bathroom break?

OK, now I have another form for you to fill out. Pass out the CHI to each child. Remember do not put you name on the paper. This form asks questions about your activities and foods over the past 7 days. So try to remember what you've been doing and how you felt for each day in the past week when you are answering each question. There are no right or wrong answers.

Each question or statement asks for you to check an answer which most closely matches your eating and feelings. For example: I ate sweets. Check "often", "sometimes" or "rarely. If you never did it or felt it during the past 7 days, check "rarely"; If you always did it or felt it, check "often".

I will read each statement and each of you will check one answer. Any questions? OK, here we go. Researcher then begins by reading the first question, and moves on as it appears everyone has finished checking off an answer, through all questions in the instrument.

OK, that's it! Are there any more questions you have for me? I'd like to thank you very much for helping me with this project. Remember to take a copy of the assent form you signed with you. It has my phone number and my teacher's phone number and e-mails if you or your parent or guardian needs to contact me.

APPENDIX E

Code____

Self-Perception Profile for Children, ages 8-12

What am I like?

	Really True for Me	Sort of True for Me				Sort of True for Me	Really True for Me
1.			Some kids would rather play outdoors in their spare time	BUT	Other kids would rather watch TV		
2.			Some kids are often *unhappy* with themselves	BUT	Other kids are pretty *pleased* with themselves		
3.			Some kids *don't* like the way they are leading their life	BUT	Other kids *do* like the way they are leading their life		
4.			Some kids are *happy* with themselves as a person	BUT	Other kids are often *not happy* with themselves.		
5.			Some kids *like* the kind of *person* they are	BUT	Other kids often wish they were someone else		
6.			Some kids *are* not very happy with the way they do a lot of things	BUT	Other kids think the way they do things is *fine*		
7.			Some kids are very *happy* being the way they are	BUT	Other kids wish they were *different*		

APPENDIX F Code_____
Children's Habit Inventory

KIDS HABIT INVENTORY

Assess your own habits. Use this habit inventory to get a clearer picture of your behavior and of your feelings that are associated with weight. Later on, at the end of the program, you will use the habit inventory again to assess the progress you have made in changing your behaviors and feelings.

There are no right or wrong answers. Just answer each question based on what you did or felt during the **last seven days**. For each question, check "often", "sometimes", or "rarely". If you never did it or felt it during the last 7 days, check "rarely". If you always did it or felt it, check "often".

Example:

I ate sweets.	x_____ often _____ sometimes _____ rarely

I ate sweets.	_____ often _____ sometimes _____ rarely
I ate vegetables.	_____ often _____ sometimes _____ rarely
I ate fried or oily foods.	_____ often _____ sometimes _____ rarely
I drank regular sodas.	_____ often _____ sometimes _____ rarely

1. The types of food I eat. **Total_____**

I ate breakfast.	_____ often _____ sometimes _____ rarely
I kept nibbling on food.	_____ often _____ sometimes _____ rarely
I ate a lot in the evening.	_____ often _____ sometimes _____ rarely
I snacked during many times during the day.	_____ often _____ sometimes _____ rarely

2. How often I eat. **Total_____**

I had second helpings.	_____ often _____ sometimes _____ rarely
I ate a lot when I snacked.	_____ often _____ sometimes _____ rarely
I had small amounts of food.	_____ often _____ sometimes _____ rarely
I ate more than my family members or friends.	_____ often _____ sometimes _____ rarely

3. How much I eat. **Total_____**

I exercised hard during workouts.	_____ often _____ sometimes

_____ rarely

I spent my afternoon sitting. _____ often
_____ sometimes
_____ rarely

I got some vigorous exercise. _____ often
_____ sometimes
_____ rarely

I sat around on the weekend. _____ often
_____ sometimes
_____ rarely

4. How much I exercise. **Total_____**

I felt bored. _____ often
_____ sometimes
_____ rarely

I was very busy. _____ often
_____ sometimes
_____ rarely

I had nothing to do. _____ often
_____ sometimes
_____ rarely

I put off doing things. _____ often
_____ sometimes
_____ rarely

5. How active I am **Total_____**

I felt really hungry. _____ often
_____ sometimes
_____ rarely

I ate when I was not hungry. _____ often
_____ sometimes
_____ rarely

I felt really full. _____ often
_____ sometimes
_____ rarely

I stopped eating when I was barely satisfied. _____often
_____ sometimes
_____ rarely

6 Listening to my hunger cues. **Total_____**

I ate because it was time to eat. _____ often
_____ sometimes
_____ rarely

I ate because I was bored. _____ often
_____ sometimes
_____ rarely

I ate because I was nervous or upset. _____ often
_____ sometimes
_____ rarely

I ate because I was depressed or unhappy. _____ often
_____ sometimes
_____ rarely

7. Eating when I am not hungry. **Total_____**

I ate quickly. _____ often
_____ sometimes
_____ rarely

I was relaxed when I started eating.
_____ often
_____ sometimes
_____ rarely

I ate while I watched TV. or read.
_____ often
_____ sometimes
_____ rarely

I took small bites of food.
_____ often
_____ sometimes
_____ rarely

8. My eating style. **Total_____**

I kept sweets in the house.
_____ often
_____ sometimes
_____ rarely

I kept vegetables in the house.
_____ often
_____ sometimes
_____ rarely

I kept fruit in the house.
_____ often
_____ sometimes
_____ rarely

I kept food in my bedroom.
_____ often
_____ sometimes
_____ rarely

9. My eating environment. **Total_____**

I ate because people offered me food.
_____ often
_____ sometimes
_____ rarely

I talked about my problems.
_____ often
_____ sometimes

_____ rarely

I told people ways they could help me.
_____ often
_____ sometimes
_____ rarely

I spoke up and said what I thought.
_____ often
_____ sometimes
_____ rarely

10. Speaking up. **Total_____**

I spent time with friends.
_____ often
_____ sometimes
_____ rarely

I felt lonely.
_____ often
_____ sometimes
_____ rarely

I telephoned a friend.
_____ often
_____ sometimes
_____ rarely

I spent time with a friend or family member this weekend
_____ often
_____ sometimes
_____ rarely

11. Time with friends. **Total_____**

I had food on my mind.
_____ often
_____ sometimes
_____ rarely

I felt guilty when I ate.
_____ often
_____ sometimes
_____ rarely

I ate and felt like couldn't stop.
_____ often
_____ sometimes
_____ rarely

I ate food secretly.
_____ often
_____ sometimes
_____ rarely

12. Feelings about eating. **Total_____**

I felt badly about myself because of my weight.
_____ often
_____ sometimes
_____ rarely

I felt disappointed in myself because of my eating habits.
_____ often
_____ sometimes
_____ rarely

I thought that I was a good person because of my eating habits.
_____ often
_____ sometimes
_____ rarely

I felt that people wouldn't like me because of my weight.
_____ often
_____ sometimes
_____ rarely

13. My feelings of self-esteem. **Total_____**

I felt sad about my weight.
_____ often
_____ sometimes
_____ rarely

I felt depressed about how my body looked.
_____ often
_____ sometimes
_____ rarely

I thought that trying to change my eating was hopeless.
_____ often
_____ sometimes
_____ rarely

I felt sorry for myself because I had to diet.
_____ often
_____ sometimes
_____ rarely

14. Feelings of depression. **Total_____**

I ate even though I didn't want to.
_____ often
_____ sometimes
_____ rarely

I felt that I would always be fat.
_____ often
_____ sometimes
_____ rarely

I ate only the amount I intended to eat.
_____ often
_____ sometimes
_____ rarely

I found that situation came up that forced me to overeat.
_____ often
_____ sometimes
_____ rarely

15. My feelings of self-control. **Total_____**

APPENDIX G

Code ____

Family Habit Inventory

My child snacked on fruit, vegetable, or other low fat, low sugar food.	_____often _____sometimes _____rarely
My child had fried or fatty foods, like fried chicken, bacon, eggs, fries, chips or ice cream.	_____often _____sometimes _____rarely
My child ate at least one cup of vegetables a day.	_____often _____sometimes _____rarely
1. The foods my child eats.	Total _____
My child had second helpings of foods.	_____often _____sometimes _____rarely
My child ate a lot when he/she snacked.	_____often _____sometimes _____rarely
My child ate small amounts at dinner.	_____often _____sometimes _____rarely
2. How much my child eats.	Total _____
My child skipped breakfast.	_____often _____sometimes _____rarely
My child ate four times a day.	_____often _____sometimes _____rarely
My child ate regular meals.	_____often _____sometimes _____rarely
3. How often my child eats.	Total _____
The meals at home consisted mainly of low fat and low sugar foods.	_____often _____sometimes _____rarely

At home, there were cakes, pies, cookies, candy, ice cream, or chips. There was a bowl of cut-up, ready-to-eat vegetables ion the refrigerator. 4. Light family food	_____often _____sometimes _____rarely _____often _____sometimes _____rarely Total _____
We watched television while we ate dinner. The family ate dinner together. We enjoyed our food, eating slowly and savoring every bite. 5. Family eating style.	_____often _____sometimes _____rarely _____often _____sometimes _____rarely _____often _____sometimes _____rarely Total _____
My child exercised for an hour or more on school days. My child had no time all day to exercise. My child exercised for at least two hours on the weekend. 6. How much my child exercises.	_____often _____sometimes _____rarely _____often _____sometimes _____rarely _____often _____sometimes _____rarely Total _____
My child watched an hour or less of television per day. My child seemed bored or sluggish.	_____often _____sometimes _____rarely _____often _____sometimes _____rarely

My child had nothing but homework to do after school. 7. My child's active lifestyle.	_____often _____sometimes _____rarely Total _____
My child was excited about learning new things. My child did household chores. My child had interests and activities that he/she really enjoyed. 8. My child's enriching lifestyle.	_____often _____sometimes _____rarely _____often _____sometimes _____rarely _____often _____sometimes _____rarely Total _____
On the weekends, we took a walk, played sports, or exercised together. Our family time included exercising together. All we did as a family was talk, eat, or watch television. 9. Active family time	_____often _____sometimes _____rarely _____often _____sometimes _____rarely _____often _____sometimes _____rarely Total _____
I feel guilty about my child's weight or eating. I feel angry or resentful about my child's weight or eating. I feel sad or fearful about my child's weight or eating. 10. Feelings about my child's weight	_____often _____sometimes _____rarely _____often _____sometimes _____rarely _____often _____sometimes _____rarely Total _____

I told myself that my child isn't really that heavy.	_____often _____sometimes _____rarely
I thought that my child would grow into his weight.	_____often _____sometimes _____rarely
I believed that the weight problem would take care of itself.	_____often _____sometimes _____rarely
11. Facing my child's weight problem.	Total _____
My child kept asking for food again until I gave in.	_____often _____sometimes _____rarely
I felt I could not make my child exercise.	_____often _____sometimes _____rarely
I found it difficult to say "no" to my child and make it stick.	_____often _____sometimes _____rarely
12. Setting limits and following through	Total _____
When my child overate I lectured or scolded him/her.	_____often _____sometimes _____rarely
When I wanted to reward or treat my child I gave him or her food.	_____often _____sometimes _____rarely
I complemented my child on exercising or eating.	_____often _____sometimes _____rarely
13. Rewarding my child positively	Total _____
I asked my child about his/her feelings and needs.	_____often _____sometimes _____rarely

I listened attentively to my child.	_____often _____sometimes _____rarely
When asked a question, I got honest answers from my child.	_____often _____sometimes _____rarely
14. Communicating with my child.	Total _____
I reassured my child that despite discomfort he/she would be OK.	_____often _____sometimes _____rarely
I praised my child.	_____often _____sometimes _____rarely
I gave my child direct messages that I accept and value him/her.	_____often _____sometimes _____rarely
15. Building my child's sense of well-being	Total _____
We parent(s) exercised for at least 60 minutes three or more times.	_____often _____sometimes _____rarely
We parent(s) were normal weight or slowly losing weight.	_____often _____sometimes _____rarely
We parent(s) ate mainly lowfat and low sugar foods.	_____often _____sometimes _____rarely
16. Role model for exercise, food, and weight.	Total _____

APPENDIX H

Program Outline: SHAPEDOWN Weight Management and Healthy Lifestyles for Children & Families

Duration: 10 weeks

Meetings: 1 per week for 1 ½ hour after school (children)
1 evening per week for 60-90 minutes for parents at school .

Cost: Funded by USD, grant supported through lead faculty

Location: St Jude's Academy

Class size: 15 families

Approach: Diet, exercise, behavior modification, self-esteem, stress management and communication applied to the needs of children and their families.

Enrollment requirements:
Child's Age (8 to 12 years) approximately 2nd through 6th grades
Parent participation
Child overweight status: BMI >/= 85th%

Proposed dates: 10 week program Begins week of September 15, 2008
Completion week of Novemeber17, 2008

2 month follow-up: week of January 19, 2009

Week	Children	Parents
Week 1 9/15	Self-assessments of food choices, self-esteem (Completed at or prior to 1st week) Goal setting, and activity planning. Height and weight Goal setting and activity planning	Family demographic form Family Habit Inventory (completed prior to 1st week Assessing behaviors
Week 2 9/22	High & low fat food choices, exercises for endurance, strength, & flexibility	
Week 3 9/29	Food portions, eating cues, establishing a home exercise program	Increased activity & exercise, healthy food choices and making changes
Week 4 10/6	Sample food plans, tracking changes, natural ways to increase activity	Stimulating change with positives, encouraging active kids

Week 5 10/13	Increasing fruit & vegetables, portion check, strength check	Setting limits, more healthy eating
Week 6 10/20	Reading labels; self-talk that motivates, endurance check	Stocking up on food ideas, building self-esteem, eating on the run
Week 7 10/27	Healthy breakfasts, snacks, dinners; self-image; setting limits	Creating healthy family eating styles; cravings, secretive eating,; special occasion eating
Week 8 11/3	Special occasion plans, eating out, preventing backsliding	Active family time; role modeling,
Week 10 11/17	Reassess habits & fitness; Height and weight Retake self-esteem inventory Evaluate program & individual progress	
Week 18 1/19/09	Children' Habit Inventory & self-esteem inventory Goal setting and activity planning. Heiaght and weight	Family Habit Inventory

Investigator: Susan Bonnell, RN, CPNP, PhD (candidate) 619-698-6454
sbonnell@sandiego.edu 619-246-9699

Faculty Advisor: Kathy Shadle James, DNSc, NP, Associate Professor of Nursing, Hahn School of Nursing and Health Sciences, University of San Diego
619-260-4585 (SON office)
kjames@sandiego.edu

APPENDIX I

FLYER

September, 2008

Dear parent(s) of St. Jude's Academy student(s),

As many of you are aware, students and faculty from the University of San Diego, Hahn School of Nursing, completed health screening for St. Jude's students in 2006 and 2007. At that time we identified a number of children with health concerns regarding overweight status, as well as some children with abnormally elevated blood pressure. These findings are not uncommon in the United States, as there is now considered an "epidemic" of obesity among our children. Many of you may or may not be aware that childhood obesity leads to obesity in adulthood and an increased risk for diabetes, heart problems, high blood pressure, as well as numerous other health problems. It is predicted that many obese children may have a shorter life expectancy than their parents may.

In September of 2008, I am offering a ten-week weight management, healthy activity, and lifestyle program at St. Jude's. I would like to invite you and your child to participate. I am a pediatric nurse practitioner at the University of San Diego and will be providing the program as part of a research study evaluating, among other factors, self-esteem in children.

There is no charge for the course. The usual fee is $350.00. Additionally, I have funding to provide each child and parent will be provided a program handbook as part of course participation, as well as a pedometer to start keeping track of activity. The children's program will be after school, and the parent program one evening for 1 ½ hour per week. I am working with a Spanish-speaking graduate student nurse practitioner to assist with the parent program.

If you are interested in being part of the first group scheduled to begin the week of September 15, 2008 at St. Jude's Academy, please turn in the bottom portion of this paper to Elsie in the school office. I will contact you over the summer to discuss the details further.

Thank-you and I look forward to working with you for improved health and happiness.
Susan Bonnell, RN, CPNP.

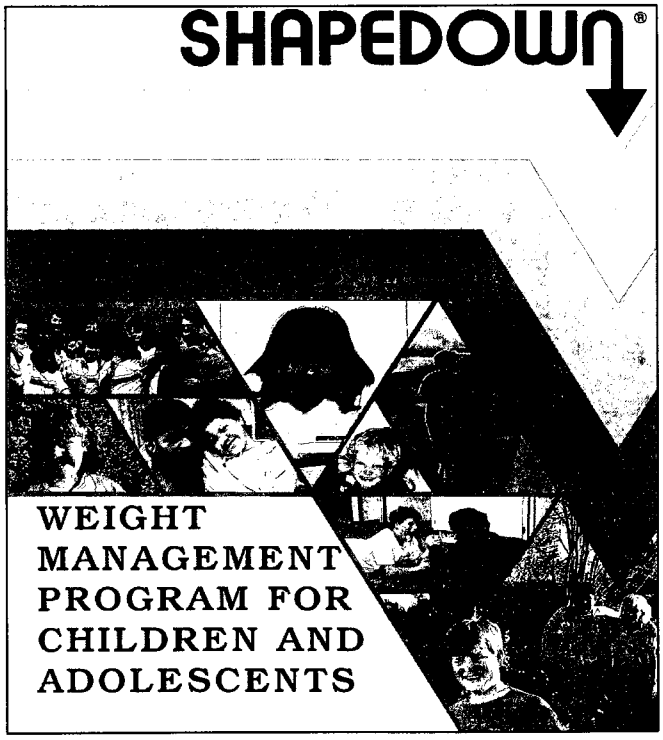
Yes, I am interested in learning more about the weight management and healthy activity and lifestyle program being offered at St. Jude's in September 2009.

Name: _____ Phone: _____

Address: _____

Cover sheet for parent letter above: This was printed on one side, with the parent letter on the other side →

SHAPEDOWN
For children ages 8-12 years
A group program for
Children who are overweight & their families
Children will learn how to take care of their health



- A 10 week program
- Meeting once weekly
- 1 ½ hour meetings
- One parent must attend each week with child
- At a local elementary school

No cost for participation
Family will receive a pedometer and child and parent workbook and group intervention for healthy lifestyle.

Program leader:
Susan Bonnell, RN, CPNP
Families will be requested, but not required to participate in research being done by leader in partial fulfillment for requirements for leaders' doctoral degree at University of San Diego

Please let your [illegible] with Laura or Irene & [illegible] you with details.

University of San Diego
HAHN SCHOOL OF NURSING AND HEALTH SCIENCE

ADVANCED PEDIATRIC
MEDICAL GROUP INC.
4282 GENESEE AVE # 303
SAN DIEGO, CA 92117
(858)-268-0702

Susan Bonnell, RN, MSN, CPNP
University of San Diego
Hahn School of Nursing
5998 Alcala Park
San Diego, California 92110

Jay Sadrieh, MD
Advanced Pediatric Medical Group
4282 Genesee Avenue, Suite 303
San Diego, California 92117
August 1, 2008

To whom it may concern,

I have discussed with Susan Bonnell the implementation of a SHAPEDOWN program at a local grade school during the school year 2008-2009. I understand that SHAPEDOWN was developed at the Departments of Pediatrics and Family and Community Medicine at the University of California, San Francisco. I have learned that more than 100,000 children, adolescents and their families have been successfully completed SHAPEDOWN. The program's short- and long-term effectiveness has been documented in controlled clinical trials published in a peer-refereed journal.

SHAPEDOWN'S orientation is to promote successive small changes in behavior that create a new lifestyle for children and their families. It is a low-risk program that avoids aggressive or potentially deleterious techniques such as low-calorie or restrictive diets. The emphasis is on producing changes now that can be sustained in the long run, so that youngsters can go on to a life that is free from dieting and weight management. Susan Bonnell, a licensed registered nurse and pediatric nurse practitioner has received technical and applied training in pediatric weight management.

I understand that Susan is providing the SHAPEDOWN program in partial requirement for completing her doctoral degree at University of San Diego. Children will be asked to participate in three data collection times to complete the Perceived Competence Scale for Children as well as demographic data, collected from both parents and children. The purpose of the study is to observe children's self-esteem at three time points in the program: before starting, at completion, and at 2-month follow-up. Those families who do not choose to participate in the research study will not have attendance and provision of SHAPEDOWN program for families and children affected.

I give permission to provide promotional material to those families who request assistance with weight management or who request information after reading a poster describing the program that will be displayed in the office waiting area.

Jay, Sadrieh, MD

JAY SADRIEH, M.D.
License A46462/CA

Signature

7/28/08

Date

St. Jude Academy

"Educating the Christian Leaders of Tomorrow"

Susan Bonnell, RN, MSN, CPNP
University of San Diego
Hahn School of Nursing
5998 Alcala Park
San Diego, California 92110

Yolanda Minton, Principal
St. Jude's Academy
1228 South 38th Street
San Diego, California 92113

August 1, 2008

To Whom It May Concern,

I have discussed with Susan Bonnell the implementation of a SHAPEDOWN program at St. Jude Academy during the school year 2008-2009. I understand that SHAPEDOWN was developed at the Departments of Pediatrics and Family and Community Medicine at the University of California, San Francisco. I have learned that more than 100,000 children, adolescents and their families have successfully completed SHAPEDOWN. The program's short- and long-term effectiveness has been documented in controlled clinical trials published in a peer-refereed journal.

SHAPEDOWN'S orientation is to promote successive small changes in behavior that create a new lifestyle for children and their families. It is a low-risk program that avoids aggressive or potentially deleterious techniques such as low-calorie or restrictive diets. The emphasis is on producing changes now that can be sustained in the long run, so that youngsters can go on to a life that is free from dieting and weight management. Program staff have received technical and applied training in pediatric weight management and include Susan Bonnell, a licensed registered nurse and pediatric nurse practitioner, and Luz Gracia, a licensed registered nurse, graduate student at the University of San Diego pediatric nurse practitioner program and a fluent Spanish speaker, with previous experience in providing SHAPEDOWN programs.

I understand that Susan is providing the SHAPEDOWN program in partial requirements for completing her doctoral degree at University of San Diego. Children will be asked to participate at three data collection times to complete the Perceived Competence Scale for Children as well as demographic data, collected from both parents and children. The purpose of the study is to observe children's self-esteem at three time points in the program: before starting, at completion, and at 2-month follow-up. Those families who do not choose to participate in the research study will not affect attendance and provision of SHAPEDOWN program for families and children.

I give permission to utilize the facilities at St. Jude Academy for this program and assist in promoting the program to families at St. Jude Academy that may benefit from the program.

Yolanda Minton
Principal, St. Jude's Academy

Signature

August 5, 2008
Date

Phone: (619) 264-3154 / Fax: (619) 264-8050
1228 South 38th Street, San Diego, CA 92113

Elena Cala, Principal
Holy Family School
1945 Coolidge Street
San Diego, California 92111
September 10, 2008

To whom it may concern,

I have discussed with Susan Bonnell the implementation of a SHAPEDOWN program at Holy Family School during the school year 2008-2009. I understand that SHAPEDOWN was developed at the Departments of Pediatrics and Family, and Community Medicine at the University of California, San Francisco. I have learned that more than 100,000 children, adolescents and their families have been successfully completed SHAPEDOWN. The program's short- and long-term effectiveness has been documented in controlled clinical trials published in a peer-refereed journal.

SHAPEDOWN'S orientation is to promote successive small changes in behavior that create a new lifestyle for children and their families. It is a low-risk program that avoids aggressive or potentially deleterious techniques such as low-calorie or restrictive diets. The emphasis is on producing changes now that can be sustained in the long run, so that youngsters can go on to a life that is free from dieting and weight management. Susan Bonnell, a licensed registered nurse and pediatric nurse practitioner has received technical and applied training in pediatric weight management.

I understand that Susan is providing the SHAPEDOWN program in partial requirements for completing her doctoral degree at University of San Diego. Children will be asked to participate in three data collection times to complete the Self-Perception Profile for Children, Children Habit Inventory, Family Habits Inventory, and demographic data, collected from both parents and children. The purpose of the study is to observe children's self-esteem and habits at three time points in the program: before starting, at completion, and at 2-month follow-up. Those families who do not choose to participate in the research study will not have attendance and provision of SHAPEDOWN program for families and children affected. Institutional Review Board (IRB) approval from the University of San Diego will be obtained before the program begins.

I give permission to utilize the facilities at Holy Family School for this program and assist in promoting the program to families at Holy Family School that may benefit from the program.

Elena Cala, Principal
Holy Family School

_____
Signature

09/16/08
Date