The Julian Samora Research Institute
The Midwest's Premier Latino Research Center

Shapedown Project: A Bilingual Approach for the Hispanic Community

Final Report[1]

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RESEARCH REPORT NO. 54

January 2016

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[1] This project was funded by the Michigan State University Extension (MSUE), Health and Nutrition Institute Initiative.

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The Midwest's Premier Latino Research Center

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ABSTRACT

Obesity is a public health concern in the United States. Minority children, especially Mexican American boys and African American girls, are more likely than non-Hispanic White children to be obese. Obese children are at higher risk for chronic health conditions such as heart disease and Type II Diabetes and are at a greater risk for social and psychological problems. The objective of this study was to evaluate a Spanish version of the *Shapedown* program and assess its effectiveness in helping Latino families in Pontiac, Michigan learn to make healthy lifestyle choices regarding nutrition and exercise as they build effective family support relationships. The results show no significant differences in child's eating habits and importance of eating healthy foods between the *Shapedown* and control groups. However, we found a significant change in that scale over time. We did not expect, given a short period of time, to find a significant difference in child's BMI between the *Shapedown* and control groups or over time. Qualitative results showed valuable lessons learned from the *Shapedown* program, including learning how to eat healthy foods, how to exercise together as a family, and the importance of the family unit as key for long-term sustainability of adopting healthy lifestyles. Overall, the project was a positive experience for both participants and university researchers in terms of collaborative efforts, lessons learned, and barriers in conducting evaluation and collaborative research between university and community organizations.

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SUGGESTED CITATION

Martinez, Rubén (Ph.D.), Kayitsinga, Jean (Ph.D.), Velez-Ortiz, Daniel (Ph.D.), Horner, Pilar (Ph.D.), Acosta, Sonia (Ph.D.) Shapedown Project: A Bilingual Approach for the Hispanic Community. JSRI Research Report No. 54. East Lansing, Michigan: The Julian Samora Research Institute, Michigan State University.

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Introduction

Obesity is a threatening health condition in the United States. According to the Centers for Disease Control and Prevention (CDC), about one-third of U.S. adults are obese (i.e., with a Body Mass Index (BMI) of 30.0 or above). In 2007-2008, about 17% of U.S. children and adolescents ages 2-19 years were obese (Ogden and Carroll, 2010). Latino children and adolescents, especially Latino boys are more likely to be obese. According to Ogden and Carroll (2010), the prevalence of obesity in 2007–2008 was significantly higher among Mexican-American adolescent boys (26.8%) than among non-Hispanic white adolescent boys (16.7%). Among girls in 2007–2008, non-Hispanic Black adolescents (29.2%) were significantly more likely to be obese compared with non-Hispanic White adolescents (14.5%) (Ogden and Carroll, 2010).

In Michigan, almost 32% of adults in 2010 were obese and 35% were overweight (i.e., with a BMI between 25.0 –29.9) (CDC, 2011). According to a report of the Michigan's Nutrition, Physical Activity and Obesity Program (Boinapally, Fussman, and Imes, 2011), the prevalence of obesity among Michigan adult population has consistently increased since 2000. In Michigan, Latinos (42.6%) and non-Hispanic Blacks (41.6%) had a significantly higher prevalence of obesity than non-Hispanic Whites (28.7%). Among youth in Michigan (9^{th} – 12^{th} grades), the prevalence of obesity was 11.9% in 2009, compared to 10.7% in 2001. In 2009, non-Hispanic Black youth (18.2%) had a higher prevalence of obesity compared to Latinos (10.9%) and non-Hispanic White youth (10.3%) (Boinapally, Fussman, and Imes, 2011).

According to the Centers for Disease Control and Prevention, obese children and adolescents are at higher risk for high blood pressure and cholesterol, which are risk factors for cardiovascular disease; increased risk of Type 2 Diabetes; breathing problems such as asthma and sleep apnea; joint problems and muscular discomfort; fatty liver disease, gallstones, and gastro-esophageal reflux. They are more likely to become obese adults, resulting in serious and chronic health conditions, such as heart disease, Diabetes, and cancer, and have a greater risk of social and psychological problems (Centers for Disease Control and Prevention, 2011).

Obesity results from an imbalance between the calories taken from food and beverage and the calories expended to support normal growth and development, metabolism, and physical activity. This energy imbalance is influenced by several and interrelated factors, including biological, demographic, psychological, socio-cultural, organizational, environmental, and regulatory factors (U.S. DHHS, 2011).

This study, "Shapedown Project," is an intensive 10-week program that helps families learn to make healthy lifestyle choices regarding nutrition and exercise as they build effective family support relationships. The program was initially designed by the University of California, San Francisco School of Medicine on the basis that it is critically important to involve parents or guardians in the process of helping children improve their physical health and have open communication about their feelings concerning their weight. According to the Shapedown validation results, parental involvement with their children in weight management lead to significant improvement in weight, diet, exercise habits, self-esteem and capacity to deal with body image issues and stress.

Developed in English and validated with English-speaking families, the current study sought to examine the effectiveness of using a Spanish-version of Shapedown with Latino families in Pontiac, Michigan. Recognizing the need for Latino families to have access to programs that address cognitive and behavioral needs regarding obesity prevention, JSRI

conducted a two-year evaluation of the Spanish version of the Shapedown program, in collaboration with El Centro Multicultural de la Familia (CMLF), a community-based nonprofit service organization in Pontiac, Michigan. Shapedown materials were translated into Spanish to address the needs of Latino families. The main goal of the program was to help Latino families in Pontiac learn to make healthy lifestyle choices. Specific program goals were:

1. To help participants gain knowledge about the benefits of an active lifestyle and learn physical activities that can improve and maintain their health;
2. To help participants gain knowledge about the benefits of a healthy diet and how to choose foods that increase their health;
3. To help children, teen and family participants support each other in making and maintaining healthy choices about diet and lifestyle activities; and
4. To help participants learn family communication techniques that support healthy lifestyles and relieve family stress and tension.

This report frames the theoretical background for explaining why programs such as "Shapedown" can help reduce the obesity problem and improve other health outcomes among disadvantaged youth. In addition, we provide an overview of the research site and population under study, the methods used to evaluate the impact of Shapedown program, and findings.

Theoretical Background

This study uses the social-ecological framework (Bronfenbrenner, 1979, 1986; Bronfenbrenner & Morris, 1998; Harrison, 2011; Fiese and Jones, 2012; Koplan et al., 2005; Koplan, 2007; Swinburn et al., 2011; Caprio et al., 2008; Davison and Birch, 2001). The social-ecological framework underscores the importance of multiple ecological levels that influence health behaviors, including individual, home, and family characteristics, neighborhood and community environments, and larger economic systems and government policies. This theory suggests that development or change in individual characteristics cannot be explained without consideration of the context or ecological niche, in which the person is embedded. For the child, an ecological niche includes the immediate contexts, the family and school, which are in turn embedded in larger social contexts, including the community and the larger society in general. In this project, we emphasized the family and socio-cultural environments and their influence on healthy lifestyles.

Family environment

At the family level, determinants of obesity for children and adolescents include feeding practices, parental decisions about the types of foods available in the home and their children's access to these foods; parents' nutritional knowledge, parents' dietary intake, parent food preferences, children's consumption of high fat foods and soft drinks, peer and sibling interactions around food, amount of time spent watching TV, child' sports participation or active recreation, and influences of parents as role models related to eating, physical activity, and body size (Davison and Birch, 2001; Lindsay et al. 2006; Kumanyika, 2008). Parents are not only responsible for food availability and accessibility, but they also influence children's eating habits and food preferences at home. In addition, the attitudes and behavior of parents, siblings,

relatives, and peers may contribute to children's eating habits and preferences, which may affect their body weight.

Parents also strongly influence their children's level of physical activity (Welk, Wood & Morss, 2003). One strong and consistent correlate of physical activity in children is the time spent outdoors, a factor largely determined by parents (Sallis, Prochaska & Taylor, 2000). An active family also creates norms and expectations about the importance of regular physical activity. Sedentary behavior, especially watching television and playing electronic games (e.g., Game Boys, Play Station, and Wii games, computer games etc.) may contribute to youth obesity as children spend more hours a day watching television or playing games. The time spent in front television or playing electronic games reduce the amount of time spent outdoors on physical activity. Watching television may also expose children to advertisements for high calorie foods and may therefore lead to increased intake of high calorie foods (Kumanyika, 2008). Parents are key sources of influence for children's television viewing and sedentary behavior due to their ability to control such practices (Davison and Birch, 2001).

Social-cultural environments

Parent-child feeding practices shape children's dietary practices and are in turn influenced by larger community, demographic, and societal characteristics such as work demands, ethnicity, socioeconomic status (SES), and the availability of convenience foods (Davison and Birch, 2001). For example, living in a disadvantaged neighborhood has been found to be associated with higher prevalence of obesity among children and adults (Nelson et al., 2006; Morland, Diez Roux and Wing, 2006; Robert and Reither, 2004). Residents in disadvantaged neighborhoods often have less access to supermarkets and other outlets that provide access to an affordable mix of healthful food and instead have a higher exposure to fast food restaurants than residents in higher SES neighborhoods (Sallis and Glanz, 2006).

Societal changes requiring working longer hours for both mothers and fathers have resulted in the reduction in time parents are available for food preparation, which have impacted dietary patterns. In most advanced societies, there has been a major shift in diets from traditional diets high in complex carbohydrates and fiber to high-fat energy-dense diets. There have been fewer home cooked meals, more calories consumed in restaurants, increased snacking between meals, and increased availability of fast foods in restaurants (Bruss et al., 2005). Frequent exposure to convenience foods is likely to be associated with childhood obesity (Davison and Birch, 2001). There have been also changes in patterns of physical activity linked to risk of obesity in both adults and children, including increased used of motorized transport, fewer opportunities for recreational physical activity, and the increased sedentary recreation (Lobstein, Baur, and Uauy, 2004).

Children's physical activity is influenced by the encouragement and support that they receive from their parents and their parents' own activity patterns, which are in turn influenced by the time parents have available for such involvement in activities, the accessibility of recreational facilities, the availability of safe activity areas, ethnicity, SES, and the structure of school physical education programs (Davison and Birch, 2001). Disadvantaged neighborhoods tend to have fewer physical activity amenities than affluent neighborhoods, including parks, leading to more inactivity among neighborhood residents (Lovasi et al., 2009; Yen and Kaplan, 1999) who may also have to deal with the threat of violent crime and insufficient police protection (Sampson, Raudenbush, and Earls, 1997). Parenting styles related to children's

sedentary behavior may be influenced by neighborhood environments. In particular, high rates of crime in low-SES and ethnic neighborhoods may constrain parents to keep their children inside their homes as a protective means of avoiding danger (Davison and Birch, 2001).

Race/Ethnicity, SES, and Gender Contexts

Obesity rates vary greatly by gender, race-ethnicity, and education (Mokdad et al. 2003; Ogden et al. 2006). Children's dietary patterns, levels of physical activity, and sedentary behavior vary by race/ethnicity. While all children in the U.S. are at risk of becoming obese, African American and Latino children are at higher risk than non-Latino White children (Ogden et al., 2006, 2010; Lutfiyya et al., 2008). Non-Hispanic White children are also more likely to involve in physical activity than Asian, Hispanic, and African American children (Sallis and Saelens, 2000; Gordon-Larsen, McMurray, and Popkin, 2000). Non-Hispanic African Americans and Latino children report higher rates of sedentary behavior than non-Hispanic White children (Gordon-Larsen, McMurray, and Popkin, 2000).

The high prevalence of obesity among racial minorities is, among other factors, attributed to cultural beliefs and practices (Kumanyika 2008), genetics, and physiological factors (Farooqi, 2007), discrimination in access to and use of health, educational, and recreational facilities (Karlsen and Nazroo, 2002), high levels of stress (Taylor and Turner, 2002), and preventive health practices related to diet, smoking, exercise, and use of screening tests (Cockerham, 2005). Parents, children, and families in ethnic minority populations are likely to have higher than average levels of exposure to environmental and psychological stress (Kumanyika, 2008).

Numerous studies have shown that racial/ethnic differences in health persist over time and are attributable to social structural and contextual factors, racism, and migration patterns (Williams and Sternthal, 2010). In particular, socioeconomic status (SES) remains one of the strongest known determinants of variations in health status and accounts for a substantial component of the racial-ethnic differences in health (Williams and Collins, 1995). SES is inversely associated with obesity and is considered a risk factor for obesity (Haas et al., 2003; Janssen et al., 2006). Boys tend to weigh more than girls among Asians and Hispanics (Ogden et al., 2006; Popkin and Udry, 1998). Gender also interacts with race/ethnicity and SES in its effects on health (Schultz and Mullings, 2006). Men and women tend to have different food consumption expectations and patterns, with men being more likely to eat coarser, higher calorie foods while women generally eat lighter fare (Bourdieu, 1984).

Acculturation

Exposure to the American environment and acculturation are thought to be associated with less-healthy diets, sedentary activity, and obesity (Carter, 2002; Fried and Nestle, 2002; Gordon-Larsen et al., 2003; Popkin and Udry, 1998; Antecol and Bedard, 2006). Previous studies have shown that acculturation has a positive relationship to the likelihood of being overweight and obese (Gordon-Larsen et al., 2003; Goel et al., 2004; Akresh, 2007). Acculturated Latinos are more likely to engage in substance abuse and undesirable dietary behaviors, and to experience worse birth outcomes, compared to their less acculturated counterparts (Lara et al., 2005). Less acculturated Latinos consume healthier diets (Lara et al., 2005; Dixon et al., 2000) and Latinos, on average, consume one or more servings of fruits and vegetables per day more than do non-Hispanic Whites. However, highly acculturated Latinos eat

half the fruits and vegetables than do the less acculturated (Neuhouser et al., 2004). Mazur, Marquis and Jensen (2003) found that lower levels of acculturation only partially ameliorated the negative association between poverty and undesirable dietary patterns in Latino youth. Van Hook and Baker (2010) found that boys whose parents were raised outside the United States weighed more and gained weight faster than any other group. Within this group, sons of low English-proficient parents gained weight more slowly than sons of English-proficient parents.

Culture

Overall *c*ulture influences food consumption by defining which foods are considered healthy and which are unhealthy; preferences for and opportunities to engage in physical activity; and the perception of risk associated with obesity (Caprio et al., 2008). Culture can also influence the utilization of health services, affecting the likelihood of childhood obesity can be prevented or effectively treated in specific ethnic groups (Caprio et al., 2008)). While ethnic differences in access to services can be attributed to differences in SES (e.g., lack of health insurance among many Latinos or transportation to health care providers), several studies have pointed to differences in use of services even when access is available. Among Latino families, differences in patterns of service use have been found to be related to different beliefs about the cause, course, and cure of an illness, the stigma attached to particular illness, and interactions between patients and providers (Leslie et al., 2007; Caprio et al., 2008).

The Shapedown project uses a health education model, which stems from a recognition that knowledge bases are contingent and contextual (Whitehead, 2003). It holds that there are broader socio-political determinants of an individual's health, while at the same time recognizing individual agency and autonomy. Moreover, it recognizes the importance of collective efficacy (Bandura, 1998), whether at the level of social policy or the family. Shapedown emphasizes the development of collective efficacy at the family level by clarifying values, promoting understanding of health concepts, and the relationship between diet and long-term health, developing skills for rational choices, healthy cooking, physical activity and family communications. We use an ecological framework which recognizes that both dietary patterns and physical activity/inactivity are shaped by both personal and environmental factors. This framework recognizes that motivation is a function of both extrinsic and intrinsic factors, with Shapedown serving to motivate members of the family to promote healthy lifestyles, and individuals enhancing their motivation to engage in behavioral changes.

Data and Methods

Quasi-Experimental Design

The Shapedown program uses a quasi-experimental design aimed at following two sessions of children and adolescents aged 6-17 years and their primary caregivers or guardians. Each program session is comprised of two groups: The Shapedown group, which received the 10-week intervention, and a control group, which received only materials about nutrition education. Pre-test and post-test data were collected for both Shapedown and control groups and a follow up data collection for both groups was done after 10 months following the completion of the Shapedown intervention.

	Time 0	--------- 6 months ----------		Time 1	Time 2 (10-12 months)
	PRE-TEST	INTERVENTION (10 week sessions)		POST-TEST	FOLLOW-UP
				(time 1)	(time 2)
SHAPEDOWN TREATMENT	Parents & Children	1ST SESSION	2ND SESSION	Parents & Children	Parents & Children
CONTROL GROUP	Parents & Children			Parents & Children	Parents & Children

Development of Questionnaires

A series of instruments were designed to evaluate the effectiveness of the intervention and to collect socio-demographic characteristics and anthropometric measures of participants. The instruments included a parent questionnaire, a child-questionnaire, and anthropometric measures for all participants. Initial instruments also included a 3-day diet record for parents and a child 24-hour diet recall instruments, but these were removed for non-completion and low response rate. The development of instruments was a continuous process in which many questions were removed while others were changed. The original questionnaires included anthropometric measures (e.g., weight, height, blood pressure, triceps skinfold, waist-to-hip ratio, step test, and sit-and-reach test), behavioral (e.g., nutrition, physical activity, dietary patterns), psychological (e.g., depression about weight, body images, and self-esteem), nutritional knowledge, family interactions and communication, neighborhood characteristics, and participants' program evaluation (e.g., parent program, children/teen sessions, and instructors).

After the development of the instruments, some team members raised concerns about their length, the content (e.g., nutrition versus self-esteem modules), mode of observations, the formulation of questions, and the literacy level of the participants. A series of modifications were made in light of the expressed concerns to simplify the first session instruments. The new instrument had significantly fewer questions, a different format for answer-choice, and a reduced number of response choices.

Session I

Recruitment Process

Staff from CMLF recruited Latino families from low-income areas, as required by the sponsor, Michigan Nutrition Network. Participants were assigned to either a 10-week Shapedown intervention or to a control group. The aim was to have a sample of 15 participating families in each group, but we were only able to get 12 families in the Shapedown group and 7 families in the control group, although 15 in each group had agreed to participate. By the end of the 10-week intervention, some families had changed residence and others were unresponsive. We are still trying to reach them.

Data Collection

Data collection was both quantitative and qualitative. Quantitative data were collected from participants, and qualitative data were collected from the instructional team through a series of debriefings that occurred throughout the sessions.

Pre-test First-Session

The pre-test questionnaires for the first session were administered on February 25, 2010 for the Shapedown group and on March 4, 2010 for the control group. Due to poor weather, few families showed up. After a brief introduction to the program and parties involved, parents and children were asked to read and sign the informed consents. Anthropometric measures were then taken from participants who attended and pre-tests forms were administered for both parents and children. Children were taken for exercise demonstrations while parents completed forms. Incentives in the form of tote bags filled with nutrition and MSU knick-knacks were given to the participants. CMLF staff and MSU team members were in attendance, as well as volunteer nurses. A total of 12 families (19 parents and children) from the Shapedown group and 7 families (17 parents and children) from the control group were pre-tested. The pre-test instruments used included a parent-questionnaire, a child-questionnaire for children aged 9-17 years, and anthropometric measures for both parents and children 6-17 years.

Intervention

The Shapedown intervention consisted of 10-week sessions focusing on healthy lifestyles, nutrition and exercise. Routine monitoring of the 10-week sessions (see Appendix A) ensured that the focus remained on these specific areas. The intervention groups participated in weekly modules in which nutrition education activities were supported with cooking and exercise demonstrations. The weekly sessions lasted about two hours and were implemented by a bilingual nutritionist, who taught them about the importance of a healthy diet and proper nutrition; a bilingual communication counselor, who taught them about communication among family members about healthy eating and nutrition; and a bilingual exercise physiologist, who engaged and taught both children and adults enjoyable and healthy physical activities. The control group did not receive the Shapedown intervention, but did receive printed materials related to healthy nutrition. The control group also participated in a nutrition education lecture and a Zumba (aerobics dance) class.

Post-test First-Session

After a 10-week intervention, post-test measures were taken from parents and children for the Shapedown group on May 27, 2010 and for the control group on June 1st, 2010. The last meeting of the Shapedown participants included anthropometric measures and filling out post-test evaluation instruments. It also included a graduation ceremony and a Zumba demonstration. Again, volunteer nurses, CMLF staff and MSU team members attended. Similar activities were conducted for the control group except for the graduation ceremony. Incentives were again provided to them. In terms of turnout by participants, the post-test evaluation was not well attended. Nine families (22 parents and children) in the Shapedown group showed up and five

families (12 parents and children) from the control group. A number of attempts to follow up on families who have not completed post-test evaluation forms have been made and the CMLF Outreach staff person continued to make phone calls and personal visits to participants' homes.

Session II

Pre-Planning Activities

Lessons learned from the first Shapedown session led the MSU evaluation team to revamp the pre- and post-tests and make them much shorter and easier to read. It was also determined that, for efficiency reasons, anthropometric measures should be taken from one family at a time in a separate room. Recruitment problems arose due to families' summer schedules and the date for launching Session II was set for August 11, 2010. Starting on this late date reduced the time for Shapedown sessions which had to end by September 30th, 2010. The Shapedown sessions and evaluations were held at a different location from the first session. This facility was an improvement over the first because the Shapedown program was able to use separate rooms for different activities. The first one, although spacious, was limited in the rooms available for use for different functions.

The curriculum content of the second session was made to accommodate the time constraints referenced above. It was also adjusted to make it more culturally appropriate as deemed necessary by the instructors. A brief description of the curriculum for the second session is included in Appendix B.

Pre-test Second Session

The pre-test occurred on August 11, 2010 for the Shapedown group and on August 12, 2010 for the control group. Eight families (24 parents and children) in the Shapedown group and nine families (36 parents and children) from the control group were pre-tested. The pre-test forms used included a parent questionnaire, a child questionnaire for children 9 years or older, and anthropometric measures for both parents and all children.

Intervention

Another modification that took place in the second group session was the number of meetings per week. Because the first session began behind schedule due to recruitment challenges and weather, the second session start date had to be rescheduled. And due to difficulties in recruiting over the summer, with families unwilling to commit to the program for ten weeks due to family demands, the program was compressed and began at the end of the summer. In the first 10 week group, the participants met one evening a week. By the start of the second session there were only 8 weeks left to deliver a 10 week intervention. To adjust for this shortened time period, session meetings were sometimes conducted twice a week, particularly those having to do with orientation to the program and data collection.

Post-test Second Session

The post-test evaluations occurred on September 29, 2010 for the control group and on

September 30th, 2010 for the Shapedown group, eight weeks after the program began. Seven families (21 parents and children) in the Shapedown group and eight families (23 parents and children) from the control group were post-tested. Attempts to follow up with families that did not show up for the post-test evaluations are underway. At the end of the post-test evaluations, food was shared, and varieties of "goodies" were given to the participants, as well as framed certificates of completion. CMLF presented framed pictures of activities to the MSU team. Participants in the control group also received "goodies" at the end of their post-test evaluation.

Follow-up Session

Follow-up evaluations for families in the Shapedown and control groups occurred in the second-half of May 2011 (May 18-19, 2011 for the first session group and May 25-26, for the second session group). As data in Table 1, illustrates, there were fewer families in the control groups that were assessed at follow-up compared to those in the Shapedown groups. The attrition rate in the Shapedown group was 27% from pre-test to post-test assessments and 4% post-test to follow-up assessments. In the control group, the attrition rate was 48% from pre-test to post-test assessments and 58% post-test to follow-up assessments.

Table 1. Total number of children under study by session, treatment group, and time of observation

GROUP \ TREATMENT			Time of observation		
			Pre-Test	Post-Test	Follow-up
Group 1	Treatment	Shapedown	17	13	12
		Control group	9	7	2
	Total		26	20	14
Group 2	Treatment	Shapedown	16	11	11
		Control group	24	10	5
	Total		40	21	18
Total	Treatment	Shapedown	33	24	23
		Control group	33	17	7
	Total		66	41	30

Data Analysis

Descriptive Statistics

Descriptive analysis will first be performed on variables collected at baseline (mean, standard deviation, median, minimum, and maximum, frequency distributions for categorical variables, and plots that illustrate change in outcomes over time). Comparison of the categorical variables between groups of cases will be compared by means of χ^2 test and Fisher's exact test in cases of expected frequencies less than 5.

Comparison of treatment and control groups will be assessed using two-sample Student's t tests for continuous variables and χ^2 test for categorical variables at baseline, after the intervention (post-test), and at follow-up. Paired t-tests of the treatment and control groups' mean scores will be performed at baseline, after the intervention, and at follow-up to test the differences in mean scores between the two-time periods.

Multivariate analysis

We used repeated measures analysis of variance (ANOVA) to compare the mean scores of selected outcomes in the Shapedown treatment and the control groups at baseline, after the intervention, and at follow-up time. The main dependent variables include child's BMI, dietary patterns, physical activity, eating habits (e.g., breakfast skipping, second/third servings, and secretive eating and snacking), self-esteem, depression, weight management knowledge, and dropout rate. Further analyses will be performed using the analysis of covariance (ANCOVA) model in order to determine the differences in mean scores of selected outcomes between the Shapedown and control groups, but also across time, while controlling for other child, family, and neighborhood characteristics.

Qualitative Interviews

In-depth qualitative interviews and participant observation occurred from January to August 2010 in order to find out how the program adapted to meet the needs of the Latino community. Each member (four) of the Shapedown staff members was interviewed using open-ended questions. Questions included: 1) Tell me about a typical session and what you were in charge of doing; 2) How would you say you had to adapt the program for the Latinos?; 3) Tell me a about a time when the Shapedown program could not address the needs of the participants; 4) Tell me about a time when you had a successful session; and, 5) what made it successful? Interviews were transcribed, entered into a maxQDA (a qualitative software program), and coded for themes. In addition, participant observations were conducted for each of the staff meetings (three) and at the initial and final meetings of the Shapedown program. Notes were taken during the meeting and reviewed for themes.

In-depth qualitative interviews were conducted two more times with two staff members, once at the end of the Shapedown intervention (individual interviews), and then one more time three months after the intervention ended (one joint interview). Questions asked included: 1. In your view, what were the benefits of the Shapedown project for your community members? 2. What are some of the challenges or difficulties you encountered during the Shapedown project? 3. What were the main reasons that you couldn't find some of the families for follow-up evaluation? 4. If you could repeat the Shapedown project all over again, what are some of the things you would change? 5. Overall, what was the main impact of the Shapedown program on your community?

Results

Quantitative Results

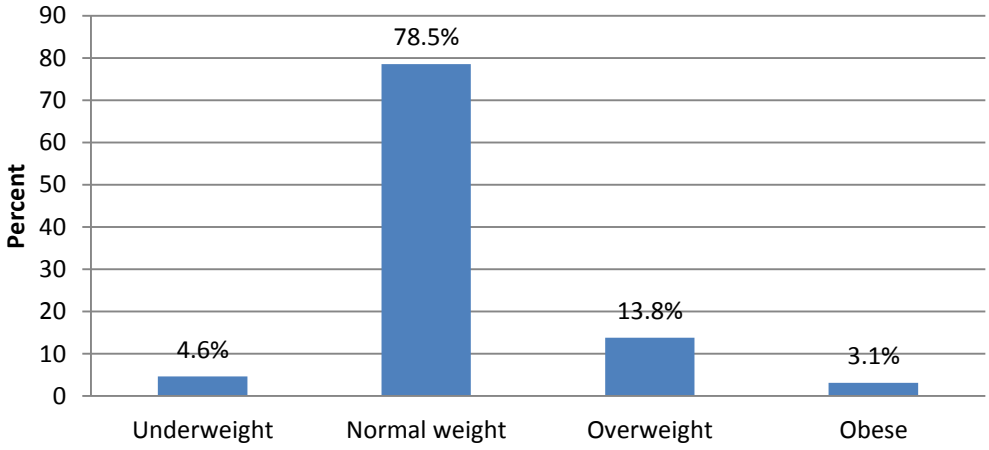
Child's Health

Overweight and Obesity

Children who are overweight are more likely to have poor self-esteem and to be overweight or obese as adult, which poses greater risks for their future health conditions. According to the Centers for Disease Control and Prevention, obese children are at higher risk for high blood pressure and cholesterol, which are risk factors for cardiovascular disease; increased risk of Type 2 Diabetes; breathing problems such as asthma and sleep apnea; joint problems and muscular discomfort; fatty liver disease, gallstones, and gastro-esophageal reflux (Centers for Disease Control and Prevention, 2011).

Following the definitions of overweight and obesity established by the Centers for Disease Control and Prevention, we characterize children with a Body Mass Index (BMI) between the 85th and 94th percentile for their age and sex as overweight, and those with a BMI greater or equal to the 95th percentile for age and sex, as obese. Weight and height measures were collected from all children ages 6-18 years during the pre-test, post-test, and follow-up sessions. Body Mass Index (hereafter BMI) of each individual was computed by dividing weight (kilograms) by height (meters). Age- and gender-specific growth charts from the Centers for Disease Control and Prevention were used to classify children (under 20 years of age) into 4 categories of weight status (Kuczmarski et. al., 2000): a) "Obese," defined as a BMI at or above the 95th percentile for children of the same age and sex; b) "Overweight," defined as a BMI at or above the 85th percentile and below the 95th percentile for children of the same age and sex; c) "Normal weight," defined as a BMI at or above the 5th percentile but less than the 85th percentile; and d) "Underweight," defined as a BMI less than the 5th percentile. Figure 1 displays the weight status of children at pre-test. About 3 percent of children were obese, 14 percent overweight, 79 percent normal weight, and 5 percent underweight, respectively (Figure 1).

Figure 1. Weight Status of Children at Pre-Test



The average BMI at pre-test for children in the Shapedown group was 24.27 (SD=6.81). In the control group, the average BMI at pre-test was 23.29 (SD=5.10). The average BMI at post-test assessment for children in Shapedown program was 23.6 (SD=4.4) and 24.51 (SD=4.24) at follow-up session. In the control group, the average BMI was 22.98 (SD=3.53) at post-test assessment and 24.38 (SD=1.02) at follow-up assessment. Summarized in Table 2 are descriptive statistics for child's BMI by time of observation and experimental groups and the results of an analysis of Variance (ANOVA) model. The results in Table 2 show no significant differences in child's BMI between Shapedown and control groups. As we expected for such a short period of time, there was no significant change in child's BMI overtime (pre-, post-, and follow-up times). However, the results in Figure 2 show a small decline in the estimated marginal means in child's BMI between the pre-test and post-test assessments, followed by an increase again at follow-up assessment. We cannot for certainty attribute this small decline to the effects of the Shapedown program. Further analyses will control for other factors and assess whether this decline, however small, persist overtime.

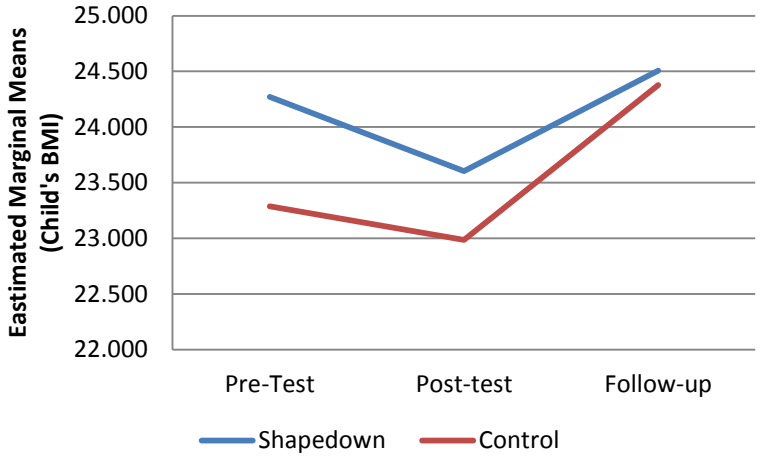
Table 2. Descriptive Statistics (mean and standard deviation) and Analysis of Variance Table for Child's BMI by Time of Observation and Treatment Group

Descriptive Statistics (Mean, Standard Deviation)						
Experimental Groups	Pre-Test		Post-Test		Follow-Up	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Shapedown	24.27	6.81	23.60	4.40	24.51	4.24
Control	23.29	5.02	22.98	3.53	24.38	1.02
Total	23.78	5.96	23.29	3.97	24.44	3.06

Analysis of Variance (ANOVA) Table				
Source	Type III SS	df	Mean Square	F
Between-Subjects Effects				
Intercept	112517.58	1	112517.58	3105.01***
Experimental group	16.55	1	16.55	.46
Between (error)	2319.20	64	36.24	
Within-Subjects Effects				
Time	14.48	1	14.48	.98
Group * Time	6.05	1	6.05	.41
Within (error)	949.44	64	14.83	

*** p <.001; ** p <.01; * p <.05

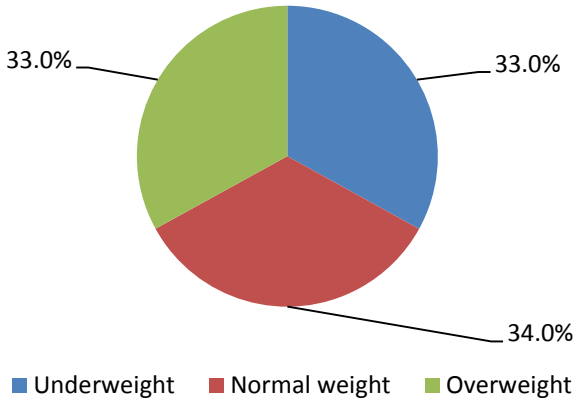
Figure 2. Children's Body Mass Index (BMI) by Treatment Group and Time of Observation



Description of Child's Weight

Figure 3 displays the distribution of children's perception about their weight status. About one-third of children equally perceive themselves as overweight, normal weight, or underweight. This perception of their weight differs significantly from their real weight described above.

Figure 3. Perceived Child's Weight Status

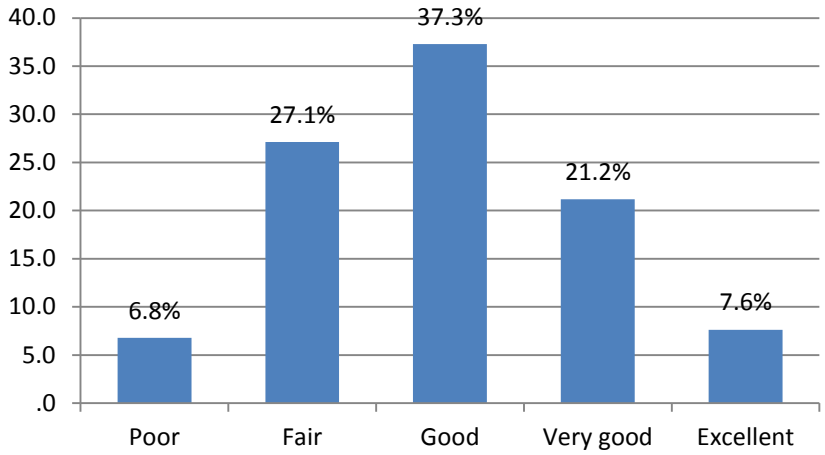


General Physical Health

Research shows that self-rated health on a five-point scale from "poor" to "excellent," is a reliable predictor of objective measures of health status and mortality (Idler and Benyamini 1997) with reports of poor and fair health strongly predictive of all-cause mortality (Idler et al. 2004). Figure 4 displays parents' reports of their children's health. The results in Figure 4 show

that about 34% of children are in "fair" or "poor" health, 37% in "good" health, and 29% in "very good" or "excellent" health (Figure 4).

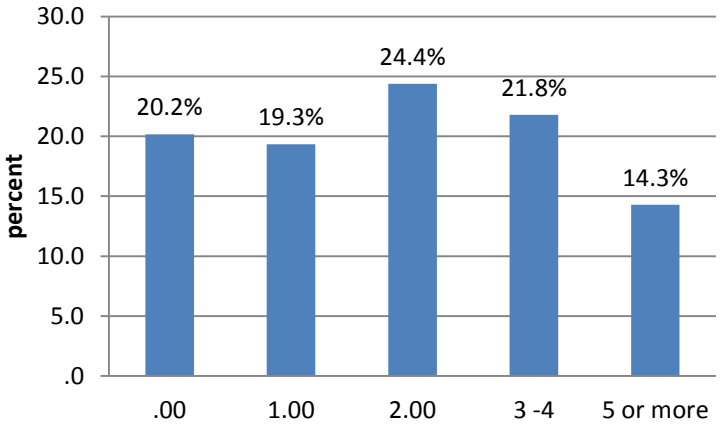
Figure 4. Conditions of Child's General Physical Health as Reported by Parents



Health Care Utilization

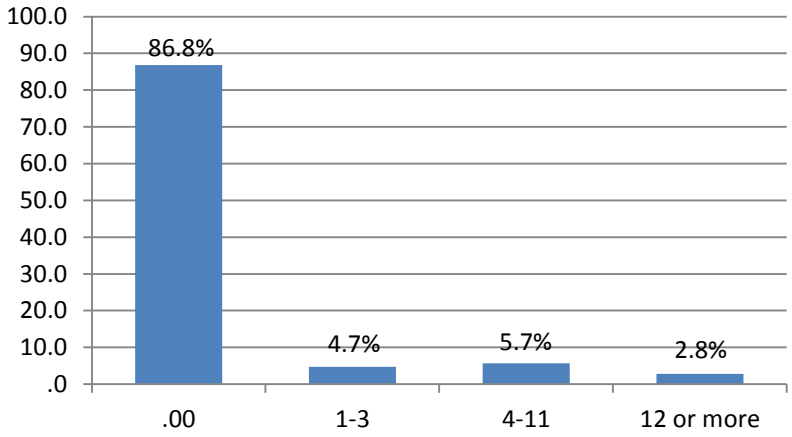
Parents were asked how many times in the last 12 months their children have seen a doctor, nurse, or other health care professional for illness or injury. Figure 5 displays the health care utilization in the past 12 months for illness or injury. About 14% of children have seen a health care professional (e.g., doctor or nurse) for illness or injury more than 4 times in the last 12 months; 3 to 4 times (22%); 2 times (24%); and once (19%) respectively. About one-fifth of children have not seen a health care professional in the 12 months (Figure 5).

Figure 5. Number of Times in the Last 12 Months a Child Has Seen a Health Professional



Parents were also asked if their children have seen a psychiatrist, doctor, or counselor for an emotional, mental, and behavioral problems. About 5% of children have seen a mental health professional 1 to 3 times in the past 12 months and about 8 percent of children have seen a mental health professional for at least 4 times in the last 12 months (Figure 6).

Figure 6. Number of Times in the Last 12 Months a Child Has Seen a Psychiatrist, Doctor, or Counselor for an Emotional, Mental, or Behavioral Problem



Psychological Well-Being

Children were asked a series of questions that measure their psychological well-being. We created a child's psychological well-being index by summing responses to the following 8 items: I often have trouble getting my breath; I get mad easily; I feel that others do not like the ways I do things; my feelings get hurt easily; other people are happier than me; I am nervous; a lot of people are against me; I often worry about something bad happening to me ($\alpha = .81$). Before creating the index, responses were reverse coded (1=often true, 2=sometimes true, 3=not true) so that higher values indicate high levels of better psychological well-being. Figure 7 displays child's psychological well-being in quintile range. Almost 13% of children were in the bottom quintile, compared to 29% in the top quintile. About 58% of children were in the middle three-fifths of the psychological well-being scale.

Figure 7. Child's Psychological Well-Being in Quintile Range

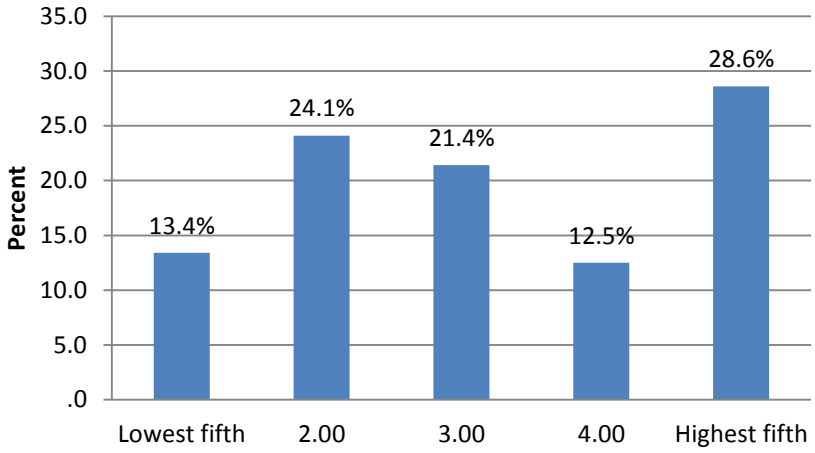


Table 3 displays demographic statistics and ANOVA table for the child's psychological well-being scale by time of observation and experimental groups. The average child's

psychological well-being score at pre-test assessment for children in the Shapedown program was 11.6 (SD=3.6), compare to 12.3 (SD=3.6) for children in the control group. Following the Shapedown treatment at post-test assessment, the average child's psychological well-being score was 11.8 (SD=3.8) in the Shapedown group, compare to 12.4 (SD=2.7) in the control group. At follow-up assessment, the average child's psychological well-being score was reduced to 10.3 (SD=2.1) in the Shapedown program, compared to 10.7 (SD=1.4) in the control group. The results in Table 3 show no significant differences in child's psychological well-being score between Shapedown and control groups. However, there was significant change in child's psychological well-being score overtime (pre-, post-, and follow-up times) ($F=10.8$; $df=1$; $p < .01$). Figure 8 shows a small increase in the estimated marginal means in child's psychological well-being score between the pre-test and post-test assessments, followed by a decrease at follow-up assessment.

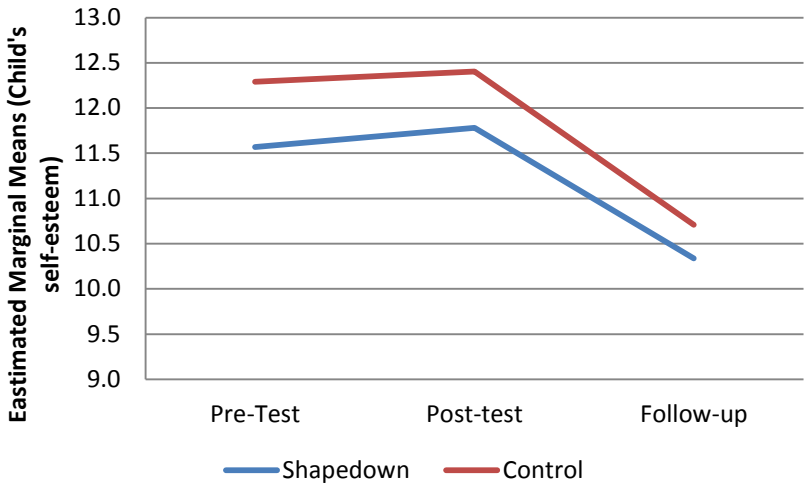
Table 3. Descriptive Statistics (mean and standard deviation) and Analysis of Variance Table for Child's Psychological Well-being by Time of Observation and Treatment Group

Descriptive Statistics (Mean, Standard Deviation)						
Experimental Groups	Pre-Test		Post-Test		Follow-Up	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Shapedown	11.57	3.56	11.78	3.79	10.34	2.08
Control	12.29	3.58	12.40	2.71	10.71	1.36
Total	11.93	3.56	12.09	3.28	10.52	1.75

Analysis of Variance (ANOVA) Table				
Source	Type III SS	df	Mean Square	F
Between-Subjects Effects				
Intercept	26256.18	1	26256.18	2264.60***
Experimental group	16.16	1	16.16	1.39
Between (error)	742.03	64	11.59	
Within-Subjects Effects				
Time --- Linear	65.41	1	65.41	10.81**
--- Quadratic	33.03	1	33.03	3.66
Group * Time -- Linear	1.03	1	1.03	.17
--- Quadratic	.06	1	.06	.01
Within (error) -- Linear	387.28	64	6.05	
--- Quadratic	577.44	64	9.02	

*** p <.001; ** p <.01; * p <.05

Figure 8. Children's Psychological Well-being by Treatment Group and Time of Observation



Physical Activity/Inactivity

One the ways to reduce childhood obesity is to increase physical activity and reduce physical inactivity, especially screen time. Figure 8 displays how children compare themselves with other children of similar age in terms of involvement in physical activity. About 10% of children indicated that they were more physically active than children of similar age; about 16% less active; and 40% about the same level of physical activity than their peers of the same age. Figure 9 displays the number of days a child is involved in physical activity/exercise in a typical week. About 39% of children indicated that they were involved in vigorous physical activity/exercise of 20 continuous minutes or more per week (Figure 9).

Children were also asked about how often they use game systems (e.g., Game Boy, Game Cube, Play Stations etc.) or computer games. Responses ranged from 1=never to 4=always. Figure 10 displays the frequency of physical inactivity as reflected in the frequency of use of game systems and computer games. The results in Figure 10 show that about 19% of children were highly involved in game systems or computer games (i.e., above the mean plus one standard deviation); about 29 percent of children were in medium category of use; and 52% of children were less involved in game systems or computer games.

Figure 9. Child's Physical Activity (PA) During Structured Sports and Free Time[5]

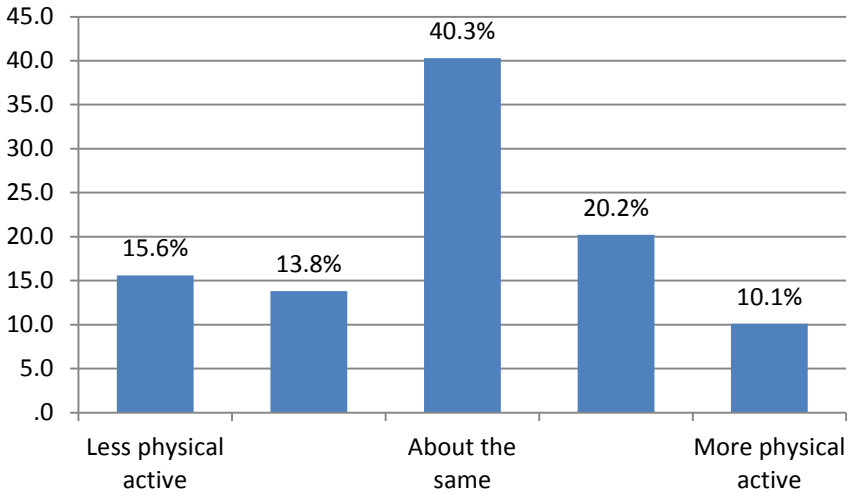
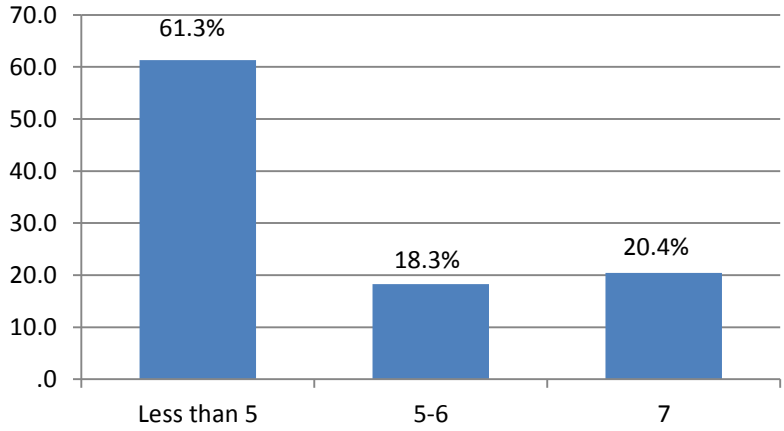
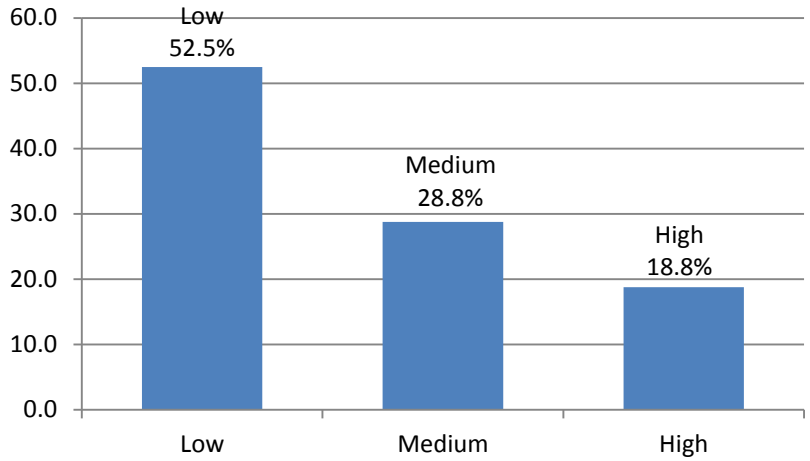


Figure 10. Number of Days of PA/Exercises for 20 Minutes or more per Week



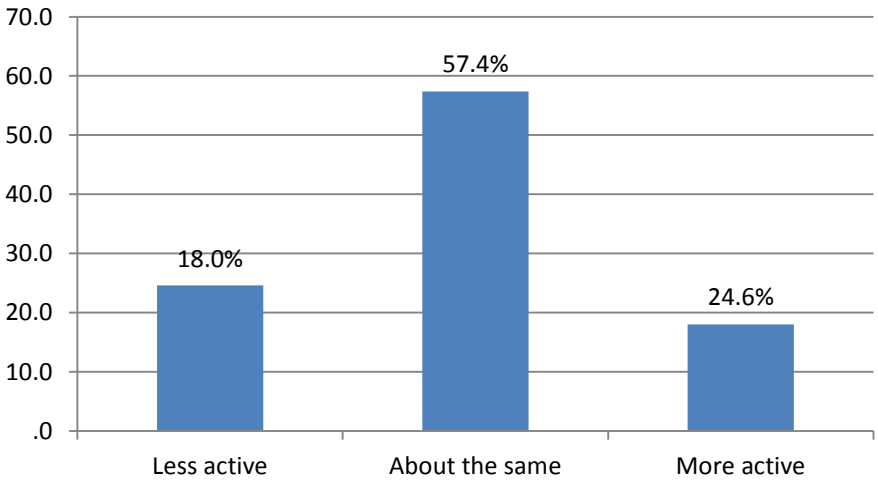
[5] Mean of two items (responses were reversed so that 1=less physical active, 2=about the same and 3=more physical active): How physical active child is when compared to other children of the same age in school or after school, and during free time.

Figure 11. Child's Physical Inactivity -- How Often they Use Game Systems or Computer Games[6]



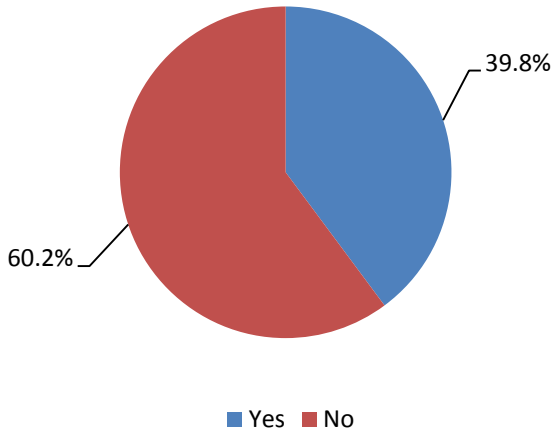
We also asked parents how they compare themselves with other parents of their age in terms of involvement in physical activity. The results in Figure 12 show that about one-fourths of parents indicated that they were more physically active than other parents of similar age; about 18 percent less active; and 57% about the same level of physical activity. Parents were in addition asked if they exercise for minimum of 30 minutes for at least 5 times a week (i.e., vigorous physical activity). The results in Figure 13 show that about 40% of parents exercise for a minimum of 30 minutes for at least 5 times a week (Figure 13).

Figure 12. Parent Physical Activity/Exercise



[6] Low= < Mean – 1SD; Medium=Mean – 1SD to Mean + 1SD; High=> Mean + 1SD.

Figure 13. Parent Vigorous Physical Activity

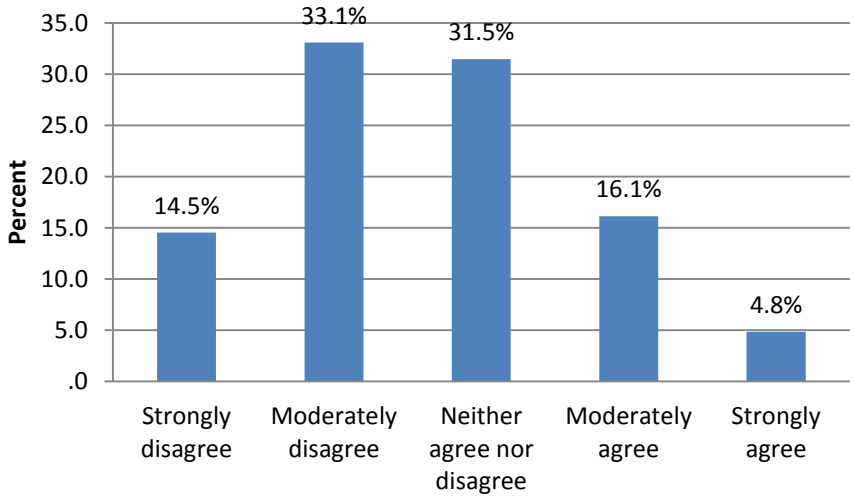


Diet and Nutrition

Nutrition Control/Regulation

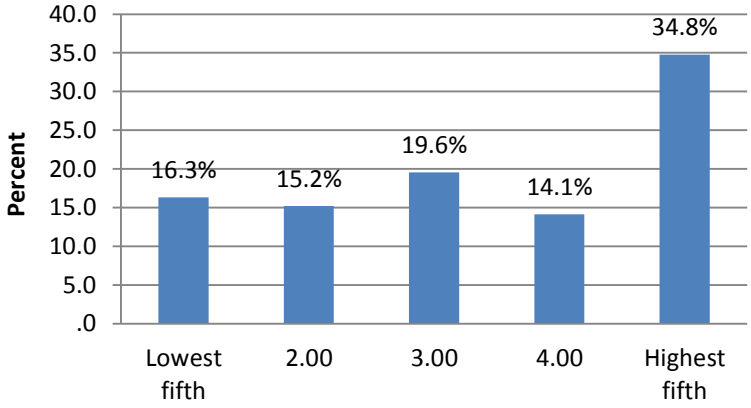
Healthy nutrition is a critically important behavioral determinant of good health and obesity among children and adolescents. Parents play a crucial role in shaping the type and quantity of food children eat at home as well as their eating habits. In this section, we explore the extent to which parents control or regulate, or influence the eating habits of children and adolescents. Figure 14 displays the frequency distribution of parents who believe that a child should eat all the food on his/her plate. About 5% of parents strongly agree with the statement that a child should eat all food on his/her plate, 15% moderately agree, 15% strongly disagree, 33% moderately disagree, and 32% are neutral (Figure 14).

Figure 14. Parents' Belief about the Amount of Food Child Should Eat



We also asked parents about nutrition control of their children. Figure 15 displays parents' nutrition control score in quintile range. Nutrition control was computed as a mean index of three items that loaded high on one factor, including: I have to make sure my child eats enough; if my child says "I am not hungry," I try to get him/her to eat anyway; and I guide or regulate my child's eating, otherwise he/she would eat much less than he/she should. The results in Figure 15 show that about 35% of parents were in the top quintile of this scale (α =.72), compared to 16% in the bottom quintile. About 49% of parents were in the middle three-fifths of this nutrition control scale (Figure 15).

Figure 15. Parent's Nutrition Control in Quintile Rank



Parents were also asked about the nutrition of their children such as eating habits and eating healthy foods. Figure 16 displays the percent distribution of an eating habits and importance of eating healthy food scale (thereafter referred to as children's nutrition scale) that combine responses of the following items: parents talk to child about the importance of eating healthy foods; parents worry about child's eating habits; and parents try to limit child's eating of unhealthy foods. Responses to these items ranged from 1=never to 4=always and were averaged to create an eating habits and importance of eating healthy food scale (α = .63). About 31% of parents were in the top quintile of this scale, compared to 10 in the bottom quintile. About 59% of parents were in the middle three-fifths of the children's nutrition scale (Figure 16).

Figure 16. Eating Habits and Importance of Eating Healthy Foods in Quintile Rank

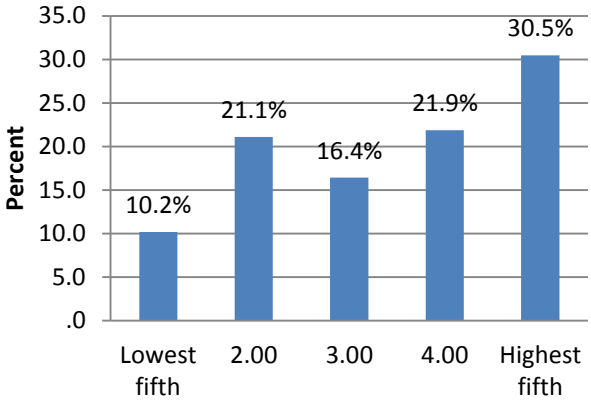


Table 4 displays demographic statistics and ANOVA table for child's nutrition scale by time of observation and experimental groups. The average child's nutrition score at pre-test assessment for children in the Shapedown program was 3.45 (SD=0.40) compared to 3.30 (SD=0.49) for children in the control group. Following the Shapedown treatment at post-test assessment, the average child's nutrition score was 3.32 (SD=0.50) in the Shapedown group, compared to 3.30 (SD=0.43) in the control group. At follow-up assessment, the average child's nutrition score was increased to 3.56 (SD=0.39) in the Shapedown program, compared to 3.53 (SD=0.24) in the control group. The results in Table 3 show no significant differences in child's nutrition score between Shapedown and control groups. However, there was a significant change in child's nutrition score overtime (pre-, post-, and follow-up times) ($F=5.99$; $df=1$; $p < .05$).

Figure 17 displays the estimated marginal means of the child's nutrition scale by treatment group and time of observation. The results in Figure 17 show a small decrease in the estimated marginal means in child's nutrition score between the pre-test and post-test assessments in the Shapedown group, followed by an increase at follow-up assessment. In the control group, there was no change in the marginal means of child's nutrition score between the pre- and post-test assessment, and an increase in the score between the post- and follow-up assessments.

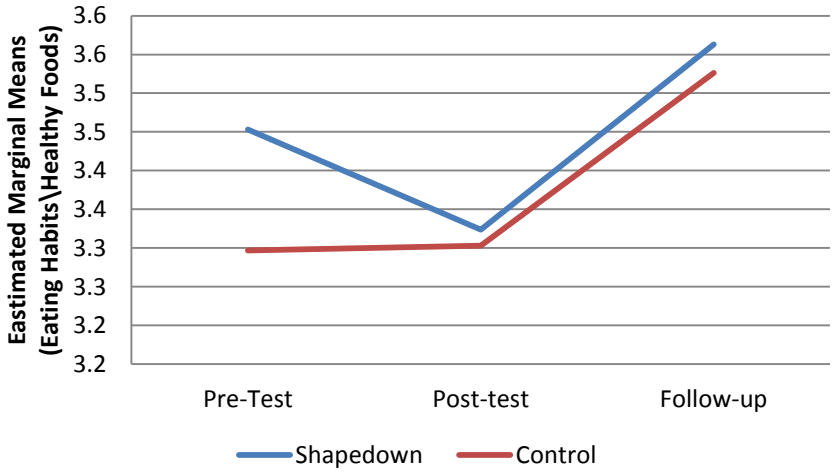
Table 4. Descriptive Statistics (mean and standard deviation) and Analysis of Variance Table for Eating Habits and Importance of Eating Healthy Foods by Time of Observation and Treatment Group

Descriptive Statistics (Mean, Standard Deviation)						
Experimental Groups	Pre-Test		Post-Test		Follow-Up	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Shapedown	3.45	.40	3.32	.50	3.56	.39
Control	3.30	.49	3.30	.43	3.53	.24
Total	3.37	.45	3.31	.46	3.54	.32

Analysis of Variance (ANOVA) Table				
Source	Type III SS	df	Mean Square	F
Between-Subjects Effects				
Intercept	2303.62	1	2303.62	13414.30***
Experimental group	.25	1	.25	1.47
Between (error)	10.99	64	.17	
Within-Subjects Effects				
Time --- Linear	.95	1	.95	5.99*
--- Quadratic	.94	1	.94	4.88*
Group * Time -- Linear	.12	1	.12	.74
--- Quadratic	.06	1	.06	.33
Within (error) -- Linear	10.16	64	.16	
--- Quadratic	12.39	64	.19	

*** p <.001; ** p <.01; * p <.05

Figure 17. Eating Habits and Importance of Eating Healthy Foods by Treatment Group and Time of Observation



Family Cohesion

Parent-Child Communication

Children were also asked how they communicate with other family members or friends. Two measures were created: one indicating non-family communication/isolation (i.e., a child kept his or her feelings to himself or herself or told a friend how he or she felt) and family communication (i.e., a child talked to a family member about something that bothered him/her or felt that his/her family really cared about his/her feelings). Figure 18 displays the frequency distribution for the non-family/isolation communication. About 28% of children were in the top quintile, compared to 17% in the bottom quintile. About 55% of parents were in the middle three-fifths of the scale (Figure 18).

Figure 18. Non-Family Attachment and Communication in Quintile Rank

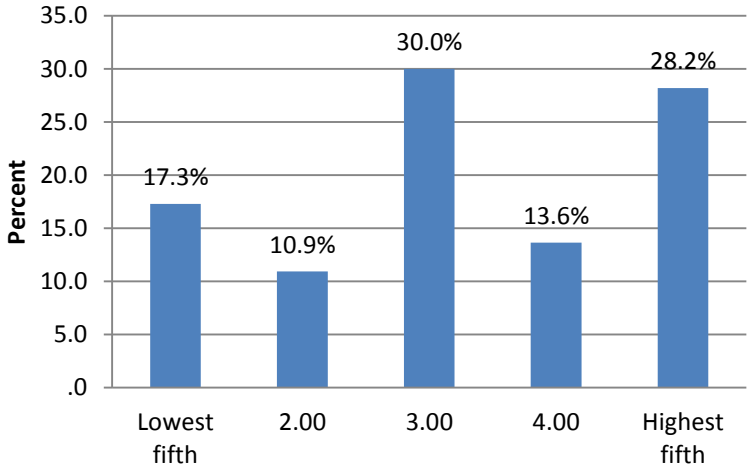
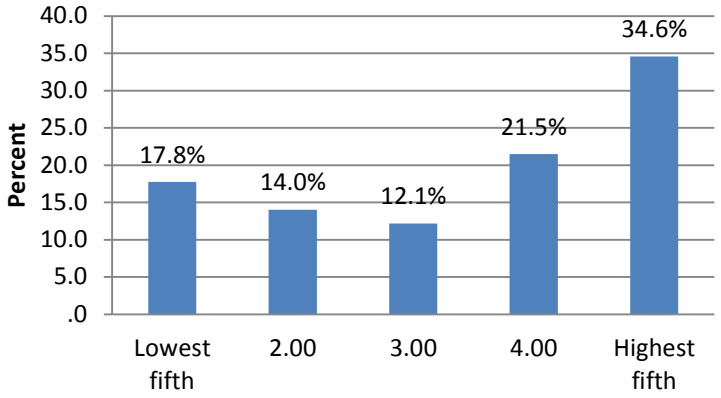


Figure 19 displays the percent distribution of the family communication measure. About

35% of children were in the top quintile, compared to 18% in the bottom quintile. About 47% of parents were in the middle three-fifths quintile of the family communication scale (Figure 19).

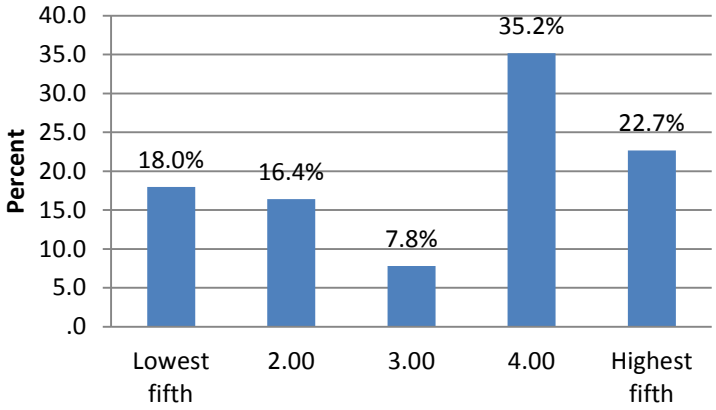
Figure 19. Family Attachment and Communication in Quintile Rank



Family Members Working together

Figure 20 displays the percent distribution of the "family-working together" scale. This scale is the average of four items (responses were 1=never, 2=sometimes, 3=often, and 4=always): our family members spend free time with each other; when our family gets together for activities, everybody is present; we can easily think of things to do together as a family; and child eats dinner together with the family ($\alpha = .87$). About 23% of parents were in the top quintile on this scale, compared to 18% in the bottom quintile. About 35% of parents were in the 4th quintile and about 24% were between the second and third quintile (Figure 20).

Figure 20. Family Members Working Together in Quintile Range



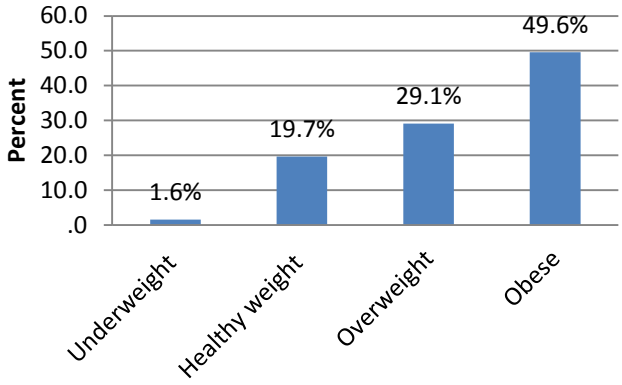
Parents' Health

Obesity among Parents

Parental obesity is positively and strongly associated with children and adolescents'

obesity. In addition to children's weights and heights, we measured parents' weights and heights and computed their BMI. Half of the parents in our study were considered obese (i.e., with a BMI equal or above 30), and about 29% of parents were overweight (i.e., with a BMI between 25.0 and 29.9) (Figure 21).

Figure 21. Prevalence of Obesity among Parents[7]

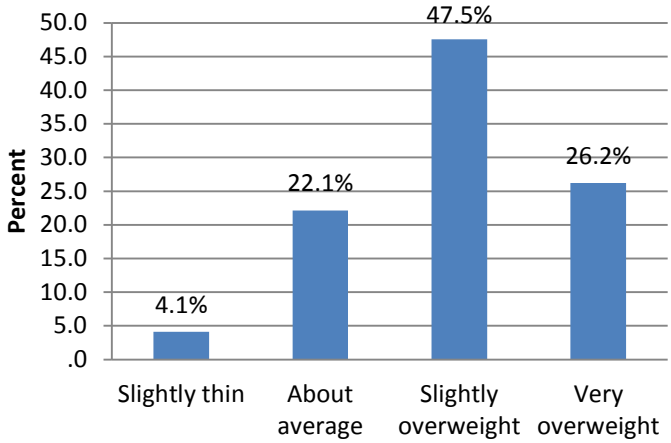


[7] Obesity for adults is defined as a BMI greater or equal to 30; overweight as BMI between 25.0 and 29.9; healthy weight as BMI between 18.5 and 24.9; and underweight as BMI below 18.5.

Description of Parent's Weight

Parents were also asked to describe their weight. Responses to this question ranged from 1=slightly thin to 4=very overweight. The results in Figure 22 show that about 26% of parents indicated that they are very overweight and 47% indicated that they slightly overweight, while 22% indicated that they are about average weight, and 4% slightly thin weight. As this show, the self-assessment of weight is different from the actual weight status described above in Figure 21.

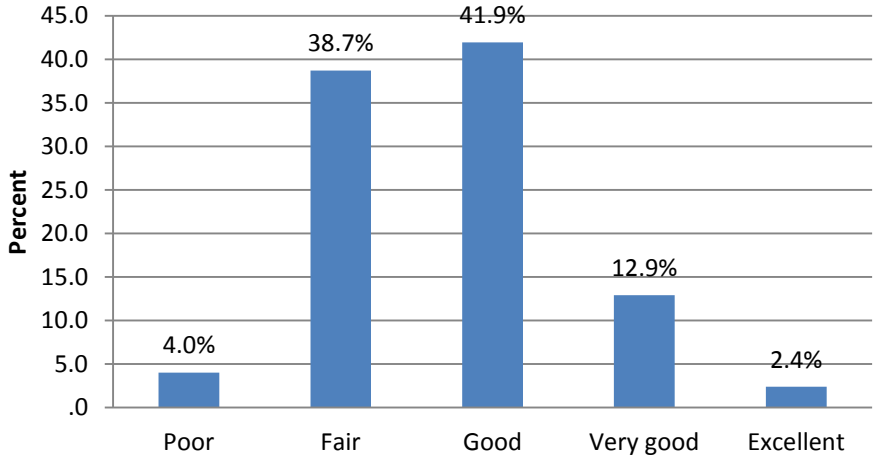
Figure 22. Perceived Parents' Weight Status



General Physical Health

We also asked parents to assess and self-report their own health. Figure 23 shows that about 15% of parents indicated they are in very good or excellent health, compared to 43% who indicated that they were in fair or poor health and about 42% who reported good health (Figure 23).

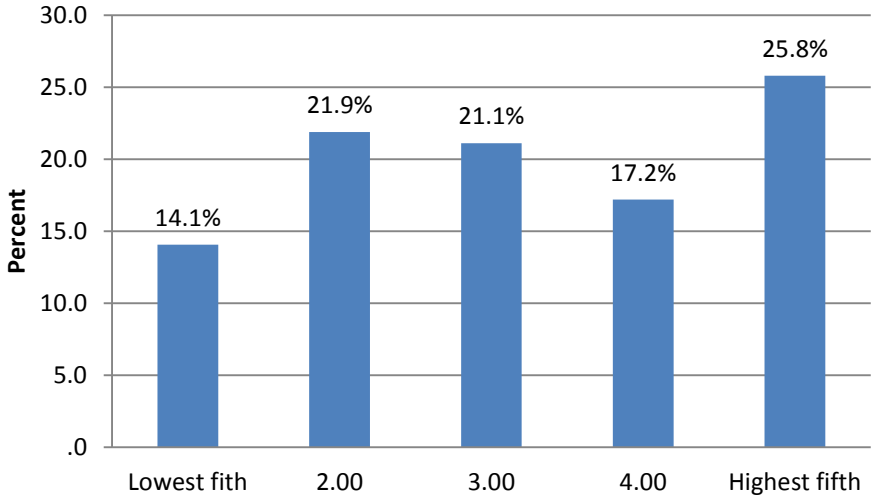
Figure 23. Prevalence of Parents Self-Rated Health



Parents' Self-Esteem

Parents were also asked questions about their self-esteem using the Rosenberg's Self-Esteem Scale (10 items). The items were summed after reverse coding items 3, 5, 8, 9, and 10 (α = .76). The results in Figure 24 show that about 26% were in the top quintile of the parents' self-esteem scale, compared to 14% in the bottom quintile. About 60% were in the middle three-fifths quintile of the parents' self-esteem scale (Figure 24).

Figure 24. Parents Self-Esteem in Quintile Range



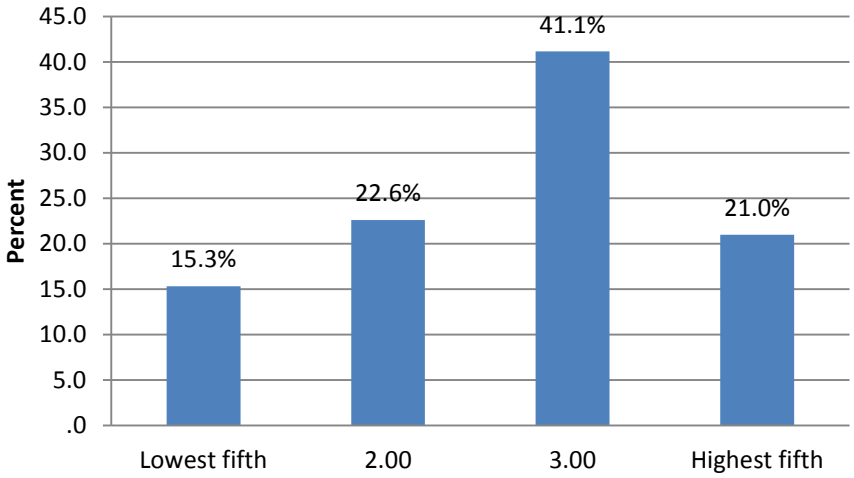
Neighborhood Environment

Numerous studies have linked characteristics of neighborhood physical environments to health, physical activity and BMI (Mujahid et al. 2008; Burdette and Hill 2008). We asked parents questions related to their neighborhoods, specifically on physical conditions for physical activity/exercise, food availability, and quality, and neighborhood safety environments (Figure 25-27).

Conducive Physical Activity Neighborhoods

Figure 25 displays the percent distribution of a neighborhood physical activity measure, which captures whether parents' neighborhoods are conducive to physical activity. We computed the mean of two items (response items ranging from 1=strongly disagree to 5=strongly agree): in my neighborhood it is easy to walk places; and I often see people walking, exercising (e.g., jogging, bicycling, playing sports) in my neighborhood ($\alpha = .84$). About 21% of neighborhoods were ranked in top quintile as conducive to physical activity/exercise, compared to 15% in the bottom quintile. About 64% of neighborhoods were in the middle-fifths of this neighborhood scale (Figure 25).

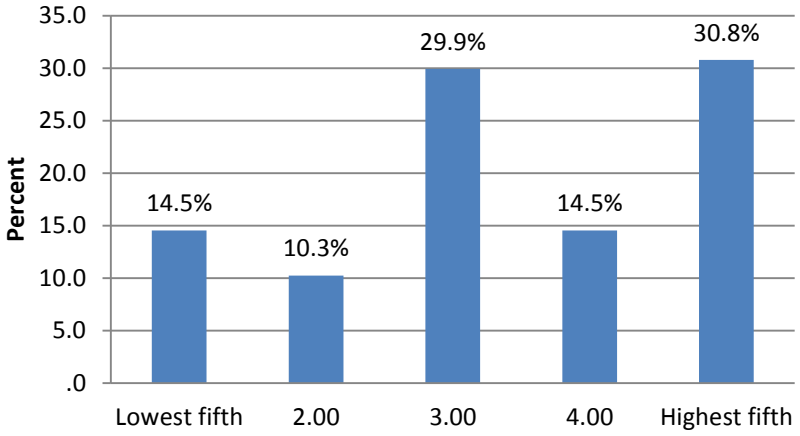
Figure 25. Conducive Physical Activity Neighborhoods in Quintile Range



Neighborhood Healthy Foods Availability

The availability of healthy foods in a neighborhood such as access to supermarkets has been linked to healthier food intakes (Morland et al., 2002). Figure 26 shows the distribution of a measure that captures neighborhood healthy foods availability. This scale was obtained from computing the mean of three items (responses range from 1=strongly disagree to 5=strongly agree): a large selection of fresh fruits and vegetables is available in my neighborhood stores; the fresh fruit and vegetables in my neighborhood stores are of high quality; and a large selection of low-fat food are available in my neighborhood stores ($\alpha = .94$). The results in Figure 26 show that about 31% of neighborhoods were ranked in top quintile in terms of healthy food availability, compared to 14% in the bottom quintile. About 55% of neighborhoods were in the middle-fifths of this neighborhood healthy food availability scale (Figure 26).

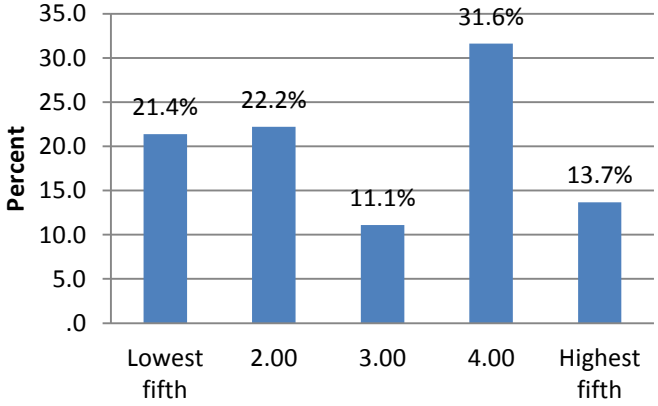
Figure 26. Neighborhood Healthy Foods Availability in Quintile Range



Neighborhood Safety

Parents' perceptions of neighborhood safety are significantly associated with children's BMI and parents are more likely to restrict their children's outdoor activities and increase the likelihood of sedentary indoor activity if they perceive their neighborhood to be unsafe (Cecil-Karb and Grogan-Kaylor, 2009). Figure 27 displays the percent distribution of an index of neighborhood safety. The neighborhood safety scale was computed as the average of three items (responses ranged from 1=very safe to 5=very unsafe): it is safe to walk alone in your neighborhood in the day; it is safe to walk alone at night in your neighborhood; it is safe for children to play outside during the day in your neighborhood ($\alpha = .86$). In this instance, higher values on the scale indicate neighborhoods that are considered very unsafe. The results in Figure 27 show that 14% of neighborhoods were in the top quintile, i.e., very unsafe, compared to 21% that are in the lower quintile or very safe. About 32% of neighborhoods were in the 4th quintile while about 33% were between the second and third quintile (Figure 27).

Figure 27. Perceived Neighborhood Safety in Quintile Range



Qualitative Results

Findings from qualitative interviews are summarized in the following three major categories (1) flexibility, (2) establishing trust, and (3) cultural competence (beyond just speaking Spanish).

Flexibility

A major theme that quickly became apparent in the intervention was the need to have detailed lesson plans prepared in advance and tailored to the Latino population. Since the lesson plans from Shapedown were not created with the Latino population in mind, a review of the translated materials revealed that they had been translated directly, meaning that further adaptations had to be made by the staff so that they could be more culturally relevant and useable with the program participants in Pontiac. Further, staff members had to be prepared to be flexible as the sessions unfolded because of challenges facing low-income Latino families. As one staff put it, "we had to do lesson plans every week, but these folks…they go beyond the lesson plans" (Exercise Physiologist). One reason staff needed to be flexible were the barriers that faced many of the participants, namely transportation, child care, and educational level-discrepancies.

Transportation was often difficult for some families to secure, and as such many would arrive late or not attend if the weather was bad. Child care issues became a continuing problem as Shapedown is designed for children 6 years of age and older, and many families had children younger than this age. In order to meet this need, CMLF had to hire from their own funds (not using grant monies) a child care provider, who could watch, play with, and entertain the younger children so that the parents and older siblings could participate in the program. Finally, the educational level of most of the participants was not much beyond 6th grade proficiency. The Shapedown program requires weekly take home assignments to be filled out and returned. The staff had to switch the focus to meet this need and instead transferred their activities to "orally based communications."

Establishing Trust

As with all community programs, gaining and maintaining community trust was vital to the Shapedown intervention. First and foremost, the focus on the family helped the community gain confidence in the program and the staff. CMLF chose a church based in the community and not far from CMLF's offices in order for the families to feel safe. As one staff member put it, "[it's the] trust factor, the importance of making sure that they understand but more importantly that they know they feel safe. And that's one of the reasons too that we go to the churches, because families do feel very safe there" (CMLF Recruiter). The space was very important. Families had to be connected to each other even if they were in different rooms, so having a building that could accommodate instructional sessions (a large room) with physical activities (the gym) proved invaluable.

In addition, as one CMLF staff put it, this community is not used to being part of a research program and the rigors of working with University protocols. Pre- and post-test instruments had to be adjusted, language simplified, and culture respected in order for the sessions to continue to completion. In addition, at the start of the program there was a great deal of discussion between the JSRI and the CMLF teams as to the purpose of the program, how it could impact the community, its importance, and the acceptable exercises/interventions that

could be done within the constraints of the grant. These issues made it difficult at times to implement the program with community participants, and other times it provided important spaces for the CMLF team to engage in creative work with the families.

Finally, having fun and celebrating with each other was important for the community and the Shapedown staff. One highly successful evening, a member of the Michigan State University team taught Zumba to all the families, (mothers, fathers, children, grandparents) in the cafeteria. The music blared, the families laughed, and great Latin dancing and exercising brought the group together.

Cultural Competence: Beyond just Speaking Spanish

Although it is very important that the entire CMLF team was bilingual, as all the parents preferred to speak in Spanish while their children tended to prefer English, language was not the only important aspect of making this program culturally competent.

The adapted Shapedown program placed heavy importance on the family, spending time together, eating together, and being a regular part of each other's lives. However, the Latino families in Pontiac were already very close with each other. This aspect resonated with them, but it did not inform their behaviors or attitudes. One struggle that the CMLF staff had was trying to come up with culturally relevant food recipes and choices for these families. The examples given in the Shapedown materials simply were not applicable or culturally relevant for Spanish-speaking Latino families.

In order to meet this need, the CMLF team was provided with Spanish-language nutrition and recipe booklets, such as *Nos Gusta Comer* by Celina Wille, Ph.D., and other authors. CMLF staff members (Nutritionist and Social Worker) also searched outside the Shapedown manual for food suggestions and recipes that included culturally appropriate but still healthy suggestions. Even though the Shapedown staff was bilingual, they had to remain open to the cultures of the families in the program different from their own. As the Social Worker commented, "in Mexico people eat very heavy at breakfast, they eat heavy, we don't do that. First of all I'm from Puerto Rico and we are more American influenced, *y yo puedo desayunar los huevos, los pancakes* [but] Mexicans don't do that, so the Shapedown program doesn't take that into consideration…[I]t's not only that the level of education is not appropriate but it is also the Hispanic population that you're trying to target. It was very interesting because the majority of the participants are Mexican. I don't think it was intentional, it was just random, but we try to also adjust to their culture."

Another example of this came during the educational exercise sessions. The Shapedown physical education leader noted that many of the kids were used to playing soccer, but lacked in hand-eye-coordination. Many were not used to forming teams with the other children and at times there was difficulty in bringing the children together for simple organized sports. Because some of the children apparently feel isolated in their communities, or are not allowed to wander their neighborhoods for safety reasons, they have grown up too sedentary, hidden away in their homes with television, video games, and computer programs.

Summary and Conclusions

About 5% of children in the Shapedown study were obese (i.e., a BMI at or above the 95th percentile for their age and sex) and 10% of children were overweight (i.e., with a BMI between the 85th and 94th percentile for their age and sex). We did not find any significant

differences between the Shapedown and control groups and across time (pre-, post-, and follow-up times). About one-third of children indicated that they are overweight, which is more than twice their real weight. This suggests that the preference for a thin body for themselves may have influenced these responses.

In terms of child health, we find that in slightly more than one-third of children, parents reported that their children were in fair or poor health and about one-fifth of children have not used a health care professional in the last 12 months, 19% once a year, and 60% twice or more in the last 12 months. These differences in the use of a health care professional can be attributed to differences in SES (e.g., lack of health insurance or transportation to their health care providers). About 29% of children were in top quintile of the psychological well-being score. We did not find any significant difference in this index between the Shapedown and control group, but we did a significant change in this index across time, with an increase in child's psychological well-being score between the pre-test and post-test assessments, followed by a decrease at follow-up.

Children in the Shapedown program were also involved in physical activity of some sort. About 10% of these children indicated that they are more active than other children of their age and about 39% of children indicated that they were involved in vigorous physical (i.e., activity/exercise of 20 continuous minutes or more per week). We found also, like other children these days, children in the Shapedown program were involved in sedentary behavior, especially game systems or computer games. About 19% of children were highly involved in game systems or computer games. Children's parents were also involved in physical activity. We found that about one-fourth of parents were more physically active than other parents of similar age and about 40% of parents indicated that they exercise for a minimum of 30 minutes for at least 5 times a week.

Parent's influence and control child intake. We found that about 20% of parents believe that a child should eat all the food on his/her plate. We also found that 35% of parents were in the top quintile of the nutrition control index score, i.e., they make sure that their children eat all food on a plate. We also found that about 31% of parents were in the top quintile of the eating habits and importance of eating healthy food scale, i.e., they talk to their children about the importance of eating healthy foods, worry about their eating habits, and try to limit their children's eating of unhealthy foods. We found no significant differences in child's eating habits and importance of eating healthy score between Shapedown and control groups, but a significant change in this score overtime (pre-, post-, and follow-up times).

We also found that 35% of children were ranked in the top quintile on the family attachment/communication scale and that 23% of children were also ranked in the top quintile of the family cohesion scale (i.e., spend free time with each other, get together for activities, eat meal together etc.). Almost half of parents were obese, but only 26% consider themselves overweight. About 43% of parents reported fair or poor health and 26% were in the top quintile of the self-esteem scale. In regards to the neighborhoods of residence, 21% of neighborhoods were ranked in top quintile as conducive to physical activity/exercise, 31% to have healthy foods, and 14% to be very unsafe.

In addition to the major findings from above, the qualitative interviews outlined some of the most valuable lessons that were learned as a result from the Shapedown intervention. These included: learning how to eat, engagement with exercise, and that the family unit is key for long-term sustainability. Also, participating with a research team from Michigan State University that was mostly Latino (four members of the research team identified as Latino and Spanish speaking) was a positive aspect of the program for the participants, especially the children who

were impressed with the positive role models.

The major challenges included finding an appropriate location that included all the necessary aspects of the Shapedown intervention (including a physical activity area, kitchen, meeting room, and play facilities for the children). In addition, it was recommended that the program not start during the fall and winter months, with Michigan's winter and transportation already being a problem with this population, the timing made it difficult to retain participants in the program. Finally, the program could have used more funds for incentives for the participants to continue their participation, especially incentives for the children (such as backpacks, school supplies, and so on). Also, the surveys given at the beginning and end of the intervention need to be at a simpler reading level (preferably a 6th grade reading level) and only last about 20 minutes.

Overall, the research program and interaction with a University was an excellent experience for the participants. And further projects are encouraged between the community agency (Centro Multicultural de la Familia) and the Michigan State University research team.

Future Studies

Further statistical analyses will assess whether the experimental group, time of assessment (pre-, post-, and follow-up assessment), child's health and health care utilization, physical activity characteristics, parental nutritional control, family attachment and communication, family cohesion, parental obesity and health, and neighborhood characteristics are significantly associated with a child's BMI, eating habits/importance of eating healthy foods, and physical activity. The results of this study will be used as pilot data for a larger grant on healthy habits and obesity among children and adolescents.

References

Akresh, Ilana R. 2007. "Dietary Assimilation and Health among Hispanic Immigrants to the United States." *Journal of Health and Social Behavior*, 48 (4): 404-417.

Antecol, Heather and Kelly Bedard. 2006. "Unhealthy Assimilation: Why Do Immigrants Converge to American Health Status Levels?" *Demography* 43 (2): 337-360.

Bandura, A. 1998. "Health Promotion from the Perspective of Social Cognitive Theory." *Psychology and Health* 13: 623-649.

Boinapally P, Fussman C, Imes G. February 2011. Overweight and Obesity Facts in Michigan Adults. Michigan's Nutrition, Physical Activity and Obesity Program Surveillance Brief. Michigan Department of Community Health, Division of Genomics, Perinatal Health and Chronic Disease Epidemiology. (http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_2959_3208-148846--,00.html).

Bourdieu, Pierre. 1984. *Distinction: A Social Critique of the Judgment of Taste*. Cambridge: Cambridge University Press.

Bronfenbrenner, Urie. 1986. "Ecology of the Family as a Context for Human Development: Research Perspectives." *Development Psychology*, 22 (6): 723-742.

Bruss, Mozhdeh B., Joseph R. Morris, Linda L. Dannison, Mark P. Orbe, Jackie A. Quitugua, and Rosa T. Palacios. 2005. "Food, Culture, and Family: Exploring the Coordinated Management of Members Regarding Childhood Obesity." *Health Communication* 18 (2): 155-175.

Caprio, Sonia, Stephen R. Daniels, Adam Drewnowski, Francine R. Kaufman, Lawrence A. Palinkas, Arlan L. Rosenbloom, and Jefrey B. Schwimmer. 2008. "Influence of Race, Ethnicity, and Culture on Childhood Obesity: Implications for Prevention and Treatment." *Diabetes Care*, 31 (11): 2211-2221.

Carter, Robert Colin. 2002. "The Impact of Public Schools on Childhood Obesity." *Journal of the American Medical Association* 288 (17): 2180-81.

Centers for Disease Control and Prevention. 2011. "Basics about Childhood Obesity." Retrieved September 30, 2011 (http://www.cdc.gov/obesity/childhood/basics.html).

Cockerham, William C. 2005. "Health Lifestyle Theory and the Convergence of Agency and Structure." *Journal of Health and Social Behavior* 46: 51-67.

Davison, Kirsten K. and Leann L. Birch. 2001. "Childhood Overweight: A Contextual Model and Recommendations for Future Research." The International Association for the Study of Obesity. *Obesity Reviews* 2, 159-172.

Dixon, Lori B., Jan Sundquist, and Marilyn Winkleby. 2000. "Differences in Energy, Nutrient, and Food Intakes in a U.S. Sample of Mexican-American Women and Men: Findings from the Third National Health and Nutrition Examination Survey, 1988-1994. *American Journal of Epidemiology*, 152 (6): 548-557.

Farooqi Ismaa S., O'Rahilly Steve 2007. "Genetic Factors in Human Obesity." *Obesity Reviews* 8 (Suppl. 1):37–40.

Fried, Ellen J. and Marion Nestle. 2002. "The Growing Political Movement against Soft Drinks in Schools." *Journal of the American Medical Association* 288 (17): 2181-82.

Goel, Mita S., Ellen P. McCarthy, Russell S. Phillips, and Christina C. Wee. 2004. "Obesity among U.S. Immigrant Subgroups by Duration of Residence." *Journal of the American Medical Association*, 292 (23): 2860-67.

Gordon-Larsen, Penny, Kathleen M. Harris, Dianne S. Ward, and Barry M. Popkin. 2003.

"Acculturation and Overweight-Related Behaviors among Hispanic Immigrants to the U.S.: The National Longitudinal Study of Adolescent Health." *Social Science and Medicine*, 57: 2023-2034.

Gordon-Larsen, Penny, Robert G. McMurray and Barry M. Popkin. 2000. "Determinants of Adolescent Physical Activity and Inactivity Patterns." *Pediatrics*, 105: E83.

Haas, Jennifer S., Lisa B. Lee, Celia P. Kaplan, Dean Sonneborn, Kathryn A. Phillips, and Su-Ying Liang. 2003. The Association of Race, Socioeconomic Status, and Health Insurance Status with the prevalence of Overweight among Children and Adolescents." *American Journal of Public Health* 93 (12): 2105-10.

Janssen, Ian, William F. Boyce, Kelly Simpson, and William Pickett. 2006. "Influence of Individual- and Area-Level Measures of Socioeconomic Status on Obesity, Unhealthy Eating, and Physical Inactivity in Canadian Adolescents." *American Journal of Clinical Nutrition* 83: 139-145.

Karlsen, Saffron and James Y. Nazroo. 2002. "Relation Between Racial Discrimination, Social Class, and Health among Ethnic Minority Groups." *American Journal of Public Health*, 92(4): 624-631.

Kumanyika, Shiriki K. 2008. "Environmental Influences on Childhood Obesity: Ethnic and Cultural Influences in Context." *Physiology & Behavior*, 94(1): 61-70.

Lara, Marielena, Chritina Gamboam, M. Iya Kahramanian, Leo S. Morales, and David E. Hayes Bautista. 2005. "Acculturation and Latino Health in the United States: A Review of the Literature and its Sociopolitical Contexts." *Annual Review of Public Health* 26: 367-97.

Leslie, Laurel K., Dena Plemmons, Amy R. Monn, and Lawrence A. Palinkas. 2007. "Investigating ADHD Treatment Trajectories: Listening to Families' Stories about Medication Use." *Journal of Developmental and Behavioral Pediatrics* 28: 179-188.

Lindsay, A. C., Sussner K. M., J. Kim, and S. Gortmaker. 2006. "The Role of Parents in Preventing Childhood Obesity." *The Future of Children* 16 (1): 187-207.

Lobstein T., L. Baur, and R. Uauy. 2004. "Obesity in Children and Young People: A Crisis in Public Health." *Obesity Review*s 5 (Suppl. 1): 4-104.

Lovasi, Gina S., Malo A. Hutson, Monica Guerra, and Kathryn M. Neckerman. 2009. "Built Environments and Obesity in Disadvantaged Populations." *Epidemiologic Reviews* 31: 7-20.

Lutfiyya, May Nawal, Rosemary Garcia, Christine M. Dankwa, Teriya Young and Martin S. Lipsky. 2008. "Overweight and Obese Prevalence Rates in African American and Hispanic Children: An Analysis of Data from the 2003-2004 National Survey of Children's Health." *Journal of the American Board of Family Medicine*, 21(3): 191-199.

Mazur, Robert E., Grace S. Marquis, and Helen H. Jensen. 2003. "Diet and food insufficiency among Hispanic youths: Acculturation and socioeconomic factors in the third National Health and Nutrition Examination Survey." *American Journal of Clinical Nutrition*, 78(6): 1120-1127.

Michigan's Nutrition, Physical Activity and Obesity Program (MiNPAO). 2011. *Overweight and Obesity in Michigan: Surveillance Update 2011*. Michigan Department of Community Health.

Mokdad, Ali H., Earl S. Ford, Barbara A. Bowman, William H. Dietz, Frank Vinicor, Virginia S. Bales, and James S. Marks. 2003. "Prevalence of Obesity, Diabetes, and Obesity-Related Health Risk Factors, 2001." *Journal of the American Medical Association* 289: 76-79.

Morland, Kimberly, Ana V. Diez Roux, and Steve Wing. 2006. "Supermarkets, Other Food

Stores, and Obesity." *American Journal of Preventive Medicine*, 30(4): 333-339.
Nelson, Melissa C., Penny Gordon-Larsen, Yan Song, Barry M. Popkin. 2006. "Built and Social Environments: Associations with Adolescent Overweight and Activity." *American Journal of Preventive Medicine*, 31(2): 109-117.
Neuhouser Mariam L., Beti Thompson, Gloria D. Coronado, and Cam C. Solomon. 2004. "Higher Fat Intake and Lower Fruit and Vegetables Intake Are Associated with Greater Acculturation among Mexicans living in Washington State." *Journal of the American Dietetic Association*, 104(1): 51-57.
Ogden, Cynthia L., Margaret D. Carroll, Lester R. Curtin, Margaret A. McDowell, Carolyn J. Tabak and Katherine M. Flegal. 2006. "Prevalence of Overweight and Obesity in the United States, 1999-2004." *Journal of the American Medical Association* 295(13): 1549–1555.
Ogden, Cynthia L., Margaret D. Carroll, Lester R. Curtin, Molly M. Lamb, and Katherine M. Flegal. 2010. "Prevalence of High Body Mass Index in US Children and Adolescents, 2007-2008." *Journal of the American Medical Association* 303(3): 242-249.
Popkin, Barry M., and J. Richard Udry. 1998. "Adolescent Obesity Increases Significantly in Second and Third Generation United States Immigrants: The National Longitudinal Study of Adolescent Health." *Journal of Nutrition* 28: 701-706.
Robert, Stephanie A. and Eric N. Reither. 2004. "A Multilevel Analysis of Race, Community Disadvantage, and BMI." *Social Science and Medicine* 59(12): 2421-34.
Sallis, James F. and Karen Glanz. 2006. "The Role of Built Environments in Physical Activity, Eating, and Obesity in Childhood." *The Future of Children*, 16(1): 89-108.
Sallis, James F. and B. E. Saelens. 2000. "Assessment of Physical Activity by Self-Report: Status, Limitations and Future Directions." *Research Quarterly for Exercise and Sports* 71 (2): S1-14.
Sallis, James F., Judith J. Prochaska., and Wendell C. Taylor. 2000. "A Review of Correlates of Physical Activity of Children and Adolescents." *Medicine & Science in Sports & Exercise*, 32: 963-975.
Sampson, Robert J., Stephen W. Raudenbush, and Felton Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science*, 277: 918-924.
Schultz, Amy J. and Leith Mullings. 2006. *Gender, Race, Class, and Health*. San Francisco, CA: Jossey-Bass.
Taylor, John and R. Jay Turner. 2002. "Perceived Discrimination, Social Stress, and Depression in the Transition to Adulthood: Racial Contrasts." *Social Psychology Quarterly* 65:213-225.
U.S. Department of Health and Human Services. 2011. *Strategic Plan for NIH Obesity Research: A Report of the NIH Obesity Research Task Force*. National Institute of Health. NIH Publication No. 11-5493 (March).
Van Hook, Jennifer and Elizabeth Baker. 2010. "Big Boys and Little Girls: Gender, Acculturation, and Weight among Young Children of Immigrants." *Journal of Health and Social Behavior* 51:200–14.
Welk, Gregory J., Kherrin Wood, and Gina Morss. 2003. "Parental Influences on Physical Activity in Children: An Exploration of Parental Mechanisms." *Pediatric Exercise Science*, 15(1): 19-33.
Whitehead, Dean. 2003. "Health Promotion and Health Education Viewed as Symbiotic Paradigms: Bridging the Theory and Practice gap Between them." J*ournal of Clinical*

Nursing 12: 796-805.
Williams, David R. and Chiquita Collins. 1995. "US Socioeconomic and Racial Differences in Health: Patterns and Explanations." *Annual Review of Sociology* 21:349–86.
Williams, David R. and Michelle Sternthal. 2010. "Understanding Racial-Ethnic Disparities in Health: Sociological Contributions." *Journal of Health and Social Behavior*, 51: S15-S27.
Yen, Irene H. and George A. Kaplan. 1999. "Neighborhood Social Environment and Risk of Death: Multilevel Evidence from the Alameda County Study." *American Journal of Epidemiology*, 149(10): 898-907.

Appendix A. Shapedown Intensive-Intervention Treatments –Session I

Session 0: Welcome/Getting Started; Fitness Testing;

Session 1: Kids- Understanding causes of weight, body image; Parents- Causes and consequences of child's weight; Family- Effective praise and family time; Exercise- Warm-up exercises; and Food records-free, light, heavy, junk;

Session 2: Kids- setting goals; Parents- Setting goals, Feelings about child's weight; Exercise- kids design exercise- warm up, huff and puff, cool down; and Food Demo: veggies. Eat more veggies, 3 daily;

Session 3: Kids- Accepting body build, being comfortable and/or uncomfortable in body; Parents- Using Positives to help our children succeed; Exercise- circuit course; and Food Groups;

Session 4: Kids- Learning about hunger and fullness, Speaking up for self when it comes to food; Parents- Setting Limits and expectations; Exercise-Activities with Resistance bands and activity in limited spaces. (Resistance bands provided); and Not feeling deprived. Food demo Fruit kabobs;

Session 5: Kids- Coping with feelings, expressing feelings to parents; Parents- Focusing on positives, expressing feeling to children; Exercise- Family Relay Race; and Light dairy and protein Food Demo: Smoothies;

Session 6: Kids- Dealing with put-downs and bullying; Parents- Relaxation and visualization, Setting limits-review and practice; Exercise- Basketball game or games with bounce balls; and Hunger scale, food records;

Session 7: Kids- Identifying food triggers, managing feelings; Parents- Identifying food triggers, managing feelings, supporting kids in managing triggers and feelings; 3 meals a day, light grains, foods demo: lavish sandwiches;

Session 8: Kids- Identifying pleasurable activities, triggers and behavioral cycles; Parents- Creating a successful and active environment, behavioral cycles of eating; Exercise - circuit course; and Food Records – Free, Light, Heavy and Junk. Food Demo: Yogurt Sundaes; and

Session 9: Review of Shapedown; Fitness Testing; Graduation; Family Evaluation of Program.

Appendix B. Shapedown Intensive-Intervention Treatments – Session II

Week 1: Participants attended a program orientation to understand the program objectives, and participated in pre-test and data collection. Intervention and control groups participated on different days. Pre-test consisted of the following biometric measures: resting blood pressures, height, weight, sit and reach, sit-ups, and 2 minutes step test with heart rate. Food demo –Fruit cup.

During weeks 2-7: The following nutrition education topics were covered:

Week 2:

Session 1: Causes of being heavy, feelings about weight, consumption of fruits and vegetables and the importance of exercise. Food demo –Vegetable soup/ Sopa de verduras.

Week 3:
Session 2: Feelings about weight (continued), free, light, heavy, nutrient-poor foods and ½ plate model, basics of exercise. A food demo was presented as part of the session –Tuna with whole crackers.

Session 3: Self-esteem, keeping food records, and all about muscles.

Week 4:
Session 4: Limits and expectations, USDA Food Pyramid, hunger scale, breakfast ideas, motivations to exercise. Smoothies were made as this week's food demo – Small Pitta Wraps.

Week 5:
Session 5: Communication, portion sizing, eating on the run, lunch ideas, food as energy. Sandwich roll-up were made as this week's food demo – Roll-ups Sandwich.

Week 6:
Session 6: Family dynamics and food, menu planning and setting exercise goals. Food demo – Brown rice with tuna and veggies

Week 7:
Session 7: Stress overeating, cravings, secretive eating. Quality time, special occasion eating, recipe makeovers and rewarding yourself. Food Demo – fruit and cheese kabobs.

Week 8: The final session was held and included the following activities:
Session 8: Post –test, final fitness evaluation, graduation and food demo – yogurt sundae, cereal and fruits