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Title of Dissertation: Psychosocial Responses and Body Weight Changes in African American and Caucasian Overweight and Obese Youth Attending a Weight Management Program

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ABSTRACT

Title of Document: **PSYCHOSOCIAL RESPONSES AND BODY WEIGHT CHANGES IN AFRICAN AMERICAN AND CAUCASIAN OVERWEIGHT AND OBESE YOUTH ATTENDING A WEIGHT MANAGEMENT PROGRAM**

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Pediatric obesity studies have examined the effect of lifestyle treatment programs on weight loss, psychosocial functioning, and health related quality of life (HRQOL), and have found inconsistent results. Numerous studies highlight ethnic differences in psychological well-being and HRQOL in overweight and obese youth, however, few studies analyze or report responses to treatment based on ethnicity. This study aimed to expand our understanding of ethnic differences in treatment responses in overweight and obese youth attending a pediatric weight management program. The program examined two intervention groups, the Intensive Group (IG program) and Standard of Care (SOC) treatment. Participants between 8 to 17 years either attended the IG program or SOC treatment within the weight management program. This study compared whether there was differential responding (zBMI scores, psychosocial functioning and HRQOL scores) between ethnic groups (African American and Caucasian) using a pre and post-intervention assessment (at 10-24 months) approach. This study also examined if there

was an effect of program participation in the entire sample regardless of ethnic group or intervention group (IG or SOC) on zBMI scores, psychosocial functioning and HRQOL scores. Participants completed measures for psychosocial functioning (Behavior Assessment System for Children, Second Edition (BASC-2)) and HRQOL (The Pediatric Quality of Life Inventory (PedsQL4.0)), and data was collected to obtain their zBMI scores at pre and post intervention. Results revealed no differential responding in psychosocial functioning between ethnic groups at follow-up for participants in the IG program. There was a significant effect of program participation in the IG sample on parent-reported withdrawal scores (improvements at follow-up) regardless of ethnicity. There were significant effects of program participation regardless of ethnic group or intervention group on zBMI scores (decrease in scores), and four HRQOL scales post program participation, with three out of four scales displaying improvements. There was not a significant interaction between ethnicity and invention group, nor a main effect of ethnicity or intervention group for zBMI or HRQOL scores from intake to follow-up assessments in youth attending the IG program relative to SOC treatment. Caucasians and African Americans demonstrated positive non-significant trends across several HRQOL scales from intake to follow-up assessments, with Caucasians exhibiting generally greater increases in HRQOL scores. These trends can be discussed with families so they are aware of potential benefits of attending weight management programs. Future studies should incorporate a qualitative component to gain a better understanding of youth's psychosocial responses to weight management interventions across ethnic groups. This information can help identify areas to target in future interventions, leading to more culturally sensitive interventions.

PSYCHOSOCIAL RESPONSES AND BODY WEIGHT CHANGES IN AFRICAN AMERICAN AND CAUCASIAN OVERWEIGHT AND OBESE YOUTH ATTENDING A WEIGHT MANAGEMENT PROGRAM

By

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Pediatric Obesity

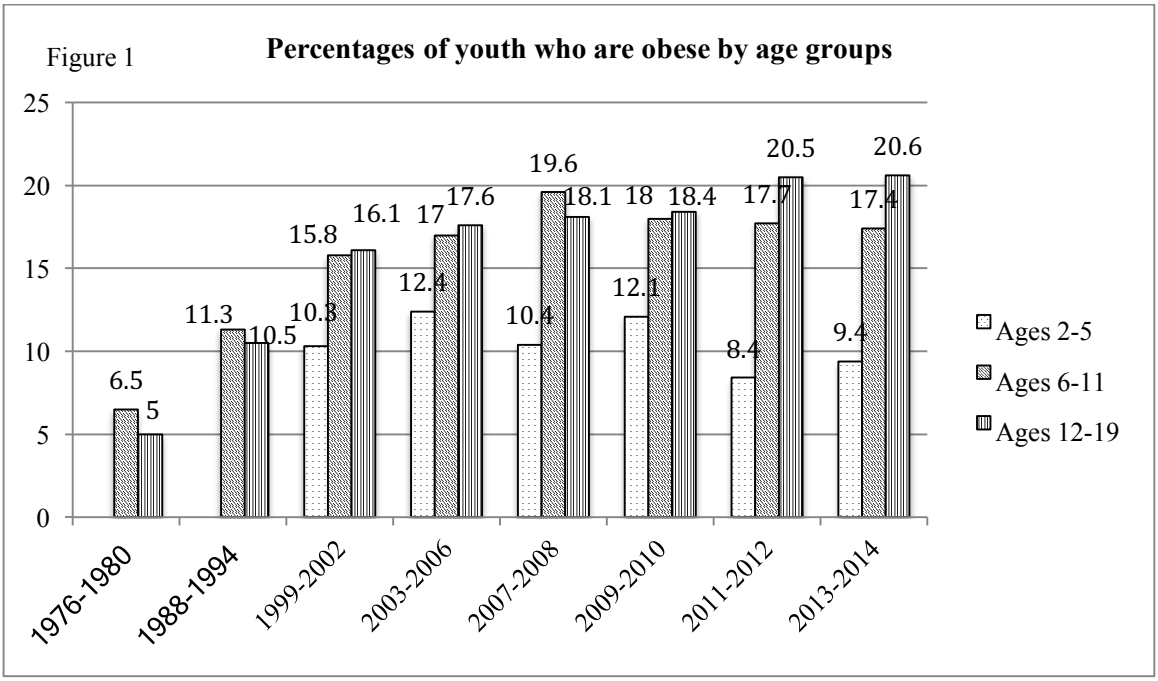
Since the 1970s, the prevalence of childhood overweight (9.2%) and obesity (5.5%) in the United States has increased significantly over time (Ogden, Carroll, Kit & Flegal, 2012). Now 33.4% of children and adolescents between the ages of two and 19 years are overweight or obese and 17.2% are obese (Ogden, Carroll, Kit & Flegal, 2014; Ogden, Carroll, Lawman, et al., 2016). Obesity is typically defined as excess body fat (Spruijt-Metz, 2011). Body mass index (BMI) is a measure frequently utilized to screen for childhood overweight and obesity using the child's weight and height and accounts for normal growth and maturation (Ogden et al., 2002). BMI weight categories are based on age and sex specific percentiles from the 2000 Center for Disease Control and Prevention (CDC) growth charts for the Unites States (reference population). Based on the 2000 CDC growth charts, children who have a BMI between the 85th and 95th percentile are classified as overweight, while children who have a BMI at or above the 95th percentile are classified as obese (Barlow, 2007; CDC, 2011).

Rates of obesity in children vary by age, sex and ethnicity

Age differences. Prevalence rates of overweight and obesity are similar between 6 to 11 year old children and 12 to 19 year old adolescents (Ogden, Carroll, Kit & Flegal, 2012; Skinner & Skelton, 2014). Youth between the ages of 6 and 19 years have significantly greater odds of being overweight and obese compared to children between the ages of 2 and 5 years (Ogden, Carroll, Kit & Flegal, 2012). Rates of obesity in children between the ages of 2 and 5 years decreased significantly since 2009-2010 (Ogden, Carroll, Kit & Flegal, 2014). Studies suggest that the decline in obesity

prevalence rates in 2 to 5 year old children is partly due to federal nutrition programs created for low-income preschool children (CDC, 2013). In general, these prevalence rates highlight the necessity for intervention programs to target overweight and obesity in youth. Figure 1 shows trends in obesity rates by age groups utilizing data from National Health and Nutrition Examination Surveys (NHANES) (Child Trend Databank, 2014; Fryar, Carroll, & Ogden, 2014; Ogden, Carroll, Lawman, et al., 2016)

Figure 1



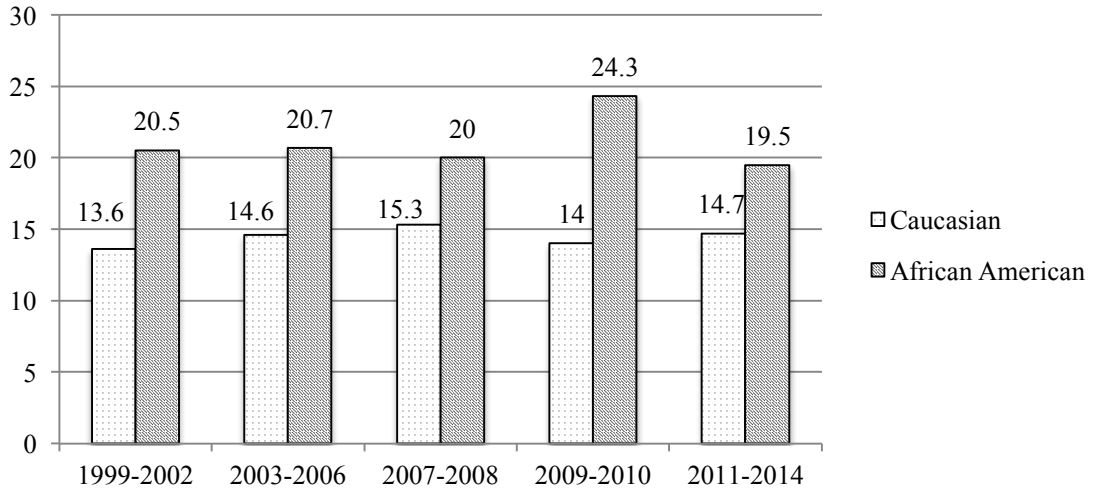
Note: Obesity is BMI at or above the sex- and age-specific 95 percentile based on the 2000 CDC growth charts. Adapted from "Overweight children and youth" by Child Trends Databank Available at: http://www.childtrends.org/?indicators=overweight-children-and-youth. Sources: Data come from National Health and Nutrition Examination Surveys (NHANES); Ogden, Carroll, Lawman, et al., 2016.

Racial/ethnic differences. Many studies have looked at prevalence of overweight and obesity across various racial and/or ethnic groups and have found the greatest rates among Hispanic youth, followed by non-Hispanic Black youth in the United States (Boonpleng et al., 2013; CDC, 2015a; Ogden, Carroll, Kit & Flegal, 2014; Ogden, Carroll, Lawman, et al., 2016). In this paper the term "youth" refers to children and adolescents, and ethnic groups are classified as African Americans (referred as non-

Hispanic Black) and Caucasians (referred as non-Hispanic White), since the literature uses these terms interchangeably.

African American youth have a greater likelihood of developing obesity, in addition to developing obesity at a faster rate compared to Caucasian youth (Baskin, Ahluwalia, & Resnicow, 2001; Rendall, Weden, Fernandes, & Vaynman, 2012; Ogden, Carroll, Lawman, et al., 2016). Ethnic minority youth (i.e., African American minorities combined with other ethnic minorities) and low-income youth are more likely to develop obesity, as well as experience obesity-related health problems (Ogden, Carroll, Kit, & Flegal, 2012). Figure 2 shows percentages of obesity in African Americans and Caucasians from NHANES data. Although figures are only displayed for prevalence rates of obesity, prevalence rates of overweight have increased in both Caucasian and African American youth over the past few decades. African American males have exhibited the greatest increases in overweight from surveys conducted over the last 14 years (Skinner & Skelton, 2014).

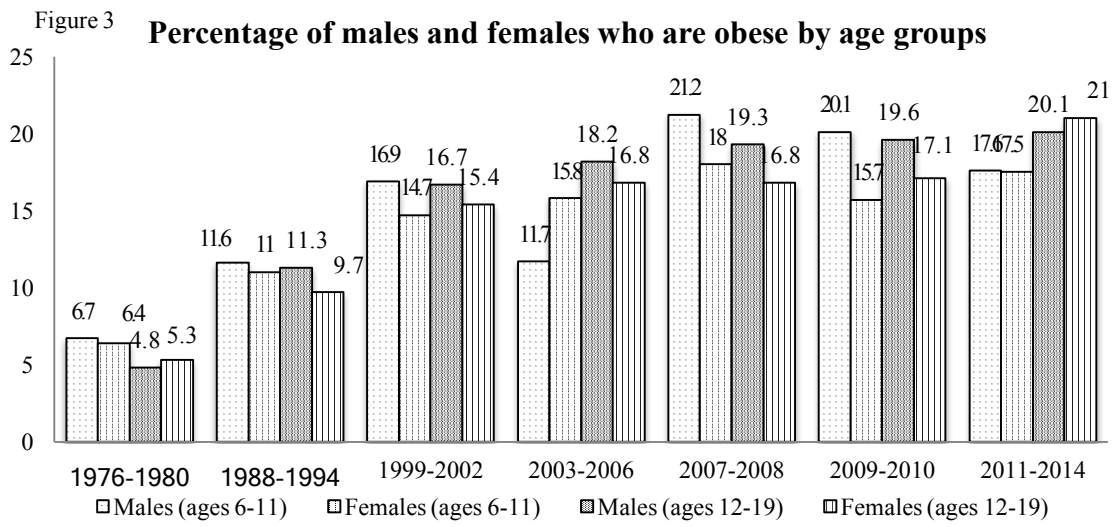
Figure 2 **Percentage of African American and Caucasian youth who are obese**



Note: Obesity is BMI at or above the sex- and age-specific 95 percentile based on the 2000 CDC growth charts. Data from 1999-2002 consists of youth between the ages of 6 and 19, while all other data points include youth 2-19 years. Sources: Data come from NHANES (Ogden, Carroll, & Flegal, 2008; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010; Ogden, Carroll, Kit, & Flegal, 2012; Ogden, Carroll, Kit, & Flegal, 2014; Ogden, Carroll, Lawman, et al., 2016; Hedley, Ogden, Johnson, Carroll, Curtin, & Flegal, 2004).

Sex differences. Current obesity prevalence rates are similar for children and adolescents regardless of sex (Fryar, Carroll, & Ogden, 2016; Ogden, Carroll, Kit & Flegal, 2014; Ogden, Carroll, Lawman, et al., 2016). However, this has not always been the case. Specifically, the prevalence rate of obesity has increased in girls, and is now similar to rates of obesity in boys. Figure 3 shows trends in obesity rates by sex and age groups utilizing data from NHANES (Child Trends Databank, 2014; Fryar, Carroll, & Ogden, 2014; Fryar, Carroll, & Ogden, 2016; Ogden, Carroll, Lawman, et al., 2016). Table 1 shows trends in obesity rates by sex and ethnic groups using surveys from 1988-1994, and 1999-2000 through 2013-2014 (Fryar, Carroll, & Ogden, 2016). Although not displayed, the prevalence rate of overweight has also increased since the 1970s and is similar across sexes (Fryar, Carroll, & Ogden, 2016; Ogden, Carroll, Kit, & Flegal, 2014).

Figure 3



Note: Obesity is BMI at or above the sex- and age-specific 95 percentile based on the 2000 CDC growth charts. Adapted from "Overweight children and youth" by Child Trends Databank Available at: http://www.childtrends.org/?indicators=overweight-children-and-youth. Sources: Data come from NHANES.

Table 1. Percentage of 2 to 19 year olds who are obese by ethnicity and sex

Survey years	Males		Females	
	Caucasian	African American	Caucasian	African American
1988-1994	9.7	10.6	8.6	14.5
1999-2000	10.9	16.4	11.1	21.4
2001-2002	15.0	15.5	12.7	19.5
2003-2004	17.8	16.4	14.9	23.8
2005-2006	13.4	18.3	12.2	24.4
2007-2008	15.6	17.3	14.9	22.8
2009-2010	16.1	24.3	11.7	24.3
2011-2012	12.6	19.9	15.6	20.5
2013-2014	15.9	16.8	14.6	20.9

Note: Obesity is BMI at or above the sex- and age-specific 95 percentile based on the 2000 CDC growth charts. Adapted from "Prevalence of overweight and obesity among children and adolescents: United States, 1963-1965 through 2013-2014" by Fryar, Carroll, & Ogden (2016). Data from CDC/National Center for Health Statistics, NHANES.

Factors contributing to pediatric obesity

Increases in obesity are related to biological mechanisms that are interacting with environmental changes. Since biology and genes do not change over a period of decades, the environment is contributing to increases in obesity prevalence rates. An ecological model can be useful for understanding childhood obesity (Bronfrenbrenner, 1986;

Davison and Birch, 2001; Birch & Ventura, 2009). Individual characteristics (psychological and biological factors) interact with multiple contexts (e.g., home and family, community and school, healthcare services), which are influenced by policies and incentives of the society at large (Bronfrenbrenner, 1986; Davison and Birch, 2001). For example, children's school environment can impact a child's weight status depending on availability of food (e.g., school lunches and snacks), physical education, and other opportunities provided to children.

Parental factors. Environment and behavior contribute to obesity; however, they are not the whole story. Parental weight status classified as overweight or obese has been associated with increased risk of their child's status being classified as overweight (Boonpleng et al., 2013). The relationship between parent and child weight status is related to both genetic and non-genetic factors (Barlow & the Expert Committee; 2007). This has been demonstrated in twin studies suggesting that genetic factors affect BMI, and multiple genes have been found to be associated with obesity risk (Maes, Neale, & Eaves, 1997; Silventoinen, Rokholm, Kaprio, & Sørensen, 2010), in addition to environmental factors being associated with weight status and weight gain (Boisvert & Harrell, 2013). Overweight parents are more likely to give their children high calorie snacks that place their children at risk of becoming overweight (Nguyen, Larson, Johnson, & Goran, 1996). In addition to parental weight status, parental eating behaviors can influence children's eating behaviors through modeling (Davison & Birch, 2001).

Parental psychological functioning and situational factors are other components that can impact children's weight status (Goodman & Brumley, 1990). Parental work demands and financial stress can also lead parents to select foods that are higher in fat

content and contain fewer nutrients due to lack of time to prepare foods or financial costs associated with healthier foods (Bluestone & Tamis-LeMonda, 1999). Sallis and colleagues (1992) suggest that children's physical activity level also varies depending on parental work schedules, income level, and ability to provide transportation for children to exercise after school.

Social and cultural norms impact parental perspectives and attitudes towards child-feeding behaviors (Patrick, Hennessy, & McSpadden, 2013). Thus, it is important to consider the role of familial, cultural and societal influences on parenting and childhood development. Parent-child feeding practices have been found to shape children's dietary practices. Pressure to eat and coercing children to eat all items off their plate has been associated with increased risk of obesity (Carper, Fisher, & Birch, 2000). When children are forced to continue eating despite not being hungry, their ability to acknowledge feelings of hunger and fullness is undermined (Carper, Fisher, & Birch, 2000). These strategies teach children to respond to environmental and emotional cues, rather than satiety cues (Ventura & Birch, 2008). Leahy and colleagues (2008) found that young children tend to eat similar amounts of food (volume of food on child's plate) at each meal regardless of calorie changes in meals. In general, parents who have knowledge of healthy nutrition and eating behaviors are better able to model healthy behaviors, versus parents without that knowledge. The type of environment that the child is in also influences the type of healthy eating and exercise behaviors that a child can engage in (Davison, Lawson, & Coatsworth, 2012).

Environmental factors can influence parenting styles and practices depending on what foods and restaurants are nearby, as well as providing or restricting access to

exercise in safe places within their neighborhood (Patrick, Hennessy, & McSpadden, 2013). When neighborhoods are restrictive and do not provide a safe environment for children to play, parents may allow their children to engage in greater sedentary behaviors (e.g., watching television, playing video games) contributing to increased risk of obesity (Marshall, Gorely, & Biddle, 2006).

Physical activity, sedentary behaviors and diet. Troiano and colleagues (2008) measured physical activity by accelerometers and found that approximately 42% of children between the ages of 6 and 11 years engaged in physical activity of at least moderate or greater intensity level five days a week, compared to only 8% of adolescents. Measuring physical activity by an accelerometer has limitations, such as not being able to count swimming and bicycling. Troiano et al., (2008) also acknowledged that inconsistently wearing the accelerometer could underrepresent participants' engagement in physical activity. Another study assessed high school students physical activity by self-report questionnaires and defined physical activity as "doing any kind of physical activity that increased their heart rate and made them breathe hard some of the time for a total of at least 60 minutes per day on 5 or more days during the 7 days before the survey" (Kann et al., 2014, p. 36). The prevalence of high school students engaging in physical activity ranged from 43.9% to 50.6%, with 9th and 10th grade students reporting greater engagement than 11th and 12th grade students. A large-scale study in Minnesota assessed adolescents' levels of engagement in physical activity via surveys administered in public schools. This study found that regardless of sex, African American adolescents were less likely to engage in physical activity than Caucasians adolescents (Neumark-Sztainer et al., 1999). In general, although measuring actual physical activity is difficult and different

studies have found different findings, it seems that pre-adolescents engage in more physical activity than adolescents, and ethnic differences may also contribute to differences in activity level.

Fakhouri and colleagues (2013) found that African Americans in their study had reported significantly higher rates of screen time compared to Caucasians. Higher amounts of television watching in youth are associated with higher BMI (Landhuis, Poulton, Welch, & Hancox, 2008; Mamun, O'Callaghan, Williams, & Najman, 2013) and greater likelihood of being overweight or obese in adulthood (Boone, Gordon-Larsen, Adair, & Popkin, 2007; Mamun, O'Callaghan, Williams, & Najman, 2013; Parsons, Manor, & Power, 2008; Viner & Cole, 2005). Dennison and Edmunds (2008) acknowledged that studies have not identified thresholds for an association between amount of time spent watching television with obesity risk, but indicated that the American Academy of Pediatrics (AAP, 2013) recommends no more than one to two hours of screen time per day. Potential reasons for greater amounts of television viewing being linked to increases in BMI include more exposure to food advertisements, less attention paid to the amount of food consumption and satiety cues (especially if snacking or eating meals while watching television), in addition to decreased opportunities to engage in physical activity (Dennison & Edmunds, 2008). Physical activity plays a major role in weight maintenance programs and is one of the strongest predictors of long-term maintenance of weight loss (Marshall, Biddle, Gorely, Cameron, & Murdey, 2004). It is recommended that youth engage in at least one hour of physical activity per day because it can help control weight, build healthy bones and muscles, increase strength and

endurance, reduce stress, increase self-esteem, and may improve cholesterol and blood pressure levels (U.S. Department of Health and Human Services, 2008).

Health complications of pediatric obesity

Across a wide range of measures and organ systems, childhood obesity is associated with significant health problems (e.g., hypertension and high cholesterol) (Bastard et al., 2006; Falkner, Hassink, Ross, & Gidding, 2002). Consequently, youth who are obese are at greater risk for abnormal glucose tolerance and insulin resistance, type 2 diabetes, metabolic syndrome, osteoarthritis, sleep apnea and several types of cancer (Kimm & Obarzanek, 2002; Cook, Weitzman, Auinger, Nguyen, & Dietz, 2003; Freedman et al., 2005; Office of the Surgeon General, 2010; Kushi et al., 2012; Li, Ford, Zhao, & Mokdad, 2009; Dietz & Gortmaker, 2001; Banis et al., 1988; Daniels, 2006; Puhl, 2011).

Higher BMI scores in youth are associated with greater risk for obesity in adulthood (Freedman, Mei, Srinivasan, Berenson, & Dietz, 2007; Freedman et al., 2005; Singh, Mulder, Twisk,Van Mechelen, & Chinapaw, 2008; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). Obesity in adulthood is more challenging to treat and associated with severe health conditions, such as heart disease and metabolic syndrome (Biro & Wien, 2010; Freedman et al., 2005; Freedman et al., 2009). Thus, early management of obesity in children and adolescents is critical to reduce long-term negative health consequences.

Psychological correlates with obesity

Childhood obesity is associated with several negative psychological outcomes (e.g., higher risk for depression, low self-esteem, body dissatisfaction, and anxiety) (Dietz & Gortmaker, 2001; Buddeberg-Fischer, Klaghofer, & Reed, 1999; Daniels, 2006; Puhl, 2011). Obese adolescents who are teased about their weight are more likely to report suicidal ideation and suicidal attempts compared to average weight peers (Eaton, Lowry, Brener, Galuska, & Crosby, 2005; Falkner et al., 2001). Obese youth are also at greater risk of experiencing peer victimization (Dietz & Gortmaker, 2001; Janicke et al., 2007; Janssen, Craig, Boyce & Pickett, 2004; Latner & Stunkard, 2003). Overweight and obese youth, specifically, girls between the ages of 11 and 16 years and boys between the ages of 11 and 14 years are more likely to be victims of aggression compared to their normal-weight peers (Janssen, Craig, Boyce, & Pickett, 2004). Janicke and colleagues (2007) found that 15% of overweight children and adolescents in their study (n = 96) reported experiencing peer victimization everyday, while more than half of participants reported experiencing some peer victimization. Gray and Janicke (2009) defined peer victimization as "the experience of overt (e.g., pushing, hitting, kicking) or relational (e.g., gossiping, teasing, ignoring, excluding) forms of aggression as perpetrated by an individual or a group of peers" (p. 721).

Puhl and Latner (2007) defined weight stigmatization as "negative weight-related attitudes and beliefs that are manifested by stereotypes, bias, rejection, and prejudice toward children and adolescents because they are overweight or obese" (p.557). In studies that asked children to rank order six drawings according to how well they liked each child (healthy child, children with visible disabilities, and an obese child), children

consistently ranked the obese drawing last (Latner & Stunkard, 2003; Richardson, Goodman, Hastorf, & Dornbusch, 1961). It is noteworthy that the stigmatization of obese children first noted in 1961 persisted in 2003 even though obesity became more normative (Richardson et al., 1961; Latner & Stunkard, 2003).

Kraig and Keel (2001) also examined weight-based stigmatization in children. Children were presented with six pictures focusing only on body weight (thin, average and chubby) and sex, and did not include drawings of children with disabilities. Girls and boys consistently rated drawings of chubby children least desirably when presented with six pictures. Children's BMI was not found to be related to illustration ratings. This study provides further evidence that peers rate chubby or obese children to be less desirable than thin or average weight children, despite the raters BMI or weight status. Children may learn early on to exclude peers due to their physical appearance, which may contribute to overweight children experiencing low self-esteem, withdrawal, depression and peer victimization. However, it is not possible to determine if weight status causes emotional distress and peer victimization or vice versa.

Weight-related teasing may also contribute to deleterious effects on youth's physical health and psychological functioning (Libbey, Story, Neumark-Sztainer, & Boutelle, 2008). One study found that overweight and obese adolescents who experienced weight-related teasing by peers or family were more likely to experience disordered eating thoughts and behaviors (e.g., eating in secret, binge eating, vomiting). Higher frequency of teasing was also associated with lower levels of self-esteem, higher levels of depression, anxiety, and anger (Libbey et al., 2008). A limitation of this study is that it did not incorporate multiple informants to gain a more comprehensive

understanding of how psychosocial functioning is impacted in overweight and obese youth. In general, it is important to assess psychological functioning in overweight and obese youth due the important role it can play in achieving a healthier lifestyle.

Psychological maladjustment. Zeller and colleagues (2004a) examined the prevalence of psychological maladjustment in obese youth attending an outpatient pediatric weight management clinic utilizing the Behavior Assessment System for Children, Second Edition (BASC-2) measure. More than two thirds of the participants had scores that fell in the "at risk" or "clinically significant" range for internalizing, externalizing and adaptive skills scales assessed by parent-proxy reports, which is a rate that is higher than published norms in the general population. Additionally, mothers' reported that their adolescents had scores that fell within the "at risk" range for withdrawal, and youth were rated to have "at risk" scores for depression and somatization. Lower socioeconomic status (SES), which was assessed by insurance status (i.e., Medicaid vs. insured/self-paying), was associated with "at risk" levels of externalizing, internalizing and adaptive skills in parent-proxy reports for children but not adolescents. It should be noted that Zeller and colleagues (2004a) only examined baseline data for youth attending a weight management clinic and did not examine post intervention data. The sample also consisted of primarily Caucasian participants, limiting the generalizability of the findings.

Self-Esteem. Low self-esteem can impact an individual's ability to engage in exercise, set goals (e.g., to lose weight), and have self-confidence (Dennis & Goldberg, 1996). Studies examining the relationship between weight status and low self-esteem have found mixed results (Friedlander et al., 2003; Wadden, Foster, Brownell, & Finley,

1984). For example, one study that recruited 716 Caucasian youth between 3rd and 8th grade attending a parochial school found no differences between obese youth or normal weight youth in self-esteem ratings (Wadden, Foster, Brownell, & Finley, 1984). Another study that consisted of primarily African American adolescents also found no significant differences between overweight or normal weight adolescents in self-esteem ratings, however, obese adolescents reported significantly lower self-esteem scores compared to overweight and normal weight peers (Witherspoon et al., 2013). A different study found that overweight children had significantly lower self-esteem scores compared to normal weight children (Friedlander et al., 2003). One study found that overweight children who felt they were responsible for being overweight had lower levels of self-esteem, compared to children who attributed their overweight to external factors (Pierce & Wadle, 1997). Further, the majority of children in this study with low levels of self-esteem experienced weight-based teasing, and believed that if they lost weight then they would no longer be teased (Pierce & Wardle, 1997).

Another study found that adolescents who were teased about weight related issues had significantly higher levels of depression (Cohen's d = -0.78) and lower self-esteem (Cohen's d = 0.66) compared to participants who were not teased, after controlling for participant BMI (Greenleaf et al., 2012). Additionally, participants who were teased held beliefs that they were less competent in their physical abilities than participants who were not teased. A strength of this study was the inclusion of participants in all weight categories, since weight related teasing was associated with lower self-esteem and higher levels of depression regardless of actual body weight. Other studies examining associations between weight-based teasing, psychological well-being and engagement in

healthy lifestyle behaviors (e.g., regular exercise, eating healthy meals, controlling portion size) have found mixed results. Some studies have found that weight-based teasing is associated with reduced exercise and healthy eating behaviors (Dennis & Goldberg, 1996), while other studies have found that weight-based teasing and low levels of self-esteem are associated with greater motivation to achieve a healthy weight status (Stern et al., 2006).

Youth who believe they are responsible (or take some responsibility) for their weight status may be more likely to engage in healthy eating and exercise behaviors. In general, youth's attributions about factors contributing to their obesity could impact their emotional well-being (Pierce & Wardle, 1997). Internalization of stigma by overweight and obese children is associated with greater symptoms of psychological distress. Since weight management programs educate youth and their families about factors contributing to obesity and strategies to engage in healthier lifestyle choices, it is possible that self-esteem may change throughout treatment programs since youth are learning to take more responsibility for their health condition by increasing physical activity and limiting unhealthy foods.

Ethnicity and psychosocial functioning. African American youth are more likely to be overweight and obese compared to Caucasian youth (Baskin, Ahluwalia, & Resnicow, 2001; Rendall et al., 2012). Overweight and obese African American adolescents perceive themselves as being of normal weight more often than overweight and obese Caucasian adolescents (Neumark et al., 2002). Smolak (2004) suggested that African American adolescents are less affected by the Western thin ideal. In general, research has supported the notion that overweight African American youth are more

satisfied with their bodies, have higher levels of self-esteem and self-competence compared to Caucasian peers (Mustillo, Budd, & Hendrix, 2013; Parnell, Sargent, Thompson, & Duhe, 1996; Zeller et al, 2004a).

Cultural factors and parental perceptions of youth's weight status may partially explain why overweight African American youth may be more accepting of their weight status compared to Caucasian youth. Jain and colleagues (2001) examined low-income mothers' perceptions of factors that contribute to childhood overweight. Mothers believed that overweight status is primarily due to genetic factors, and felt that changing environmental factors (exercise and diet) would not result in weight loss. Similarly, Stern and colleagues (2004) found that in their sample of overweight African American adolescent girls, mothers reported that healthy behaviors such as exercise and eating healthy were undesirable because their impact would be inconsequential on their daughters' weight status. Other studies have found that parents of overweight and obese youth tend to underestimate their child's weight (Baughcum, Chamberlin, Deeks, Powers, & Whitaker, 2000; De La O et al., 2009; Maynard, Galuska, Blanck, & Serdula, 2003; Young-Hyman, Herman, Scott, & Schlundt, 2000). Thus, overweight African American adolescents may be more accepting of their weight compared to Caucasian adolescents, due to the belief that it is more out of their control and fits in with their cultural norms.

Compared to overweight African American adolescent girls with lower levels of self-esteem, overweight African American adolescent girls with higher levels of self-esteem were less likely to engage in regular exercise and believed their weight was less of a problem (Stern et al., 2004). Additionally, African American mothers who perceived their overweight or obese daughters to have high levels of self-esteem, were more likely

to minimize their daughters weight as being problematic and less likely to control their daughters' food selection. Thus, high versus low levels of self-esteem in African American adolescents contributed to differing levels of motivation to achieve a healthy weight status.

Zeller and colleagues (2004a) observed that obese Caucasian adolescents self-reported lower self-esteem than obese African American adolescents. However, ethnic differences were not found in child self-report or parent proxy-report measures. These finding are aligned with other studies suggesting that Caucasian youth experienced greater psychological distress than African American youth (Mustillo, Budd, & Hendrix, 2013). Thus, ethnic differences may emerge during adolescence. However, studies are limited by only assessing psychological functioning at one time point. Additionally, it is important to examine if this pattern is consistent after weight management treatment. Limited information is available on lifestyle maintenance programs that consist of primarily ethnic minority participants.

Health-related quality of life in overweight and obese youth

Numerous studies have found that obesity in youth is associated with lower health-related quality of life (HRQOL) (Buttitta, Iliescu, Rousseau, & Guerrien, 2014; Keating, Moodie, & Swinburn, 2011; Pinhas-Hamiel et al., 2006; Varni, Burwinkle, Katz, Meeske, & Dickinson, 2002; Wallander et al., 2009; Williams, Wake, Hesketh, Maher, & Waters, 2005). HRQOL measures are commonly used to assess patient health and well-being (Varni, Burwinkle, & Lane, 2005). More specifically, HRQOL is a multidimensional construct that incorporates multiple dimensions of functioning, such as emotional, physical, academic, and social well-being in order to assess the effect of a

health condition on the youth's overall functioning (Friendlander et al., 2003; Janicke et al., 2007). HRQOL measures can be assessed via self-report and/or parent proxy-report.

Several studies have found that obese youth reported significantly lower HRQOL in all domains (e.g. physical, psychosocial, emotional, social and school) of functioning compared to non-obese children and adolescents (Schwimmer, Burwinkle, & Varni, 2003; Varni, Burwinkle, Katz, Meeske, & Dickinson, 2002; Zeller & Modi, 2006). Specifically, obese youth displayed impaired HRQOL scores, assessed by self-report and parent proxy-reports on the Pediatric Quality of Life Inventory (PedsQL4.0), compared to published norms for non-obese children and adolescents (Zeller & Modi, 2006). Another study found that pediatric obesity patients reported significantly lower overall HRQOL, physical health, psychosocial health, emotional functioning, and social functioning compared to non-obese children, with medium to large effect sizes (Varni, Limbers, & Burwinkle, 2007). The same pattern of results was found for parent proxy-reports, except the effect size for the physical health domain was in the small to medium range. Further, more severe levels of obesity were associated with lower HRQOL scores. Janicke and colleagues (2007) also found that most dimensions of HRQOL were lower in their sample of overweight children and adolescents, compared to non-overweight children. Additionally, increases in depressive symptoms assessed by child-reports were associated with worse overall HRQOL by both parent proxy-report and self-report.

Ethnicity, psychological functioning, and HRQOL. Pediatric obesity studies have yielded mixed results with regards to ethnic differences in psychosocial functioning in overweight and obese youth. Some studies found that Caucasian adolescents reported lower HRQOL than African American adolescents (Philips et al., 2012). However, other

studies did not find significant differences in HRQOL scores between African American or Caucasian groups in their sample of overweight (Janicke et al., 2007) or obese youth (Schwimmer, Burwinkle, & Varni, 2003).

Failure to detect differences in HRQOL scores between different ethnic groups could be due to the sample size, low power, and weight categories included/analyzed in studies (i.e., including only obese or only overweight patients). Previous studies have found that obese youth have more impaired HRQOL scores compared to overweight youth (Keating, Moodie, & Swinburn, 2011; Pinhas-Hamiel et al., 2006; Williams et al., 2005). Inclusion of overweight and obese youth may lead to varying HRQOL outcomes for different ethnic groups.

Interventions for pediatric obesity

Losing weight requires that an individual reduce energy intake and/or increase energy expenditure. Less common interventions include medication and surgery. More frequently utilized treatment approaches for pediatric obesity consist of behavioral interventions for youth and their families and consist of one or more of the following target areas: dietary changes, increases in physical activity, or decreases in sedentary behaviors (Acosta, Manubay, & Levin, 2008; Wilfley et al., 2007). These interventions can educate and encourage youth and their families to engage in healthy lifestyle choices that can be practiced and maintained throughout their lives.

Diet. Dietary interventions involve educating youth and their families on nutritious food choices, limiting caloric and fat intake, reading labels, minimizing eating out and avoiding high energy dense foods and sugary beverages (Epstein & Squires, 1988; Epstein, Paluch, Beecher & Roemmich, 2008; Steele et al., 2012). The United

States Department of Agriculture (USDA, 2010; USDA 2015) advises that youth consume foods in nutrient-dense forms. Nutrient-dense foods contain vitamins and minerals, while also minimizing added solid fats, added sugars, and refined starches. In general, it is important for families to collaborate with health care providers to enable youth to develop healthy eating and exercise behaviors to reach and maintain a healthy weight status throughout their life.

Dietary Approaches. Very low calorie diets (VLCD) are used sparingly to treat severely obese youth, and should be conducted under appropriate medical supervision (Sothern, Udall, Suskind, Vargas, & Blecker, 2000; Suskind et al., 2000). These diets are approximately 4 to 12-weeks and recommended with close medical supervision for short-term management of pediatric obesity (Figueroa-Colon, von Almen, Franklin, Schuftan, & Suskind, 1993).

Low carbohydrate weight loss diets, such as the Atkins diet, have been found to decrease total cholesterol and triglycerides levels (Demol et al., 2009; Sondike, Copperman, & Jacobson, 2003). However, side effects reported by youth following these diets have included headaches, nausea, weakness and fatigue. In general, weight loss can result from reduced calorie diets regardless of macronutrient content (Foster et al., 2003; Sacks et al., 2009; USDA & Health and Human Services, 2010). However, low-carbohydrate diets are difficult for participants to adhere to over long periods of time (i.e., 12-months) (Foster et al., 2003; Sacks et al., 2009).

Epstein and Squires (1988) developed the *Traffic Light Diet* to promote a healthy diet and decrease energy intake for overweight children and their parents. This program incorporates behavioral techniques such as goal setting to increase healthy foods,

stimulus control techniques to limit unhealthy foods, positive reinforcement, as well as self-monitoring and contingency management to track food and beverage intake throughout the day (Epstein, Paluch, Beecher, & Roemmich, 2008; Sothern et al., 2000). The *Traffic Light Diet* is based on the food guide pyramid and categorizes foods into different colors. Pediatric obesity intervention studies frequently utilize the *Traffic Light Diet* or revised versions of this program, yielding beneficial outcomes (Epstein & Squires, 1988; Epstein, Paluch, Kilanowski, & Raynor, 2004; Epstein, Paluch, Gordy, & Dorn, 2000; Epstein, Paluch, Beecher, & Roemmich, 2008; Goldfield, Epstein, Kilanowski, Paluch, & Kogut-Bossler, 2001; Steele et al., 2012; Sondike, Copperman, & Jacobson, 2003).

The American Dietetic Association conducted a systematic review to assess the effectiveness of pediatric overweight and obesity intervention programs in families and in schools. This review concluded that nutrition education/dietary counseling is most effective when conducted within a multicomponent, family-based program that also incorporates behavioral modification or physical activity, compared to nutrition services alone (ADA, 2006).

Physical activity and sedentary behaviors. Consistent and frequent moderate to vigorous-intensity physical activity is associated with beneficial physical and psychological outcomes (Strong et al., 2005; CDC, 2015b). The U.S. Department of Health and Human Services (2010) recommends that youth between the ages of 6 and 17 years engage in age-appropriate physical activity for at least 60 minutes per day. Physical activities can be promoted in home, school, community and health care settings. Reducing sedentary behaviors can also lead to increases in physical activity and improve

overall health (Strong et al., 2005). Screen time should be limited to an hour and half or less per day (American Academy of Pediatrics (AAP), 2016).

Recommendations to treat childhood obesity. In response to the epidemic of childhood and adolescent obesity, the American Medical Association (AMA), along with the Department of Health Resources and Service Administration, and the CDC united to form an Expert Committee and provided updated recommendations for assessment and treatment of overweight and obesity (Barlow and the Expert Committee, 2007); recommendations consisted of four stages of treatment depending on severity of overweight or obesity. Stages 1 and 2 are largely geared towards primary care physicians (PCP) as a starting place to reduce the prevalence of obesity. However, due to minimal progress commonly seen as well as barriers to treatment delivered from PCP offices, stage 3 is highly recommended as a comprehensive treatment approach.

Stage 3 (comprehensive multidisciplinary intervention) is intended for youth who are not able to reduce BMI and weight status after 3-to-6-months of engaging in stage 2 (Barlow and the Expert Committee, 2007). Stage 3 involves more frequent visits, increased intensity of behavior changes, and increased involvement from more specialists. Stage 4 (Tertiary Care Intervention) is recommended for severely obese youth (depending on maturity level and motivation to follow through with treatment goals), and includes medications (e.g., Sibutramine, Orlistat), very low-calorie diets, and bariatric surgery.

Stage 3 programs have yielded promising results (Delamater, Jent, Moine, & Rios, 2008). The U.S. Preventive Services Task Force (USPSTF, 2010) indicated that comprehensive multidisciplinary intervention programs that utilize a moderate intensity

level or higher (i.e., patient and family level of involvement greater than 25 contact hours over 6-months) are effective for obese children 6 years and older. Specifically, these programs demonstrated a healthier weight status 12-months post intervention. Interventions that consisted of low intensity involvement (less than or equal to 25 hours over 6-months) were not found to produce significant changes in weight status.

Interventions should promote healthy lifestyle behaviors by increasing energy expenditure (e.g., increasing physical activity, decreasing sedentary behaviors) and decreasing energy intake (e.g., dietary changes) (Delamater, Jent, Moine, & Rios, 2008; Steele et al., 2012). In order for overweight and obese youth to maintain a healthier weight throughout development, it is important for interventions to modify and replace unhealthy eating and exercise behaviors with healthy lifestyle behaviors (Epstein, Myers, Raynor, & Saelens, 1998).

Components of pediatric multidisciplinary intervention programs

It is recommended that pediatric multidisciplinary obesity programs incorporate behavior modification strategies that focus on monitoring dietary intake, goal setting for physical activity and diet, and contingency management (Barlow and the Expert Committee, 2007). The implementation of structured diet and physical activity should result in negative energy balance. Assessments of BMI, diet and physical activity should be collected at intake appointments and throughout the program to track progress. Programs are also recommended to examine the patient and family's motivation and readiness to make behavioral changes. Implementation of stage 3 programs should involve a multidisciplinary team consisting of a dietician, psychologist or other mental

health care provider, physical therapist, and physician who have experience with childhood obesity, in addition to participation of parents.

Cognitive and behavioral techniques. Due to difficulty with treatment adherence and low success rate in maintaining weight loss in obesity treatment programs, dietary recommendations are most effective when paired with behavioral change components (Epstein, Wing, Steranchak, Dickson, & Michelson, 1980; Sothern et al., 2000). Effective programs often include cognitive restructuring and behavior strategies (e.g., self-monitoring of caloric intake, positive reinforcement, goal-setting, stimulus control and behavioral contracting) to support changes in physical/lifestyle activity, sedentary behavior, and diet (Berkowitz et al., 2013; Delamater, Jent, Moine, & Rios, 2008; Steele et al., 2012).

Outcomes from pediatric obesity interventions

Lifestyle treatment programs may result in slight weight loss or weight gain prevention due to the short time frame; thus, collecting multiple outcome measures may be a more accurate way to assess the effectiveness of programs (Barlow and the Expert Committee, 2007; Glasgow et al., 2005; Kitzmann et al., 2010; Klesges et al., 2008). For example, including measures on eating behaviors and physical activity may produce more obvious short-term changes in weight-related behaviors (Barlow and the Expert Committee, 2007; Kitzmann et al., 2010). Additionally, Glasgow et al., (2005) recommends collecting measures on patient perspectives, such as HRQOL, since they are critical for both real-world implication at both the clinical and policy level.

HRQOL measures can provide evidence of beneficial patient responses to treatment, as well as raise awareness of potential detrimental outcomes related to the

diagnosis of obesity. Reporting unfavorable intervention effects, such as decreases in self-esteem or reduced HRQOL can lead to alterations and improvements in programs (Klesges et al, 2012). Thus, following previous recommendations, this study examined HRQOL and psychosocial functioning assessed by self-report and parent proxy-report as outcome variables.

Self-esteem outcomes. Previous weight management studies have found improvements in self-esteem at post-treatment (Lowry, Sallinen, & Janicke, 2007). Specifically, a review of 21 studies examining the effects of pediatric weight management programs on self-esteem revealed that 18 studies found improvements in self-esteem or components of self-esteem after program completion (Lowry, Sallinen, & Janicke, 2007). Participants in intervention groups had greater gains in self-esteem compared to controlled studies (10 studies included control groups). However, three of these control groups consisted of normal weight peers (Barton et al., 2004; Foster, Wadden, & Brownell, 1985; Walker, Gately, Bewick, & Hill, 2003) while the other comparison groups utilized samples of overweight or obese participants. Another study found improvements in adolescents overall self-concept at 1-year post completion of a weight management intervention, however, these gains were not maintained at the 2-year follow up assessment (Savoye et al., 2005). One study found decreases in self-esteem post completion of a weight management program (Cameron, 1999). The inconsistent results of weight management programs on self-esteem ratings highlight the importance of continuing to assess self-esteem ratings in overweight and obese youth post treatment completion.

HRQOL outcomes. Previous weight management studies have also found improvements in HRQOL (Pratt, Lazorick, Lamson, Ivanescu, & Collier, 2013; Steele et al., 2012). One study found that compared to youth who received a brief family intervention (i.e., 3 visits over 10 weeks), youth who completed a 10-week family-based group intervention program experienced clinically significant increases in HRQOL scores at 12-month post intervention assessed via a self-report measure (Steele et al., 2012). Parent proxy-reports indicated statistically significant increases in HRQOL scores at post-treatment in youth who participated in the 10-week group intervention. However, other studies have failed to find improvement in HRQOL scores. One study found that parent and child reports of HRQOL scores did not significantly change from baseline to post-test or follow up assessment in either group (Lochrie et al., 2013). This study acknowledged that HRQOL scores were in the normative range at the start of treatment, which could be due to using an overweight and obese community sample where participants were not seeking treatment, which differs from a clinical sample where participants seek treatment. Previous research has suggested that clinical samples consist of treatment seeking families who usually present with more severe psychopathology/ symptomatology compared to community samples (Kolotkin et al., 2006).

Kolotkin and colleagues (2006) assessed HRQOL utilizing a weight specific measure in adolescents between the ages of 11 and 19 years (M = 14.0) attending a weight loss intervention. Adolescents HRQOL significantly improved from baseline to post-intervention, in all areas of HRQOL, with effect sizes ranging from 0.41 to 0.75 (Kolotkin et al., 2006). Pratt and colleagues (2013) examined changes in HRQOL in children and adolescents attending an integrated pediatric obesity treatment program over

three clinic visits (i.e., approximately 5.5 months between visit one and visit three). Results revealed that youth's HRQOL scores significantly increased from visit one to visit three. Additionally, parent proxy-reports revealed increases in HRQOL scores over time. This study emphasized the importance of examining HRQOL in obese youth, since HRQOL scores significantly improved over time despite minimal changes in zBMI scores.

zBMI Scores. Studies have found inconsistent findings with regards to reduction in zBMI scores after completing weight management treatment programs. Lochrie and colleagues (2013) found that in their sample of school age children with average zBMI scores of 2.20, the intervention group had significantly lower zBMI scores at post-treatment (M = 2.02) and 12-month follow up *(*M = 1.97), compared to the control group (baseline: M = 2.12, follow up: M = 2.07), with small to medium effects at post-treatment and 12-month follow up (Cohen's d = .27). The intervention group was a family-based lifestyle program that consisted of 14 sessions over 6 months. The program incorporated components on diet, physical exercise, behavior modification, self-monitoring, problem solving, education on medical consequences of obesity, and psychological functioning (e.g., stress management, peer pressure and teasing). The control group attended a one-hour group session led by a registered dietician who provided educational services on nutrition and physical activity recommendations as well as resources for weight management in the community. Another study found that obese adolescents (n = 25) achieved significant reductions (7.7%) in zBMI scores post completion of a 1-year comprehensive weight management program (baseline: M = 2.49, 1-year: M = 2.30), and maintained some weight loss at the 2-year follow up assessment (M = 2.29) (Savoye et

al., 2005). Between years 1 and 2, approximately 24% of participants dropped out of the program. Thus, it is possible that results may have been different if all participants remained in the study at the 2-year follow-up. The intervention used in Savoye et al., (2005) was reexamined in a randomized control trial with an ethnically diverse sample (Savoye et al., 2007). Participants assigned to the weight management intervention group significantly reduced percentage of body fat (4%) and BMI scores at 6 and 12-month assessments (Baseline M = 35.8, BMI change of -2.1 and -1.7), compared to the control group that demonstrated increases in these measures (Baseline M = 36.2, BMI change of 1.1 and 1.6).

Attrition rates. Pediatric weight management programs have documented attrition rates that range from 15% to 73% (Jelalian et al., 2008; Lochrie et al., 2013; Skelton, Goff, Ip, & Beech, 2011; Zeller et al., 2004b). Factors associated with attrition rates are ethnic minority status, residing with a single caregiver, older participant age, higher BMI, Medicaid insurance coverage, and greater depressive symptoms. Many programs consist of samples with mostly Caucasian participants at pre-treatment assessments.

A study assessing weight change and HRQOL in youth (n = 267) attending an integrated pediatric obesity treatment program (stage 2) over three clinic visits, which was approximately 5.5 months between visit one and visit three, reported attrition rates of 57.7% at visit two and 82% at visit three (Pratt et al., 2013). Barriers in transportation to and from clinic appointments were likely associated with higher attrition rates. Race, BMI category, weight loss, gender, and age were not predictors of attrition.

A randomized trial compared two different lifestyle modification programs (LMP) in a sample of obese adolescents, and was stratified by site (clinics located in Philadelphia, PA or Danville, PA) (Berkowitz et al., 2013). Participants were either assigned to the self-guided LMP or Group LMP. Both conditions were administered the same 12-month LMP curriculum and all participants were given the same manual. Both conditions were scheduled to attend six clinic visits, which included one-on-one time with the family (i.e., adolescent and parent) and the multidisciplinary team; however, the Group LMP program received an additional 17 group clinic sessions. Baseline measures were not statistically different for adolescents in either treatment condition or site. Adolescents in both groups experienced similar weight reductions at 12-month post intervention (average reduction of 1.2% of baseline BMI). However, 12-month retention rates differed significantly between intervention groups but not between sites. The self-guided LMP had a 60% retention rate, while the Group LMP had a 75% retention rate. A limitation of this study was that it did not report factors contributing to attrition rates. It should be noted that adolescents were able to receive up to $3 for each weekly diet and exercise record that was turned in. Thus, retention rates in the Group LMP program may have been higher due to the immediate reward that participants could receive upon turning in their weekly records.

A randomized control trial compared the effects of a weight management intervention group (n = 105) to a control group (n = 69), and found that attrition rates in the intervention group were 29%, compared to 36% in the control group at a 12-month assessment (Savoye et al., 2007). This trial initially included two intervention groups (structured meal plans or better food choices approach) as well as a control group.

However, the structured meal plan intervention group was discontinued and eliminated from analyses due to an 83% dropout rate at 6-months post baseline assessment. Dropout rates did not statistically differ across ethnic groups. Another study compared overweight and obese children and adolescents who were randomly assigned to a family based behavioral group intervention for 10 weekly sessions or a brief family intervention (BFI) for 3 sessions over 10 weeks (Steele et al., 2012). Ethnicity, HRQOL scores and zBMI scores were not significantly different at baseline assessment across treatment conditions. This study found similar attrition rates in both groups (36% vs. 39%) at a 1-year follow up assessment. Baseline measures (HRQOL scores, zBMI, and monthly income) did not significantly differ in the 11 families that dropped out prior to attending any treatment session in either intervention group from families that remained in either intervention. Participants in this study received compensation for completing pre and post treatment assessments ($20), as well as the 12-month follow up assessment ($50). Thus, retention rates may be higher in this study compared to others due to the high compensation rates. Steele and colleagues (2012) acknowledged that their study was underpowered, which limited interpretation of treatment effectiveness between the two groups and therefore, they were not able to indicate if one treatment was more effective than the other. Despite limitations, children in both intervention groups demonstrated reductions in zBMI scores, and clinically significant improvements in both children and adolescents HRQOL scores in the family based behavioral group intervention.

Age. Children tend to have more successful weight loss results compared to adolescents. (Presti, Lai, Hildebrandt, & Loeb, 2010; Steele et al., 2012). Children 12 years and younger have demonstrated short-term reductions in percent overweight of 5%

to 20% (Jelalian & Saelens, 1999; Wilfley et al., 2002). A study demonstrated significant decreases in zBMI scores at post treatment and 1-year follow up (0.30-0.32 SD) in children, while adolescents exhibited increases in zBMI scores (0.19-0.25 SD) at the 1-year follow up assessment (Steele et al., 2012). Specifically, children assigned to a family based behavioral group intervention (GI) for one session per week over 10 weeks or a brief family intervention (BFI) for 3 sessions over 10 weeks experienced reductions in zBMI (GI: baseline: $M = 2.26$, follow up: $M = 1.87$; and BFI baseline: $M = 2.20$, follow up: $M = 1.79$), in contrast to adolescents who experienced gains (GI: baseline: $M = 2.21$, follow up: $M = 2.29$; and BFI baseline: $M = 2.19$, follow up: $M = 2.58$).

A review of 21 studies found differential effects on self-esteem based on age. Specifically, younger children between the ages of 7 and 11 years were more likely to display improvements in self-esteem compared to older children between the ages of 12 and 18 years (Lowry, Sallinen, & Janicke, 2007). However, other studies have not found differences across age groups in overall HRQOL outcomes (Steele et al., 2012).

Ethnicity outcomes. Lowry and colleagues (2007) indicated that future research is needed to explore ethnic differences. Numerous studies consist of primarily Caucasian samples or do not report or analyze data on ethnicity (Dreyer Gillette et al., 2014; Kitzmann et al., 2010; Kihm, 2014). Some studies that have examined the effect of ethnicity on outcomes have not found differences related to ethnic groups (Goldschmidt et al., 2014; Savoye et al., 2007). Failure to find ethnic differences in these studies could be due to limited participant diversity or selected outcomes being assessed. Specifically, Goldschmidt and colleagues (2014) sample consisted of 68.7% of participants being Caucasian, while Savoye et al., (2007) assessed weight change and other medical

outcomes, but did not examine psychosocial outcomes. A study with primarily Caucasian adolescents (78.4%) lost approximately 4.3kg, compared to ethnic minority (undefined) adolescents who lost approximately 2.1kg (Jelalian et al., 2008).

Janicke and colleagues (2011) assigned obese children between the ages of 6 and 12 years whose parents were enrolled in Medicaid to a behavioral family intervention (BFI) group (i.e., attended one 90 minute session per week for 12-weeks) or an individual standard of care condition (i.e., three 60 minute intervention sessions over 12-weeks) across three treatment sites. The BFI group consisted of African American children (n = 10) with average BMI scores of 2.16 at baseline and experienced average increases of 0.05 BMI z-score units at post-treatment and 0.09 BMI z-score units at a 9-month follow up. Caucasian children (n = 10) in the BFI group had average BMI scores of 2.09 at baseline and experienced decreases in BMI z-score units of 0.03 at post-treatment and 0.08 at a 9-month follow up. Caucasian children (n = 6) assigned to the individual standard of care condition experienced minimal changes from baseline to post-treatment and follow-up. No conclusions could be made about African American children assigned to the individual standard of care condition because the sample size was too small (n = 2). Weight status did not significantly change from baseline to post-intervention and follow up for African American or Caucasian children in either group. This study should be interpreted cautiously because of the limited sample size.

Berkowitz and colleagues (2013) randomly assigned obese adolescents to two different lifestyle modification programs (LMP) (self-guided LMP or Group LMP) stratified by site (two clinics in PA). Adolescents recruited in one clinic (Children's Hospital of Philadelphia; n = 92) were predominantly African American (84.7%) from an

urban setting, while the other clinic (Geisinger Health System; $n = 77$) consisted of mostly Caucasian (96%) adolescents from a rural area. Baseline measures were not significantly different for adolescents in either treatment condition or site. Adolescents in both clinics and both groups experienced average weight reductions in BMI of 1.2% at 12-month post intervention. Thus, Caucasian adolescents in a rural setting and African American adolescents in an urban setting responded similarly to treatment. However, it should be noted that attrition rates were higher for participants in the self-guided LMP group. A limitation of this study is that it did not examine psychosocial responses to treatment conditions at both sites across ethnic groups.

Kolotkin and colleagues (2006) found that Caucasian youth reported significantly lower HRQOL scores for physical discomfort, body esteem, social life and total score compared to African American youth. These findings are consistent with other studies (Parnell, Sargent, Thompson, & Duhe, 1996; Zeller et al., 2004a), suggesting that African American adolescents may be more accepting of their weight status compared to Caucasian adolescents. Many studies included multiple ethnic groups but did not look at ethnic differences (Dreyer Gillette et al., 2014; Pratt et al., 2013; Steele et al., 2012). Thus, it is difficult to draw conclusions about the effect of ethnicity in response to treatment outcomes due to a number of studies that fail to report or analyze ethnic factors.

Sex outcomes. Kolotkin and colleagues (2006) found that females reported lower body-esteem and total HRQOL scores compared to males. Epstein and colleagues (2007) found that girls and boys had similar weight reductions at 6 and 12-months post intervention, but girls had greater reductions in zBMI scores at 5 and 10 years post intervention compared to boys. However, these findings should be interpreted with

caution since the majority of participants were girls and 5 and 10-year data were obtained for some participants via self-report assessments. Other studies have not found differences in outcome (e.g., zBMI, HRQOL) measures between sexes (Savoye et al., 2007; Steele et al., 2012) or analyzed and reported outcomes with regard to sex differences (Pratt et al., 2013).

Summary of findings

Several pediatric obesity studies have examined the effect of lifestyle treatment programs on weight loss, psychological functioning, and HRQOL, and have found inconsistent results. These studies suggest that psychological functioning and HRQOL may improve, remain the same or decrease post-intervention and at follow up assessments. These studies also suggest that children tend to experience greater reductions in weight compared to adolescents. Further, numerous studies highlight ethnic differences in psychological well-being and HRQOL in overweight and obese youth, however, few intervention studies analyze or report responses to treatment based on ethnicity. Studies that have reported outcome responses based on ethnicity have found inconsistent results. Thus, it is important for future studies to examine post-intervention psychosocial functioning and HRQOL scores across ethnicities in youth attending weight management clinics. If youth differ in their responding pattern based on ethnicity then future treatment programs can cater interventions for specific ethnicities to reach optimal outcomes.

Current Study

This study examined whether there were differential responding (zBMI scores, psychological functioning, and HRQOL scores) between ethnic groups (African American and Caucasian) using a pre and post-intervention assessment (at 10-24 months) approach in overweight and obese youth attending a pediatric weight management program. This study examined whether there was an effect of program participation in the entire sample on zBMI scores, psychological functioning, and HRQOL. This study uses the term follow-up in place of 10-24 months post-intervention assessment. This study examined whether there were differential responding (zBMI scores and HRQOL scores) between ethnic groups at intake and follow-up in overweight and obese youth attending a subprogram (The Program's Intensive group (IG program)) relative to standard of care (SOC) treatment (self-paced program which can incorporate individual sessions with a member on the psychology team, nutrition team, and/or physical therapist). This study also examined whether there was differential responding in psychosocial functioning based on ethnicity in overweight and obese youth attending the IG program at intake and follow-up. This study examined psychosocial aspects based on previous literature suggesting that overweight and obese youth are at higher risk for depression, low self-esteem, withdrawal, and peer victimization (Buddeberg-Fischer, Klaghofer, & Reed, 1999; Dietz & Gortmaker, 2001; Friedlander et al., 2003; Janssen, Craig, Boyce, & Pickett, 2004; Libbey et al., 2008; Stern et al., 2004). The psychosocial aspects that were examined are Depression, Withdrawal, Interpersonal Relations (perception of their relationships and friendships with peers) and Self-Esteem. A summary of the current study is included in Appendix A.

Based on the current literature, there is mixed evidence of ethnic differences in psychological well-being and HRQOL in overweight and obese youth (Janicke et al., 2007; Philips et al., 2012; Schwimmer, Burwinkle, & Varni, 2003). Research suggests that African Americans may be more accepting of bigger body size due to cultural factors/norms, and consequently have greater self-esteem and higher HRQOL compared to Caucasians who are overweight or obese and less accepting of their body size (Mustillo, Budd, & Hendrix, 2013; Parnell, Sargent, Thompson, & Duhe, 1996; Philips et al., 2012; Smolak, 2004; Stern et al., 2004). However, other studies have not found differences in HRQOL scores based on ethnic factors (Janicke et al., 2007; Schwimmer, Burwinkle, & Varni, 2003). This study examined whether ethnic differences were present in HRQOL scores in African American and Caucasian overweight and obese youth attending the weight management clinic from intake to follow-up. This study explored if psychosocial responses (i.e., Depression, Withdrawal, Interpersonal Relations, Self-Esteem and HRQOL scales) to a pediatric obesity weight management clinic vary by ethnicity at pre and post-intervention.

This study aims to expand our understanding of ethnic differences in treatment responses in psychosocial outcomes and body weight changes in participants attending a weight management clinic. Despite high attrition rates (87.5% in standard of care treatment and 74.6% in the intensive group treatment), this study provides data on a sample consisting of mostly African American participants attending a weight management clinic in Baltimore, Maryland. Findings from this study can be utilized to gain a better understanding of potential differences in outcome responses across ethnicity

and intervention groups. This information can help identify areas to target in future interventions to increase retention and quality of care.

Aims and Hypotheses

The first aim examined whether there was differential responding in psychosocial functioning between ethnicity (African Americans and Caucasians) from intake to follow-up in overweight and obese youth attending one subprogram of the weight management clinic (IG program). This study also examined whether there was an effect of program participation in the entire sample on psychosocial functioning (regardless of ethnic groups). Specific hypotheses were:

- Caucasian youth would display greater increases in self-reported Self-Esteem scores from intake to follow-up compared to African American youth.
- Change in self-reported Interpersonal Relations scores from intake to follow-up would be greater for Caucasian youth than African American youth.
- Caucasian youth would display greater reductions in Depression scores from intake to follow-up compared to African American youth.
- Change in parent-reported Depression scores from intake to follow-up would be greater for Caucasian youth than African American youth. Furthermore, it was predicted that parent-reported Depression scores would decrease for both Caucasian youth and African American youth.
- Change in parent-reported Withdrawal scores from intake to follow-up would be greater for Caucasian youth than African American youth. Furthermore, it was predicted that parents would report decreases in Withdrawal scores for Caucasian and African American youth.

- Psychosocial functioning scores would improve for all participants in the entire sample (regardless of ethnicity) post program completion.

The second aim examined whether there were differential responding in HRQOL outcomes between ethnicity from intake to follow-up in youth in the IG program relative to SOC treatment. This study also examined whether there was an effect of program participation in the entire sample on HRQOL (regardless of ethnicity or intervention condition). Specific hypotheses were:

- Self and parent proxy-report for Caucasian youth would display greater increases in all HRQOL scales (Physical, Emotional, Social, School and Total Overall QOL) from intake to follow-up compared to African American youth.
- Participants in the IG program would display greater improvements across all HRQOL scales compared to participants receiving SOC treatment, regardless of ethnic group.
- HRQOL scores would improve for all participants in the entire sample (regardless of ethnicity or intervention condition) post program completion.

The third aim examined whether there was differential responding in zBMI change scores between ethnic groups from intake to follow-up in youth in the IG program relative to SOC treatment. This study also examined whether there was an effect of program participation in the entire sample on change in zBMI scores (regardless of ethnicity or intervention condition). Specific hypotheses were:

- Caucasian youth in both groups would display greater reductions in zBMI scores at follow-up compared to African American youth.

- Youth in the IG program would display greater reductions in zBMI scores at follow-up compared to youth receiving SOC treatment.
- Younger children would demonstrate greater reductions in zBMI scores at follow-up compared to older children.
- Participants in the entire sample (regardless of ethnicity or intervention condition) would demonstrate a reduction in zBMI scores post program completion.

Methods

Participants

This study used pre-collected data from children, adolescents and their parent(s) who attended a pediatric weight management clinic (urban tertiary care facility) and were part of a larger ongoing study. Children and adolescents were referred to the weight management clinic (referred to as The Program throughout this document) by their primary care provider or self-referred due to concerns that the child or adolescent was at risk of being overweight, overweight, or obese. Participants provided consent or assent in accordance with the Western Institutional Review Board (WIRB) at their initial evaluation for The Program. The WIRB approved chart review and ongoing data collection for youth between the ages of 6 and 18 years who were enrolled in The Program since 2005. This study received UMBC IRB approval. All participants in this study were between the ages of 8 and 17 years, since 8 years is the minimum age that the child must be to complete self-report measures utilized in this study.

Description of Interventions

The Program is a pediatric weight management program that utilizes a multidisciplinary approach and incorporates nutritional, medical, educational and

behavioral components. The Program is designed for youth between the ages of 6 and 18 years and their families. The Program's team includes a pediatric gastroenterologist, nurse practitioners, psychologists, dieticians, and physical therapists.

The Program's Intensive Treatment Group Sample (IG). Three hundred and thirty six participants presented at the initial clinic evaluation and were placed in the IG Program. Participants were predominately female (60.7%), African American (79.2%), and primarily had Medical Assistance as their insurance coverage (56.3%). The mean age of participants was 11.93 (*SD* = 2.52) years. The mean BMI for youth was 35.53 (*SD* = 7.11) and mean zBMI score was 2.45 (*SD* = 0.28). Youth's zBMI scores were classified as overweight (2.3%) and (obese 97.7%). Obese is classified as having a zBMI score equal to or greater than 1.645 (CDC, 2009). Mother's mean BMI score was 34.81 (*SD* = 8.36) and father's mean BMI score was 32.03 (*SD* = 8.17).

The IG program consists of educational sessions and group exercise. Since 2005, the program has ranged from 10 to 13 weeks and has held sessions once or twice a week. The majority of treatment groups have lasted 10 weeks consisting of two-hour sessions twice a week. Each session consisted of sixty minutes facilitated by the psychology or nutrition department. Psychosocial interventions including cognitive behavioral techniques and behavioral modification were utilized to support changes in physical/lifestyle activity and diet. Sample topics included general nutrition facts, appropriate portion size, healthy recipes and cooking information, selecting healthier foods when eating meals outside the home, techniques to control hunger and snacking, teasing and bullying, food triggers, and phone or tablet applications for tracking food

intake and exercise routines. The other sixty minutes of each session was group exercise facilitated by a physical therapy assistant.

The Program's Standard of Care Treatment Sample (SOC). Four hundred and twenty two participants presented at the initial clinic evaluation and were placed in the SOC treatment. They were predominately female (58.1%), African American (78.4%), and primarily had Medical Assistance as their insurance coverage (67.3%). The mean age of participants was 12.15 (*SD* = 2.74) years. The mean BMI for youth was 37.84 (*SD* = 8.21) and mean zBMI score was 2.54 (*SD* = .33). Youth's zBMI scores were classified as overweight (3.2%) and obese (96.8%). Mother's mean BMI score was 35.70 (*SD* = 9.60) and father's mean BMI score was 32.67 (*SD* = 7.68).

The SOC intervention included a self-paced program of educational sessions only, which can consist of meeting with a member on the psychology and nutrition team. Families could also attend individual physical therapy appointments as recommended for their condition. The SOC intervention has several "subgroups," however; none of the participants in this group received the IG program discussed above.

Design

This study included data from youth who were enrolled in The Program from 2005 to 2013. Participants were included in this study if they were between the ages of 8 and 18 years, Caucasian or African American, and either enrolled in the IG program or received SOC treatment. Participants in both groups were requested to return for a follow up visit 12 months post intake, however, only a small portion of participants returned. For the purpose of the current study, follow-up visits incorporate participants who returned 10-24 months post intake evaluation. Additionally, during both visits youth and their

parents were asked to complete psychosocial and HRQOL measures (BASC-2 and PedsQL4.0) and other medical (i.e., height and weight) information was collected.

Participants were excluded from this study if they did not return for their follow up evaluation, did not complete psychosocial measures at both time points, or were missing zBMI scores at both time points. Specifically, 758 participants completed the initial intake evaluation, however, only 151 participants returned for their follow up appointment (see table 2). Hypothesis 1 was tested using data from 54 participants' parents and 53 youth completing the psychosocial measures (BASC-2). Hypothesis 2 was tested using data from 97 participants' parents and 98 youth completing HRQOL measures (PedsQL4.0). Hypothesis 3 was tested using data from 129 participants who had verifiable zBMI scores.

Age was included as a covariate in all analyses because previous studies have found that younger children were more likely to display improvements in self-esteem compared to older children (Lowry, Sallinen, & Janicke, 2007). However, other studies have not found differences across age groups in HRQOL outcomes (Steele et al., 2012). Previous studies have also found that children tend to have more successful weight loss results compared to adolescents (Presti, Lai, Hildebrandt, & Loeb, 2010; Steele et al., 2012). Additionally, age was included as a covariate in all analyses in all hypotheses, rather than separating each analysis by age groups (children 8-12 years and adolescent 13-18 years), since the psychosocial measures have different versions for children and adolescents. The BASC-2 uses T-scores, which are equivalent for children and adolescents. Further, this study is utilizing scales on the BASC-2 that exist in both the child and adolescent versions. Additionally, the PedsQL4.0 total scale scores have the

same meaning for both children and adolescents, making it acceptable to analyze the data for the hypotheses with all ages together and using age as a covariate.

Table 2. Participants with pre and post intervention data

Youth Groups				
	IG		SOC	
	Total Sample	Participants with pre and post data	Total Sample	Participants with pre and post data
N	336	88	422	63
Sex	M = 132 F = 204	M = 35 F = 53	M = 177 F = 245	M = 28 F = 35
Ethnicity	C = 70 AA = 266	C = 21 AA = 67	C = 91 AA = 331	C = 22 AA = 41
Insurance	MA = 189 Com = 147	MA = 48 Com = 40	MA = 248 Com = 138	MA = 37 Com = 26
Age	11.93 (2.52)	11.81 (2.48)	12.15 (2.74)	11.76 (2.76)
BMI (youth)	35.53 (7.11)	35.30 (5.92)	37.84 (8.21)	36.36 (7.44)
zBMI (youth)	2.46 (0.28)	2.48 (0.29)	2.54 (0.33)	2.49 (0.37)
zBMI weight category (youth)	OW = 2 Obese = 334	OW = 2 Obese = 86	OW = 7 Obese = 415	OW = 2 Obese = 61
BMI (mother)	34.81 (8.36)	33.48 (8.70)	35.70 (9.60)	34.31 (8.96)
BMI (father)	32.03 (8.17)	30.60 (7.57)	32.67 (7.68)	32.84 (7.91)

Note: M = male, F = female, C = Caucasian, AA = African American, MA = Medical Assistance, Com = Commercial Insurance, OW = Overweight

Measures

Comprehensive Intake Form. Prior to the initial intake appointment, youth and their parent(s) completed a comprehensive weight management intake form that requested information with regards to age, sex, ethnicity, past medical history, family history, current grade level and educational history, and other behavioral questions on eating (see Appendix B).

Socioeconomic Status (SES). Insurance coverage was used as a proxy for socioeconomic status.

Weight and height. Weight was obtained for children and adolescents using a Health-O-Meter Professional Plus wheelchair scale or the Tanita SC-331S bioimpedance machine. Height was obtained using a Holtain Limited wall-mounted stadiometer. Sex and age-specific zBMI scores were calculated using a web-based program provided by Baylor College of Medicine. Parental BMI scores were calculated from self-reported weight and height documented on the intake form.

The Pediatric Quality of Life Inventory (PedsQL 4.0). The PedsQL4.0 is a reliable and valid generic measure of HRQOL with versions for children (ages 8 to 12 years), adolescents (ages 13 to 17 years), and parent proxy-reports (Varni, Seid, & Rode, 1999). The PedsQL4.0 consists of 23-items and examines four core scales; Physical Functioning, Emotional Functioning, Social Functioning, School Functioning, and a Total overall score. Internal consistency reliability coefficients for all scales are 0.70 or higher (Varni, Seid, & Kurtin, 2001). Child and adolescent self-report forms ask youth to rate each question based on "how much of a problem each one has been for you during the past one month" on a 5-point scale, ranging from 0 ("never a problem") to 4 ("almost always a problem"). Parent proxy forms indicate, "in the past one month, how much of a problem has your child/teen had with…" for each item. Each scaled score ranges from 0 to 100 and is standardized with higher scores indicating better quality of life. The Physical Functioning scale examines activities of daily living (Varni, Seid, & Rode, 1999; p. 129). The Emotional Functioning scale assesses emotional distress. The Social Functioning scale assesses peer relations (p.129), the School Functioning scale examines

impact of illness and difficulties on school related activities, and the Total Scale Score is the mean of all answered items in the measure. The PedsQL4.0 parent and youth versions are in Appendix C.

Behavior Assessment System for Children, Second Edition (BASC-2). This measure was used to assess the child or adolescent's psychological functioning. Specifically, the BASC-2 assesses both adaptive and problematic behaviors using a four-point rating scale ranging from 1 ("never") to 4 ("almost always"), as well as true/false questions. The BASC-2 has been normed with more than 13,000 self-report and parent-report cases in the United States (Reynolds & Kamphaus, 2004). The BASC-2 has been validated with both a clinical and non-clinical sample of youth and their parents. This assessment includes parent-rating scales for children (PRS-C) aged 6 to 11 years or adolescents (PRS-A) aged 12 to 21 years. The BASC-2 PRS-C scale consists of 160 items, and the BASC-2 PRS-A scale consists of 150 items. This study utilized the Withdrawal and Depression scales from the BASC-2 PRS. The Withdrawal scale assesses the youth's tendency to avoid social contact in social settings (p.63); the Depression scale assesses youth's feelings of sadness and stress that may impact one's ability to complete everyday activities and can lead to thoughts of suicide (Reynolds & Kamphaus, 2004, p.60). Internal consistency reliability coefficients for these parent-rating scales ranged from 0.79 to 0.88. Test-retest reliability for these scales ranged from 0.78 to 0.87.

The BASC-2 includes self-report rating scales for children (SRP-C) aged 8 to 11 years and adolescents (SRP-A) aged 12 to 21 years. The BASC-2 SRP-A version consists of 176 items, and the SRP-C consists of 139 items (Reynolds & Kamphaus, 2004). Scoring of these items created a behavior rating profile that consists of five composite

scores, four adaptive scales and 10 to 12 clinical scales (depending on child or adolescent version). Scales have high content validity and are highly interpretable with regards to relevance of behavioral and emotional problems, as well as providing useful information for treatment planning.

This study utilized the Interpersonal Relations, Self-Esteem, and Depression scales from the SRP-A and SRP-C versions. The Interpersonal Relations scale assesses an individual's perception of their relationships and friendships with peers (p.74). The Self-Esteem scale assesses an individual's feeling of self-esteem and self-acceptance (p. 74) and their satisfaction to their physical and more global characteristics (p.78). The Depression scale assesses an individual's feelings of sadness, unhappiness, and feelings that nothing goes their way (Reynolds & Kamphaus, 2004, p.74). Internal consistency reliability coefficients for these scales ranged from 0.78 to 0.88. Test-retest reliability for these scales ranged from 0.73 to 0.81. Items in each scale for this measure are included in Appendix D.

Procedure

At the initial evaluation, the parent and child completed psychosocial measures including the PedsQL4.0, BASC-2, as well as other measures that were not used in this study.

A medical provider evaluated each child or adolescent at the initial clinic appointment and obtained medical information including body composition measures. Additionally, psychology staff were present at the initial evaluation session to review safety items on the BASC-2 and obtain relevant psychological and medical history. The Program's team met with the parent(s) and child at the end of their initial evaluation to provide each

family with basic recommendations on how to improve diet and increase activity. Recommendations for treatment interventions were not based on random assignment. They were made by the psychology team, which incorporates clinical assessment, psychosocial measures; the families reported level for their readiness to change, and the family's input.

Results

The Program's data set was provided to the researcher in an SPSS dataset in de-identified format and was analyzed using SPSS version 21.

Power Analyses

Power analyses provide information on the probability of finding a significant effect. Per Cohen's (1988) guidelines, it is recommended that sufficient power be greater than .80 to detect a small to medium effect size. Post hoc power analyses were conducted for all analyses. Observed power in the current study ranged from .01 to 1.00. This study had high attrition, which resulted in a relatively small sample size. This limits the interpretation of treatment effects, due to the current study being underpowered.

Attrition

Rates of attrition were analyzed to determine whether any subject characteristics were related to attrition. Chi-squared analyses indicated significant differences in attrition based on ethnicity and intervention conditions in the full sample (n = 758) at follow-up. African Americans (n = 489) were more likely to drop out of treatment compared to Caucasians (n = 118), (χ^2 (1) = 5.90, p = .015). Participants in the SOC treatment (n = 359) were more likely to drop out than participants in the IG program (n = 248), (χ^2 (1) = 14.87, $p < .01$). Attrition rates did not vary based on sex (χ^2 (1) = 0.07, p = .789) or SES

(as measured by insurance status) (χ^2 (1) = 3.00, p = .083). Attrition rates also did not vary based on intake zBMI scores (t (755) = -0.88, p = .380). Attrition resulted in a final sample of 151 participants (see table 2 above).

The IG program and SOC treatment were compared to determine whether the groups differed on variables in the sample of 151 participants. No significant group differences were found for ethnicity (χ^2 (1) = 2.20, p = .138), SES (as measured by insurance status) (χ^2 (1) = 0.26, p = .609), or sex (χ^2 (1) = 0.33, p = .566).

Preliminary Analyses

The IG and SOC groups were compared to determine whether the groups differed on variables that could potentially confound results. Variables examined were sex and SES (as measured by insurance) for each hypothesis. If group differences existed, variables were included as covariates in subsequent analyses.

Hypothesis 1

Hypothesis 1 predicted that there would be differential responding in psychosocial functioning based on ethnicity from intake to follow-up in youth attending the IG program. It was also predicted that psychosocial functioning scores would improve for participants in the entire sample (regardless of ethnic group) from intake to follow-up.

Demographics. Fifty-five participants attended the IG program and completed psychosocial measures (BASC-2) at the initial intake evaluation and 10-24 months (M = 17.10, SD = 2.63) post initial intake evaluation. The sample included 30 females, 39 African Americans, and 28 had Medical Assistance as their insurance coverage. The mean age of participants was 11.89 (SD = 2.35) years. The mean BMI for youth was 34.84 (SD = 6.23) and mean zBMI score was 2.43 (SD = 0.30). The sample consisted of

53 youth who were classified as obese. Mother's mean BMI score was 33.21 (*SD* = 8.73) and father's mean BMI score was 30.58 (*SD* = 8.19). Within this sample, 54 participants' parents completed the BASC-2 at their initial clinic evaluation and follow-up appointment. Further, 53 youth completed measures (BASC-2) at their initial clinic evaluation and at their follow-up appointment (See table 3).

Table 3. BASC over time by ethnicity (these numbers reflect participants who have data at intake and follow-up)

Intensive Group	BASC (all scales)		
	Ethnicity		
	Caucasian	African American	Total
Parent Version	16	38	54
Youth Version	16	37	53

Preliminary Analyses

The dependent variables were BASC-2 scales (Self-Esteem, Interpersonal Relations, Depression, and Withdrawal) and were analyzed for skew and kurtosis (table 4), which were within normal limits. Figure 4 displays the means for BASC-2 scales split by ethnicity at follow-up for participants in the IG program. Additionally, pre-treatment BASC-2 scales were examined to see if they differed across ethnic groups. A Bonferroni Correction was applied to hypothesis 1 due to the 5 comparisons being examined. Thus, p values were set at 0.01 to achieve statistical significance. There were no pre-treatment psychosocial differences across ethnic groups (table 5).

Table 4. Distribution of BASC-2 Scales for IG program for Hypothesis 1

BASC-2 Scales	P/Y	*n*	Mean T-score	SD	Skew	Kurtosis	Min	Max
Intake								
Self-Esteem	Y	53	47.62	11.14	-0.92	-0.09	15	58
Interpersonal Relations	Y	53	51.75	8.63	-1.41	1.20	25	59
Depression	P	54	48.15	10.68	1.90	5.13	36	90
	Y	53	47.47	6.80	1.26	1.05	38	68
Withdrawal	P	54	51.83	11.36	1.16	1.40	37	89
Follow-up								
Self Esteem	Y	53	50.43	10.32	-1.49	1.79	16	61
Interpersonal Relations	Y	53	51.96	8.63	-1.77	3.50	19	62
Depression	P	54	46.74	11.75	1.90	5.23	34	97
	Y	53	46.53	6.78	1.70	2.32	40	68
Withdrawal	P	54	48.04	9.43	0.90	0.92	35	80

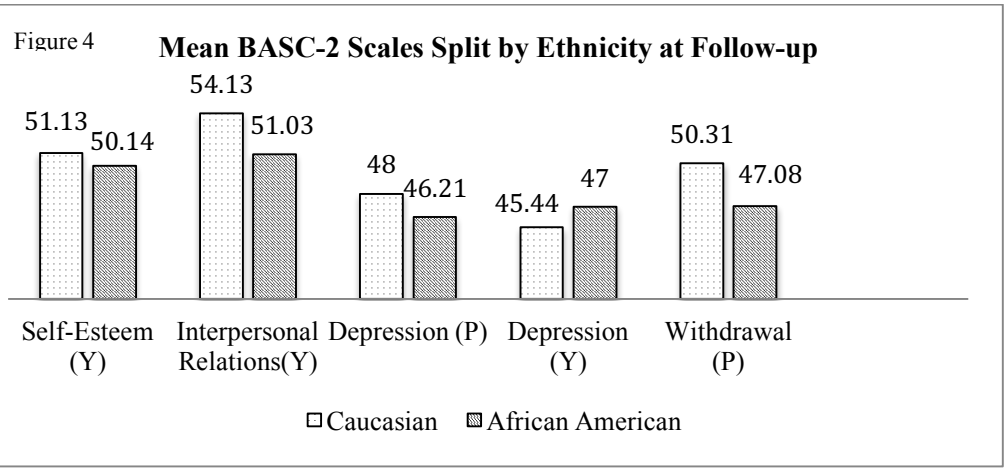
Note: P = Parent Version, Y = Youth Version.

Table 5. Relation between ethnic groups and pre-treatment psychosocial variables (BASC-2 Scales)

		Caucasian		African American			
Intake		*M*	*SD*	*M*	*SD*	*t*	*p*
Self-Esteem	Y	45.00	11.98	48.76	10.72	-1.13	0.26
Interpersonal Relations	Y	52.63	6.40	51.38	9.49	0.48	0.63
Depression	P	50.81	8.64	47.03	11.35	1.19	0.24
	Y	46.19	5.09	48.03	7.41	-0.90	0.37
Withdrawal	P	53.06	8.91	51.32	12.32	0.51	0.61

Note: P = Parent Version, Y = Youth Version

Figure 4



Note: P = Parent Version, Y = Youth Version.

A repeated measures analyses of variance (ANOVA) was conducted, with ethnicity (African American vs. Caucasian) as the between subjects variable and time (intake and follow-up) as the within-subjects variable for each dependent variable. The dependent variables were self-reported Self-Esteem, self-reported Interpersonal Relations, self-reported Depression, parent-reported Depression, and parent-reported Withdrawal. Age at intake was included as a covariate in the model. Sex and SES (as measured by insurance status) did not significantly predict the main outcomes (see tables 6 and 7). Therefore, these were not considered covariates in the subsequent analyses for this hypothesis. Additionally, a Bonferroni Correction was applied to hypothesis 1 due to the 5 comparisons being examined. Thus, p values were set at 0.01 to achieve statistical significance. Post hoc power analyses were conducted for all analyses.

Separate paired sample t-tests were conducted on each of the psychosocial functioning variables to examine if there was an effect of program participation in the entire sample from intake to follow-up. Similarly, a Bonferroni Correction was applied to hypothesis 1 due to the 5 comparisons being examined. Thus, p values were set at 0.01 to achieve statistical significance.

Table 6. Relation between participant sex and outcome variables (BASC-2 Scales) at Intake and Follow-up

		Female		Male			
Intake		*M*	*SD*	*M*	*SD*	*t*	*p*
Self-Esteem	Y	47.03	12.28	48.40	9.59	-0.45	0.66
Interpersonal Relations	Y	53.07	6.91	50.08	10.06	1.25	0.22
Depression	P	50.80	12.14	44.84	7.34	2.15	0.04
	Y	48.00	6.85	46.92	6.70	0.58	0.56
Withdrawal	P	50.43	10.16	53.72	12.47	-1.08	0.29
Follow-up							
Self Esteem	Y	49.10	11.88	52.42	7.67	-1.18	0.24
Interpersonal Relations	Y	52.87	7.68	51.13	9.70	0.74	0.47
Depression	P	47.93	13.54	45.36	9.36	0.80	0.43
	Y	45.87	7.08	47.08	6.45	-0.65	0.52
Withdrawal	P	47.59	7.56	48.56	11.36	-0.38	0.71

Note: P = Parent Version, Y = Youth Version

Table 7. Relation between participant SES (as measured by insurance status) and outcome variables (BASC-2 Scales) at Intake and Follow-up

		MA		Commercial			
Intake		*M*	*SD*	*M*	*SD*	*t*	*p*
Self-Esteem	Y	48.64	9.29	46.62	12.75	0.67	0.51
Interpersonal Relations	Y	52.04	8.57	51.31	8.70	0.31	0.76
Depression	P	44.89	10.56	51.41	9.73	-2.38	0.02
	Y	47.25	7.56	47.77	5.86	-0.28	0.78
Withdrawal	P	49.82	11.56	54.11	10.76	-1.42	0.16
Follow-up							
Self Esteem	Y	51.54	8.38	49.54	12.08	0.71	0.48
Interpersonal Relations	Y	52.18	9.02	52.00	8.29	0.08	0.94
Depression	P	44.56	9.14	48.93	13.72	-1.38	0.17
	Y	46.61	6.52	46.19	7.16	0.22	0.83
Withdrawal	P	46.37	10.05	49.70	8.83	-1.31	0.20

Note: P = Parent Version, Y = Youth Version

Parent Version

Depression

Age was controlled for in all analyses for this hypothesis. Ethnicity and time had no significant interaction when controlling for age, F (1, 51) = 0.56, p = .46, partial η^2 = .01, observed power = .11, or age and time, F (1, 51) = 1.34, p = .25, partial η^2 = .03, observed power = .21 in parent proxy report for youth's Depression scores from intake to follow-up. There was also not a significant effect of time, F (1,51) = 1.84, p = .18, partial η^2 = .04, observed power = .27, ethnicity, F (1, 51) = 0.92, p = .34, η^2 = .02, observed power = .16, or age, F (1, 51) = 0.03, p = .89, partial η^2 = .00, observed power = .05.

Withdrawal

Ethnicity and time had no significant interaction when controlling for age, F (1, 51) = 0.33, p = .57, partial η^2 = .01, observed power = .09, or age and time, F (1, 51) = 0.36, p = .55, partial η^2 = .01, observed power = .09, in parent proxy report for youth's Withdrawal scores from intake to follow-up. There was also not a significant effect of time, F (1,51) = 1.50, p = .23, partial η^2 = .03, observed power = .23, ethnicity, F (1, 51) = 0.48, p = .49, partial η^2 = .11, observed power = .23, or age, F (1, 51) = 1.50, p = .23, partial η^2 = .03, observed power = .23.

Youth Version

Interpersonal Relations

Ethnicity and time had no significant interaction when controlling for age, F (1, 50) = 0.56, p = .46, partial η^2 = .01, observed power = .11, or age and time, F (1, 50) = 0.13, p = .72, partial η^2 = .00, observed power = .06, in youth's Interpersonal Relations scores from intake to follow-up. There was also not a significant effect of time, F (1,50)

= 0.19, p = .66, partial η^2 = .00, observed power = .07, ethnicity, F (1, 50) = 1.24, p = .27, η^2 = .02, observed power = .19, or age, F (1, 50) = 1.78, p = .19, partial η^2 = .03, observed power = .26.

Depression

Ethnicity and time had no significant interaction when controlling for age, F (1, 50) = 0.04, p = .85, partial η^2 = .00, observed power = .05, or age and time, F (1, 50) = 0.20, p = .66, partial η^2 = .00, observed power = .07, in youth's Depression scores from intake to follow-up. There was also not a significant effect of time, F (1,50) = 0.06, p = .81, partial η^2 = .00, observed power = .06, ethnicity, F (1, 50) = 1.16, p = .29, partial η^2 = .02, observed power = .18, or age, F (1, 50) = 1.57, p = .22, partial η^2 = .03, observed power = .23.

Self-Esteem

Ethnicity and time had no significant interaction when controlling for age, F (1, 50) = 1.70, p = .20, partial η^2 = .03, observed power = .25, or age and time, F (1, 50) = 1.81, p = .18, partial η^2 = .04, observed power = .26, in youth's Self-Esteem scores from intake to follow-up. There was also not a significant effect of time, F (1,50) = 0.71, p = .41, partial η^2 = .01, observed power = .13, ethnicity, F (1, 50) = 0.17, p = .68, partial η^2 = .00, observed power = .07, or age, F (1, 50) = 0.57, p = .46, partial η^2 = .01, observed power = .11.

Effect of IG Program participation in the entire sample

Paired sample t-tests revealed that there was an effect of program participation in the entire IG sample on parent-reported withdrawal scores, displaying a statistically significant improvement from intake to follow-up regardless of ethnic group t(53) = 3.74,

$p < .001$. There were no other psychosocial differences from intake to follow-up in psychosocial functioning scores regardless of ethnic group (see table 8).

Table 8. Comparison on psychosocial variables pre and post in entire sample

		Intake		Follow-up			
Intake		*M*	*SD*	*M*	*SD*	*t*	*p*
Self-Esteem	Y	47.62	11.14	50.43	10.32	-1.85	0.07
Interpersonal Relations	Y	51.75	8.63	51.96	8.63	-0.18	0.86
Depression	P	48.15	10.68	46.53	6.78	0.94	0.35
	Y	47.47	6.80	46.53	6.78	1.10	0.28
Withdrawal	P	51.83	11.36	48.04	9.43	3.74	0.00

Note: P = Parent Version, Y = Youth Version

Hypothesis 1 was partially supported since there was an effect of program participation in the entire sample on parent-reported withdrawal scores displaying a statistically significant improvement from intake to follow-up regardless of ethnic group. However, there was no differential responding in psychosocial functioning based on ethnicity from intake to follow-up in youth attending the IG program. Ethnicity was not related to change at post-treatment assessment for any of the dependent variables (self-reported Self-Esteem, self-reported Interpersonal Relations, self-reported Depression, parent-reported Depression, and parent-reported Withdrawal). Hypothesis 2 predicted that self and parent proxy-report for Caucasian youth would display greater increases in all HRQOL scales (Physical, Emotional, Social, School and Total Overall QOL) from intake to follow-up compared to African American youth. Hypothesis 2 also predicted that participants in the IG program would display greater improvements across all HRQOL scales compared to participants receiving SOC treatment, regardless of ethnic group.

Hypothesis 2

Hypothesis 2 predicted that there would be differential responding in HRQOL scores based on ethnicity (African American and Caucasian) from intake to follow-up assessment in overweight and obese youth attending the IG program relative to SOC treatment. It was also predicted that HRQOL scores would improve for participants in the entire sample (regardless of ethnicity or intervention condition) from intake to follow-up.

Demographics. Fifty-five participants were in the IG program and 54 participants were in the SOC treatment and completed psychosocial measures (PedsQL4.0) at the initial intake evaluation and 10 to 24 (M = 15.15, SD = 3.20) months post initial intake evaluation. There was a significant difference between months from intake to follow-up for participants in the IG program (M = 17.06, SD = 2.70) compared to the SOC treatment (M = 12.93, SD = 2.12), (t (93) = 8.19, $p < .01$). However, there was not a significant difference in months from intake to follow-up appointments between ethnic groups, (t (93) = 0.32, p =. 75). The sample included 61 females, 74 African Americans, and 59 participants had Medical Assistance as their insurance coverage. The mean age of participants was 11.78 (SD = 2.51) years. The mean BMI for youth was 35.43 (SD = 6.82) and mean zBMI score was 2.45 (SD = 0.34). The sample consisted of 105 youth who were classified as obese. Mother's mean BMI score was 33.89 (SD = 9.03) and father's mean BMI score was 31.68 (SD = 8.33). Within this sample, 97 participants' parents completed the PedsQL4.0 at their initial clinic evaluation and at follow-up. Further, 98 youth completed the PedsQL4.0 at their initial clinic evaluation and at follow-up (see table 9).

Table 9. PedsQL4.0 Parent and Youth version over time by ethnicity (these numbers reflect participants who have data at intake and follow-up)

Youth Group	PedsQL (Parent version)				PedsQL (Youth Version)		
	Ethnicity				Ethnicity		
	Caucasian	African American	Total		Caucasian	African American	Total
IG	16	35	51		14	35	49
SOC	17	29	46		16	33	49
Total	33	64	97		30	68	98

Preliminary Analyses

Change scores were created for PedsQL scales by subtracting intake scores from follow-up assessment scores. A positive change score indicates an increase in functioning. The dependent variables were change scores for the PedsQL scales (Overall QOL, Physical functioning, Emotional Functioning, Social Functioning, and School Functioning), and were analyzed for skew and kurtosis (table 10), which were within normal limits. Figures 5 and 6 display means for PedsQL4.0 scales split by ethnicity at follow-up and change scores. Additionally, pretreatment PedsQL4.0 scales were examined to see if they differed across intervention conditions (table 11) and ethnic groups (table 12). A Bonferroni Correction was applied due to the 10 comparisons being examined. Thus, p values were set at 0.005 to achieve statistical significance. There were pre-treatment differences for parent proxy reports for youth overall functioning, emotional functioning, and school functioning, as well as youth self-report for emotional functioning. Participants who were in the IG program had higher HRQOL scores than participants in the SOC treatment on these variables. There were no significant pre-treatment differences across ethnicity and PedsQL4.0 scales.

Table 10. Distribution of PedsQL4.0 for Hypothesis 2

Variable	P/Y	*n*	Mean	SD	Skew	Kurtosis	Min	Max
Change Score								
Total Score	P	97	4.71	18.63	0.19	1.29	-53.27	59.78
	Y	98	6.54	13.12	0.10	0.92	-31.52	51.08
Physical Functioning	P	97	6.12	25.45	-0.12	0.53	-68.75	68.75
	Y	98	5.05	17.71	-0.06	0.94	-50.00	53.12
Emotional Functioning	P	97	8.16	17.96	-0.05	-0.45	-30.00	45.00
	Y	98	8.88	20.67	0.23	0.13	-40.00	65.00
Social Functioning	P	97	3.51	27.48	0.18	1.76	-65.00	90.00
	Y	98	7.86	21.42	-0.29	1.44	-60.00	65.00
School Functioning	P	97	-0.44	23.26	-0.10	0.48	-60.00	90.00
	Y	98	3.99	19.28	1.29	2.73	-35.00	75.00

Note: P = Parent Version, Y = Youth Version. Change scores are the difference between intake and follow-up scores.

Table 11. Relation between intervention conditions and pre-treatment PedsQL4.0 scales

		IG		SOC			
Pre-treatment scores		*M*	*SD*	*M*	*SD*	*t*	*p*
Total Score	P	70.46	17.17	60.07	14.07	3.39	.001
	Y	73.41	16.53	65.93	13.08	2.56	.012
Physical Functioning	P	66.64	21.17	60.03	18.99	1.68	.095
	Y	74.92	18.12	71.88	16.71	0.89	.375
Emotional Functioning	P	72.64	18.47	58.44	14.04	4.44	.000
	Y	72.79	23.90	60.67	18.45	2.89	.005
Social Functioning	P	71.04	25.76	60.87	21.37	2.20	.030
	Y	73.56	23.21	65.38	20.72	1.89	.061
School Functioning	P	74.72	22.02	61.59	20.60	3.16	.002
	Y	71.80	19.38	62.60	18.85	2.46	.016

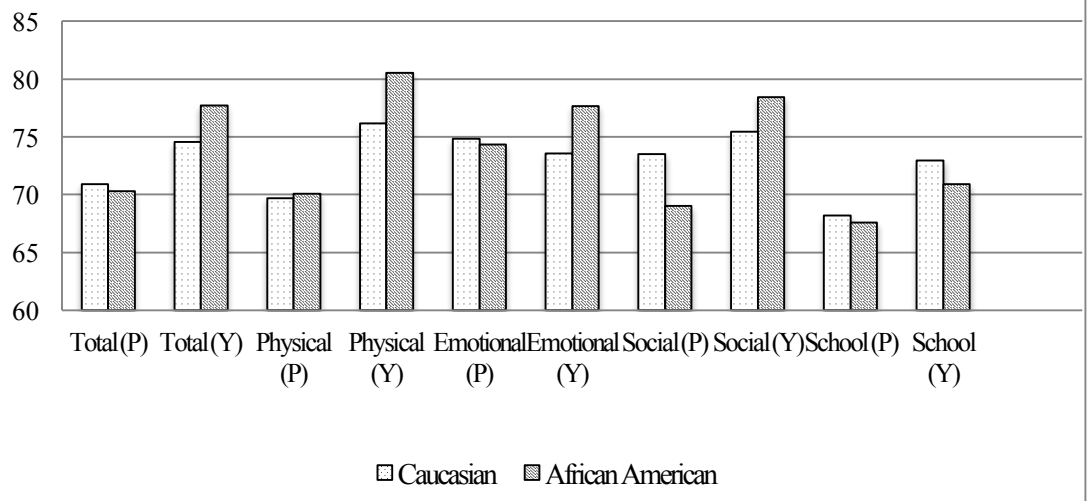
Note: P = Parent Version, Y = Youth Version

Table 12. Relation between ethnicity and pre-treatment PedsQL4.0 scales

		Caucasian		African American			
Pre-treatment scores		*M*	*SD*	*M*	*SD*	*t*	*p*
Total Score	P	62.86	16.73	66.54	16.35	-1.08	.283
	Y	67.36	16.48	70.74	14.72	-1.05	.296
Physical Functioning	P	57.84	20.76	66.13	19.64	-2.00	.048
	Y	68.99	21.69	75.45	14.75	-1.78	.079
Emotional Functioning	P	59.86	14.32	68.48	18.79	-2.61	.011
	Y	60.45	22.02	69.65	21.67	-2.00	.048
Social Functioning	P	64.43	24.90	66.79	23.87	-0.47	.639
	Y	69.09	20.97	69.65	22.99	-0.12	.906
School Functioning	P	70.14	21.20	67.25	22.82	0.63	.532
	Y	69.09	20.33	66.32	19.30	0.67	.504

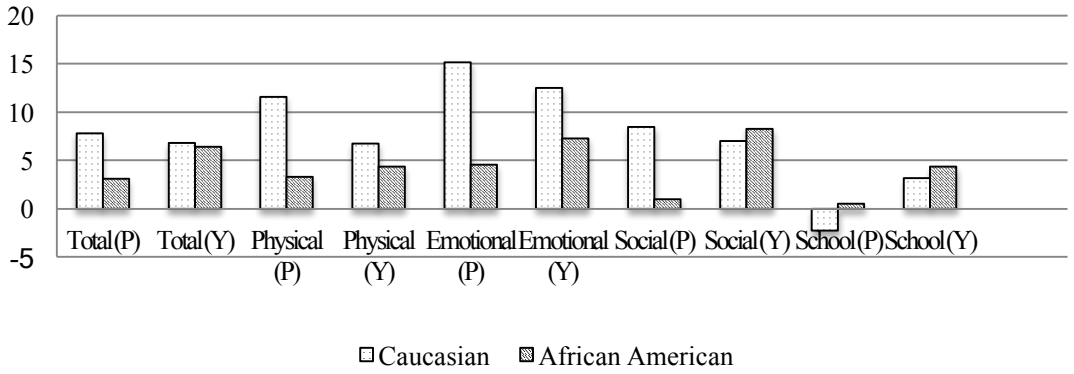
Note: P = Parent Version, Y = Youth Version

Figure 5 **Mean PedsQL4.0 Scales Split by Ethnicity at Follow-up**



Note: P = Parent, Y = Youth

Figure 6 **Mean Change Scores for PedsQL4.0 Scales Split by Ethnicity**



Note: P = Parent, Y = Youth

A two way ANCOVA was conducted, with ethnicity (African American vs. Caucasian) and intervention (IG program vs. SOC treatment) as the between-subjects variables and all PedsQL4.0 scale change scores as the dependent variables. Age was included as a covariate in the model. Sex and SES (as measured by insurance status) did not significantly predict the dependent variables (see tables 13 and 14). Therefore, these were not considered covariates in the subsequent analyses for this hypothesis. However, the four pretreatment PedsQL4.0 intake scales (Parent proxy reports for youth overall functioning, emotional functioning, school functioning, and youth self-report for emotional functioning) were considered covariates in those four analyses for this hypothesis. Additionally, a Bonferroni Correction was applied to hypothesis 2 due to the 10 comparisons being examined. Thus, p values were set at 0.005 to achieve statistical significance. Post hoc power analyses were conducted for all analyses.

Separate paired sample t-tests were conducted on each of the psychosocial functioning variables to examine if there was an effect of program participation in the entire sample from intake to follow-up. Similarly, a Bonferroni Correction was applied to

hypothesis 2 due to the 10 comparisons being examined. Thus, p values were set at 0.005 to achieve statistical significance.

Table 13. Relation between participant sex and outcome variables (PedsQL4.0 change scores)

		Female		Male			
Change Scores		*M*	*SD*	*M*	*SD*	*t*	*p*
Total Score	P	6.17	18.03	2.62	19.49	0.92	0.36
	Y	7.19	13.99	5.77	12.12	0.53	0.60
Physical Functioning	P	7.68	23.94	3.91	27.40	0.72	0.47
	Y	6.33	16.89	3.54	18.71	0.78	0.44
Emotional Functioning	P	10.11	19.15	5.38	15.95	1.28	0.20
	Y	7.45	19.85	10.56	21.72	-0.74	0.46
Social Functioning	P	4.74	29.05	1.75	25.22	0.53	0.60
	Y	10.09	22.59	5.23	19.89	1.12	0.27
School Functioning	P	-0.44	23.48	-0.44	23.25	0.00	1.00
	Y	4.74	20.74	3.11	17.59	0.42	0.68

Note: P = Parent Version, Y = Youth Version

Table 14. Relation between participant SES (as measured by insurance status) and outcome variables (PedsQL4.0 change scores)

		MA		Commercial			
Change Scores		*M*	*SD*	*M*	*SD*	*t*	*p*
Total Score	P	3.56	20.69	5.89	16.40	-6.12	0.54
	Y	6.89	13.19	6.08	13.18	0.30	0.76
Physical Functioning	P	5.04	28.96	7.23	21.31	-0.42	0.67
	Y	4.40	17.20	5.01	18.55	-0.42	0.68
Emotional Functioning	P	6.05	17.86	10.31	17.99	-1.17	0.24
	Y	9.38	16.57	8.21	25.35	0.26	0.80
Social Functioning	P	0.20	31.12	6.88	23.03	-1.20	0.23
	Y	8.40	23.28	7.14	18.91	0.29	0.78
School Functioning	P	-0.20	23.78	-0.68	22.96	0.10	0.92
	Y	5.98	19.57	1.34	18.78	1.18	0.24

Note: P = Parent Version, Y = Youth Version, MA = Medical Assistance

Parent Version

Parent proxy report for youth Overall Quality of Life

Intervention condition and ethnicity had no significant interaction when controlling for age and initial intake scores for parent proxy report of youth overall functioning, F (1, 91) = 0.85 p = .36, partial η^2 = .01, observed power = .15. There was not a significant effect of intervention condition, F (1, 91) = 0.44, p = .51, partial η^2 = .01, observed power = .10, or ethnicity, F (1, 91) = 0.76, p = .39, partial η^2 = .01, observed power = .14. Age, F (1, 91) = 1.53, p = .22, partial η^2 = .02, observed power = .23, was included as a covariate in the model and was not significant. There was a significant effect of parent proxy report of youths initial intake scores for overall functioning, F (1, 91) = 46.27, p = .00, partial η^2 = .34, observed power = 1.00, which is why it was controlled for in the model.

Parent proxy report for youth Physical Functioning

Intervention condition and ethnicity had no significant interaction when controlling for age, F (1, 92) = 1.74, p = .19, partial η^2 = .02, observed power = .26. There was not a significant effect of intervention condition, F (1, 92) = 0.77, p = .38, partial η^2 = .01, observed power = .14, or ethnicity, F (1, 92) = 2.17, p = .14, partial η^2 = .02, observed power = .31. Age, F (1, 92) = 0.06, p = .81, partial η^2 = .00, observed power = .06, was included as a covariate in the model and was not significant.

Parent proxy report for youth Emotional Functioning

Intervention condition and ethnicity had no significant interaction when controlling for age and initial intake scores for parent proxy report of youth emotional functioning, F (1, 91) = 3.28, p = .07, partial η^2 = .04, observed power = .43. There was

not a significant effect of intervention condition, F (1, 91) = 1.84, p = .18, partial η^2 = .02, observed power = .27, or ethnicity F (1, 91) = 5.23, p = .03, partial η^2 = .05, observed power = .62, when the alpha level was adjusted to .005. Age, F (1, 91) = 5.91, p = .02, partial η^2 = .06, observed power = .67, was included as a covariate in the model and was not significant at the adjusted alpha level of .005. There was a significant effect of parent proxy report of youths initial intake scores for emotional functioning, F (1, 91) = 23.51, p = .00, partial η^2 = .21, observed power = 1.00, which is why it was controlled for in the model.

Parent proxy report for youth Social Functioning

Intervention condition and ethnicity had no significant interaction when controlling for age, F (1, 92) = 0.08, p = .78, partial η^2 = .00, observed power = .06. There was not a significant effect of intervention condition, F (1, 92) = 0.62, p = .43, partial η^2 = .01, observed power = .12, or ethnicity, F (1, 92) = 1.51, p = .22, partial η^2 = .02, observed power = .23. Age, F (1, 92) = 0.06, p = .82, partial η^2 = .00, observed power = .06, was included as a covariate in the model and was not significant.

Parent proxy report for youth School Functioning

Intervention condition and ethnicity had no significant interaction when controlling for age and initial intake scores for parent proxy report of youths school functioning, F (1, 91) = 0.30, p = .59, partial η^2 = .00, observed power = .08. There was not a significant effect of intervention condition, F (1, 91) = 0.05, p = .82, partial η^2 = .00, observed power = .06, or ethnicity, F (1, 91) = 0.01, p = .94, partial η^2 = .00, observed power = .05. Age, F (1, 91) = 0.67, p = .41, partial η^2 = .01, observed power = .13, was included as a covariate in the model and was not significant. There was a

significant effect of parent proxy report of youths initial intake scores for school functioning, F (1, 91) = 53.80, p = .00, partial η^2 = .37, observed power = 1.00, which is why it was controlled for in the model.

Youth Version

Youth report for Overall Quality of Life

Intervention condition and ethnicity had no significant interaction when controlling for age, F (1, 93) = 0.02, p = .89, partial η^2 = .00, observed power = .05. There was not a significant effect of intervention condition, F (1, 93) = 0.00, p = .95, partial η^2 = .00, observed power = .05, or ethnicity, F (1, 93) = 0.01, p = .93, partial η^2 = .00, observed power = .05. Age, F (1, 93) = 0.08, p = .78, partial η^2 = .00, observed power = .06, was included as a covariate in the model and was not significant.

Youth report for their Physical Functioning

Intervention condition and ethnicity had no significant interaction when controlling for age, F (1, 93) = 0.91, p = .34, partial η^2 = .01, observed power = .16. There was not a significant effect of intervention condition, F (1, 93) = 2.60, p = .11, partial η^2 = .03, observed power = .36, or ethnicity, F (1, 93) = 0.41, p = .52, partial η^2 = .00, observed power = .10. Age, F (1, 93) = 0.26, p = .61, partial η^2 = .00, observed power = .08, was included as a covariate in the model and was not significant.

Youth report for their Emotional Functioning

Intervention condition and ethnicity had no significant interaction when controlling for age and initial intake scores for youth report for their emotional functioning, F (1, 92) = 2.73 p = .10, partial η^2 = .03, observed power = .37. There was not a significant effect of intervention condition, F (1, 92) = 0.35, p = .56, partial η^2 =

.00, observed power = .09, or ethnicity, F (1, 92) = 0.01, p = .93, partial η^2 = .00, observed power = .05. Age, F (1, 92) = 0.60, p = .44, partial η^2 = .01, observed power = .12, was included as a covariate in the model and was not significant. There was a significant effect of youths report of their initial intake scores for emotional functioning, F (1, 92) = 32.94, p = .00, partial η^2 = .26, observed power = 1.00, which is why it was controlled for in the model.

Youth report for their Social Functioning

Intervention condition and ethnicity had no significant interaction when controlling for age, F (1, 93) = 0.00, p = .99, partial η^2 = .00, observed power = .05. There was not a significant effect of intervention condition, F (1, 93) = 0.02, p = .90, partial η^2 = .00, observed power = .05, or ethnicity, F (1, 93) = 0.11, p = .74, partial η^2 = .00, observed power = .06. Age, F (1, 93) = 0.34, p = .56, partial η^2 = .00, observed power = .09, was included as a covariate in the model and was not significant.

Youth report for their School Functioning

Intervention condition and ethnicity had no significant interaction when controlling for age, F (1, 93) = 0.01, p = .92, partial η^2 = .00, observed power = .05. There was not a significant effect of intervention condition, F (1, 93) = 0.03, p = .86, partial η^2 = .00, observed power = .05, or ethnicity, F (1, 93) = 0.03, p = .85, partial η^2 = .00, observed power = .05. Age, F (1, 93) = 0.45, p = .51, partial η^2 = .00, observed power = .10, was included as a covariate in the model and was not significant.

Effect of Program participation in the entire sample

Paired sample t-tests revealed that there was an effect of program participation in the entire sample from intake to follow-up regardless of ethnic group or intervention

condition on parent-reported emotional functioning scores, $t(96) = -4.47$, $p < .001$, youth report for overall quality of life ($t(97) = -4.94$, $p < .001$), and youth report for social functioning ($t(97) = -3.63$, $p < .001$), displaying statistically significant improvements on these scales post program completion. Additionally, there was a decline in youth report for emotional functioning ($t(97) = -4.25$, $p < .001$) in the entire sample from intake to follow-up. There were no other statistically significant changes from intake to follow-up in HRQOL scores regardless of ethnic group or intervention condition (table 15).

Table 15. Comparison on PedsQL variables pre and post in entire sample

		Intake		Follow-up			
Change Scores		*M*	*SD*	*M*	*SD*	*t*	*p*
Total Score	P	65.58	16.97	70.28	16.38	-2.49	0.015
	Y	70.34	15.05	76.88	13.92	-4.94	0.000
Physical Functioning	P	63.89	20.69	70.01	21.09	-2.38	0.019
	Y	74.10	17.46	79.15	16.27	-2.82	0.006
Emotional Functioning	P	65.71	18.30	73.87	19.16	-4.47	0.000
	Y	87.35	22.18	76.22	20.57	-4.25	0.000
Social Functioning	P	66.50	24.74	70.00	22.04	-1.26	0.212
	Y	70.20	21.76	78.06	21.01	-3.63	0.000
School Functioning	P	68.27	22.73	67.84	19.84	0.19	0.853
	Y	67.74	19.44	71.73	17.01	-2.05	0.043

Note: P = Parent Version, Y = Youth Version

Hypothesis 2 was partially supported since there was an effect of program participation in the entire sample on parent-reported emotional functioning scores, youth report for overall quality of life, and youth report for social functioning, displaying statistically significant improvements from intake to follow-up regardless of ethnic group or intervention condition. There was also a significant effect of program participation in the entire sample on youth report for emotional functioning, although these scores decreased from intake to follow-up, suggesting that youth rated their emotional functioning to decline post program completion. Further, intervention condition was not

related to any HRQOL change scores (Overall QOL, Physical functioning, Emotional Functioning, Social Functioning, and School Functioning). Ethnicity was not related to change scores for any HRQOL scale. There was also no interaction between ethnicity and invention condition for any change scores in HRQOL scales. Hypothesis 3 predicted that Caucasian youth in both groups (IG program and SOC treatment) would display greater reductions in zBMI scores at follow-up compared to African American youth. It was hypothesized that youth in the IG program would display greater reductions in zBMI scores at follow-up compared to youth receiving SOC treatment.

Hypothesis 3

Hypothesis 3 predicted differential weight change based on ethnicity (African American and Caucasian) at follow-up in overweight and obese youth attending the IG program relative to SOC treatment. It was also predicted that zBMI scores would decrease for participants in the entire sample (regardless of ethnicity or intervention condition) from intake to follow-up.

Demographics. For this hypothesis, three participants were excluded from analyses due to one or more of the following reasons: decrease in height, increase in height of more than 3 standard deviations above the mean, missing height and/or weight information at follow-up, or missing a BMI value, despite having a zBMI value, thus, making it impossible to verify that their zBMI values were accurate as opposed to outliers due to data entry error. One participant was considered to be an extreme outlier (5 standard deviations away from the mean), however, this participant remained in the subsequent analysis because their data was not due to data entry error. This resulted in a sample size of 129 participants who attended either the IG program (n = 81) or the SOC

treatment (n = 48) and had a zBMI score at the initial intake evaluation and 10 to 24 (*M* = 15.25, *SD* = 3.13) months post initial intake evaluation. There was a significant difference between months from intake to follow-up appointments for participants in the IG program (*M* = 16.46, *SD* = 2.92) compared to the SOC treatment (*M* = 13.21, *SD* = 2.32), (*t* (127) = 6.58, *p* < .001). However, there was not a significant difference in months from intake to follow-up appointments between ethnic groups, (*t* (127) = 0.53, *p* =. 60). The sample included 72 females, 94 African Americans, and 76 participants had Medical Assistance as their insurance coverage. The mean age of participants was 11.76 (*SD* = 2.52) years. The mean BMI for youth was 35.44 (*SD* = 6.50) and mean zBMI score was 2.47 (*SD* = 0.32). The sample consisted of 126 youth who were classified as obese. Mother's mean BMI score was 33.40 (*SD* = 8.60) and father's mean BMI score was 30.84 (*SD* = 7.55). See table 16.

Table 16. Participants with zBMI scores over time by treatment condition

Youth Group	zBMI		
	Ethnicity		
	Caucasian	African American	Total
IG	20	61	81
SOC	15	33	48
Total	35	94	129

Preliminary Analyses

Change scores were created for zBMI by subtracting intake scores from follow-up zBMI scores. A negative change score indicates a relative decrease in weight. Next the distribution of the dependent variable (zBMI change score) was analyzed for skew and kurtosis (table 17) and was within normal limits. Figure 7 displays means for zBMI scores at intake, follow up and change scores split by ethnicity. Additionally, pre-

treatment zBMI scores were examined to see if they differed across intervention conditions (table 18) and ethnicity (table 19), and did not differ across conditions or ethnic groups.

Table 17. Distribution of zBMI scores for hypothesis 3

Variable	*n*	Mean	SD	Skew	Kurtosis	Min	Max
Intake							
zBMI	129	2.47	0.32	-1.17	3.60	0.96	3.14
Follow-up							
zBMI	129	2.38	0.39	-1.11	2.96	0.60	3.12
Change Score							
zBMI change	129	-0.09	0.19	-1.55	5.14	-1.05	0.26

Note: Change scores are the difference between intake and follow-up scores

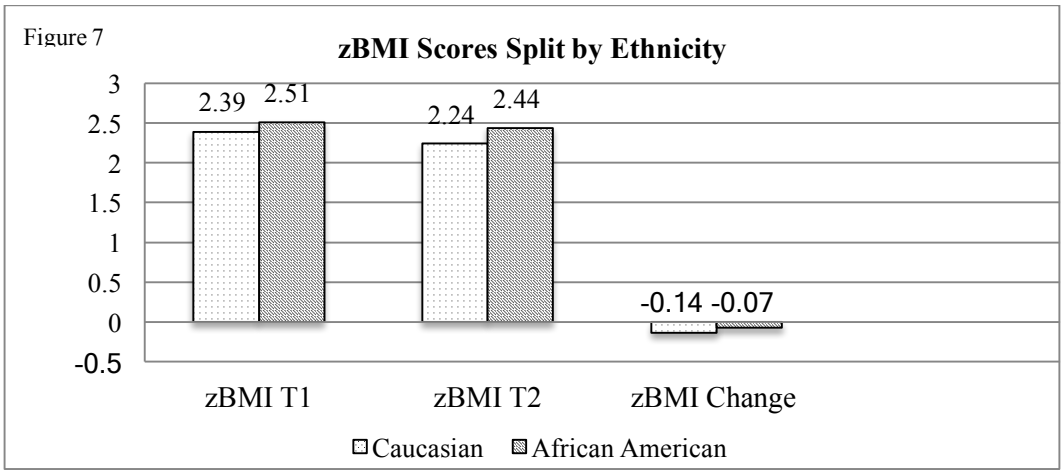
Table 18. Relation between pre-treatment zBMI scores and intervention conditions

	IG		SOC			
	M	*SD*	*M*	*SD*	*t*	*p*
zBMI pre-treatment scores	2.47	0.29	2.48	0.36	-0.17	.86

Table 19. Relation between pre-treatment zBMI scores and ethnicity

	Caucasian		African American			
	M	*SD*	*M*	*SD*	*t*	*p*
zBMI pre-treatment scores	2.39	0.33	2.51	0.31	-1.90	.06

Figure 7



Note: T1 = Time 1, T2 = Time 2, Change = difference between intake and follow-up scores.

A two way ANCOVA was conducted, with ethnicity (African American vs. Caucasian) and intervention (IG program vs. SOC treatment) as the between-subjects variables and zBMI change score as the dependent variable. Age at intake was included as a covariate in the model. SES (measured by insurance) and sex were tested. Sex did not significantly predict the main outcome (see table 20). Therefore, this was not considered a covariate in the subsequent analysis for this hypothesis. SES (measured by insurance) did significantly predict a change in zBMI scores, thus it was controlled for in the subsequent analysis (see table 21 and figure 8). Additionally, the relationship between age and zBMI change scores was investigated using a correlation analysis, and indicated that age was positively correlated with zBMI change scores, $r = .19$, $p < .05$ (see figure 9). Post hoc power analyses were conducted for this hypothesis.

Table 20. Relation between participant sex and outcome variable

	Female		Male			
	M	*SD*	*M*	*SD*	*t*	*p*
zBMI Change Score	-.12	0.17	-0.05	0.03	-1.94	.06

Table 21. Relation between participant SES (measured by insurance status) and outcome variable

	MA		Commercial			
	M	*SD*	*M*	*SD*	*t*	*p*
zBMI Change Score	-0.05	0.16	-0.14	0.22	2.77	.01

Figure 8. Relation between participant SES and zBMI change score

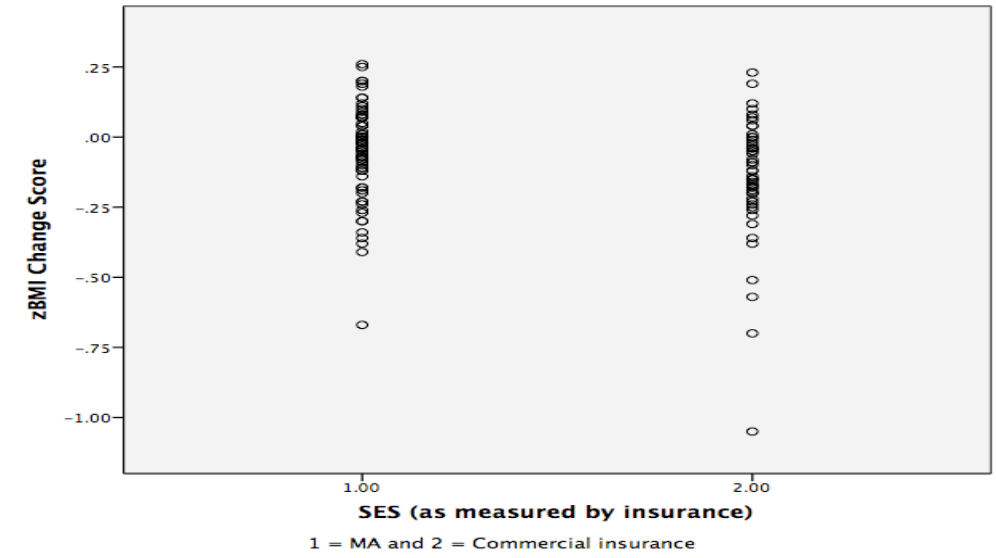
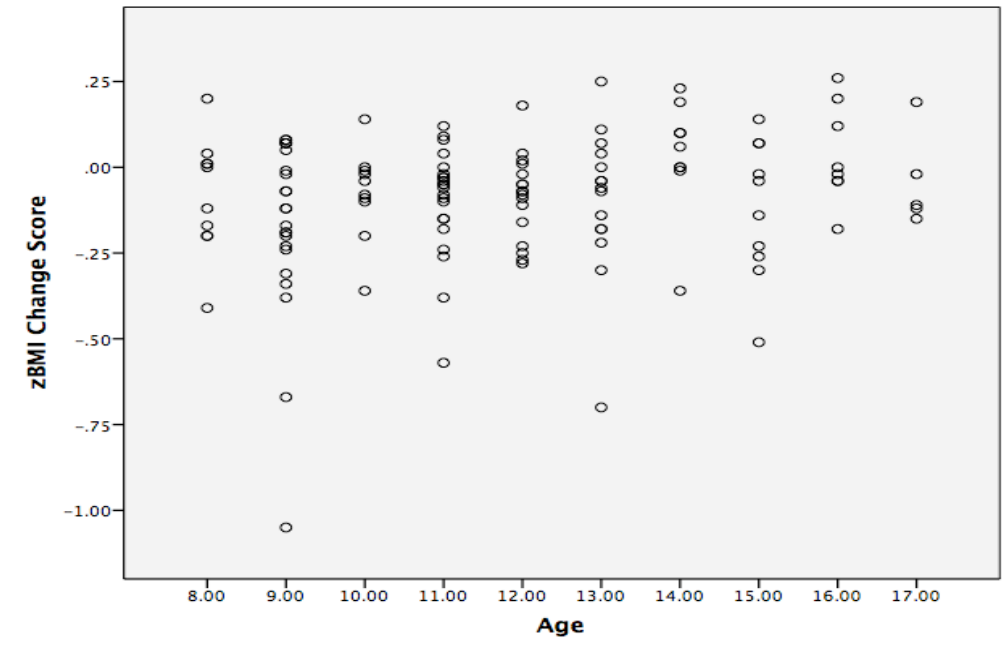


Figure 9. Relation between participant age and zBMI change score



Change in zBMI Scores. Intervention condition and ethnicity had no significant interaction when controlling for SES (as measured by insurance) and age, F (1, 123) = 1.50, p = .22, partial η^2 = .01, observed power = .23. There was not a significant effect of intervention condition, F (1, 123) = 0.22, p = .64, partial η^2 = .00, observed power = .08, or ethnicity predicting change in zBMI scores, F (1, 123) = 1.99, p = .16, partial η^2 = .02, observed power = .29. Participants in the IG program had a mean zBMI change score of -0.09 (Standard error = 0.02) and participants in the SOC treatment had a mean zBMI change score of -0.11 (Standard error = 0.03), after adjusting for the effects of covariates. Additionally, Caucasians had a mean zBMI change score of -0.13 (Standard error = 0.03) and African Americans had a mean change score of -0.07 (Standard error = 0.02), after adjusting for the effects of covariates.

Age, F (1, 123) = 5.21, p = .02, partial η^2 = .04, observed power = .62, was included as a covariate in the model and was significant. Based on the correlation analyses conducted above, it appears that increases in age are associated with smaller reductions in zBMI scores from intake to follow-up. This suggests that on average, younger children demonstrated greater reductions in zBMI scores from intake to follow up and displayed a greater relative weight loss compared to older youth (see figure 9 above). Economic status, F (1, 123) = 4.72, p = .03, partial η^2 = .04, observed power = .58, was also significant, which is why it was controlled for in the model. Additionally, this suggests that on average, youth with commercial insurance are more likely to have negative zBMI change scores and have greater decreases in zBMI scores from intake to follow-up compared to youth with medical assistance (see table 21 and figure 8 above).

Effect of Program participation in the entire sample

A paired sample t-test revealed that there was a statistically significant effect of program participation in the entire sample from intake ($M = 2.47$, $SD = 0.32$) to follow-up ($M = 2.38$, $SD = 0.39$), $t(128) = 5.82$, $p < .01$, regardless of ethnicity or intervention condition on zBMI scores. This indicates that there was a significant decrease in zBMI scores from intake to follow-up assessments. However, not all participants in the entire sample experienced a decrease in zBMI scores at follow up, as depicted in Figure 9.

Hypothesis 3 was partially supported. Increases in age is associated with smaller reductions in zBMI scores from intake to follow-up. Additionally, there was a statistically significant decline in zBMI scores at post program completion regardless of ethnic group or intervention condition in the entire sample. However, ethnicity and intervention condition were not related to post-treatment zBMI scores.

Discussion

This study examined whether there was differential responding in psychosocial functioning, HRQOL, and weight changes from intake to follow-up assessments in youth attending a weight management program. This study also examined whether there was an effect of program participation in the entire sample on psychosocial functioning, HRQOL, and weight changes regardless of ethnic group or intervention condition. This study revealed statistically significant improvements in psychosocial functioning at follow-up assessments. Specifically, parent-reported withdrawal scores improved from intake to follow-up regardless of ethnicity in participants who attended the IG program. This suggests that parents perceived their youth to be more engaged in social settings after participating in the IG program. This study also found an effect of program

participation in the entire sample from intake to follow-up assessments regardless of ethnic group or intervention condition on parent-reported emotional functioning scores, youth report for overall quality of life, and youth report for social functioning, which resulted in statistically significant improvements on these scales post program completion. However, there was a decline in youth report for emotional functioning in the entire sample from intake to follow-up, indicating that youth perceived themselves to experience greater distress post program completion regardless of ethnicity or intervention condition. However, it should be noted that post treatment emotional functioning scores in both intervention conditions and ethnic groups were similar to youth's scores on all other HRQOL scales, suggesting that this decline may not be clinically significant. This study also revealed that there was a statistically significant effect of program participation in the entire sample from intake to follow-up regardless of ethnic group or intervention condition on zBMI scores, indicating significant decreases in zBMI scores post program completion.

This study revealed positive trends across several HRQOL scales, even though the change scores across all scales were not statistically significant when examining differential responding based on ethnicity and intervention conditions. Despite results not being statistically significant, Caucasian parent-proxy report and self-report measures indicated greater increases from intake to follow-up in youth's emotional functioning compared to African American's regardless of intervention condition. This is important because Caucasian parents perceived their youth to benefit from the weight management program, despite changes in weight or intervention condition, which was consistent with self-report ratings. Research suggests that overweight and obese Caucasians may

experience greater emotional distress than overweight and obese African Americans (Parnell, Sargent, Thompson, & Duhe, 1996), and this trend may motivate Caucasian families to enroll their youth in weight management programs.

Additionally, improvements were seen by both parent-proxy report and self-report measures in social functioning, suggesting improvements in peer relations after participating in the weight management program. Increases in physical functioning were displayed via parent-proxy reports and self-report measures, indicating improvements in youth's activities of daily living (e.g., increased participation in exercise and energy level, taking better care of oneself). It should also be noted that Caucasians exhibited greater increases in change scores across several HRQOL scales compared to African Americans, such as parent-proxy reports of total, physical, and social functioning, as well as self-report total and physical functioning scales. Increases were seen in both African American and Caucasian self-report scores on their perception of school functioning (e.g., missing less school to attend doctor appointments and/or not feeling well, improved concentration). Despite not finding statistically significant increases on any scale, several HRQOL scales improved after participating in the weight management program. It is common for obesity literature to discuss trends due to small sample sizes, since attrition is often very high in this population.

Similar to Lochrie et al., (2013), HRQOL change scores for all scales did not significantly differ for participants in either intervention condition. Intervention condition and ethnicity did not significantly interact when controlling for age on any HRQOL scale. It is possible that failure to find an effect of intervention, or interaction terms on the HRQOL scales could be related to the significant difference between months from intake

to follow-up appointments for participants in the IG program (M = 17.06, SD = 2.70) compared to the SOC treatment (M = 12.93, SD = 2.12). Specifically, if participants in the IG program had returned 12 months post intake, differences may have been present between the two groups. Post-treatment assessments at 12 months are customary and frequently reported in studies to gain a better understanding of outcome responses. For example, Steele et al., (2012) found that youth who completed a 10-week family-based group intervention program experienced clinically significant increases in HRQOL scores at 12-month post intervention assessed via a self-report measure compared to youth who were in a SOC treatment group.

Similar to previous research, this study found that younger children displayed greater reductions in zBMI scores from intake to follow-up and displayed a greater relative weight loss compared to older youth (Presti, Lai, Hildebrandt, & Loeb, 2010; Steele et al., 2012). This study also found that on average, youth with commercial insurance were more likely to have greater decreases in zBMI scores from intake to follow-up compared to youth with medical assistance, which is also consistent with previous literature (Skelton et al., 2011).

However, this study did not find a significant effect of intervention condition or ethnicity, controlling for age and SES, when predicting change in zBMI scores. There was a significant difference between months from intake to follow-up appointments for participants in the IG program (M = 16.46, SD = 2.92) compared to the SOC treatment (M = 13.21, SD = 2.32). It is possible that the results could have been different if both groups were reassessed at 12-months post intake (which is also customary in the literature). It is also possible that the inclusion of an extreme outlier may have impacted

the results of this analysis; however, that participant remained in the analysis because the data was not due to data entry error. Thus, removal of this outlier may have yielded a different outcome. Despite the lack of significant findings, this study still contributes to the literature because other studies have not examined responses of HRQOL and zBMI changes in treatment groups based on ethnicity (Dreyer Gillette et al., 2014; Pratt et al., 2013; Steele et al., 2012). Additionally, untreated obesity in youth are associated with continual weight gain over time, and increases the potential of developing type 2 diabetes and other comorbid medical conditions in adulthood (Atman & Wilfley, 2015).

In addition to untreated pediatric obesity leading to long-term negative health outcomes, racial differences are also present in obese adults. Studies from adult populations have found that African Americans tend to have less successful weight loss results compared to Caucasians. One study found that African Americans had smaller reductions in weight loss at 6-month post intervention and gained more weight at 12-months compared to Caucasians (Wing & Anglin, 1996). Another study found that African American women lost approximately 2.7 kg less than Caucasian women at an 18-month follow up assessment (Kumanyika, Obarzanek, Stevens, Hebert, & Whelton, 1991). Thus, it is critical to provide culturally sensitive interventions to overweight and obese youth.

This study did not find differential responding in psychosocial functioning (Self-Esteem, Interpersonal Relations, Depression, and Withdrawal) between ethnic groups from intake to follow-up in overweight and obese youth attending the IG program. One possible explanation is that participants in the current study had scores that fell within the normative range. Additionally, the sample for this question consisted of primarily African

American youth (38 parents and 37 youth) who completed the BASC-2 at both intake and follow-up assessments compared to only sixteen Caucasian parents and youth who completed the measures at both time points. Thus, the limited number of Caucasians in this sample could contribute to the lack of finding ethnic differences. For this research question, the sample had an average age of 11.89 years. It is possible that results may have been different if this sample had a higher mean age. For example, Zeller and colleagues (2004a) study revealed that Caucasian adolescents self-reported lower self-esteem than African American adolescents. Thus, ethnic differences may emerge during adolescence.

Another possible explanation could be related to the amount of time between intake and follow-up appointments. For example, Savoye et al., (2005) found improvements in adolescents overall self-concept at 1-year post completion of a weight management intervention; however, these gains were not maintained at the 2-year follow up assessment. In the current study, participants had a mean interval of 17.10 months between their initial intake and follow-up assessment. Thus, it is possible that the results could have been different if participants were reassessed at 12 months compared to 17 months. Despite not finding significant differences in psychosocial functioning post completion of the IG program, a strength of this study was the inclusion of mostly African American youth. This is particularly important because previous weight management studies consist of primarily Caucasian samples, limiting generalizability of findings (Zeller et al., 2004a).

Potential Contributions and Limitations

This study contributes to the literature is several ways. First, limited information is available on psychosocial responses to weight management programs between ethnic groups in overweight and obese youth. This study compared HRQOL responses and body weight changes in two ethnic groups (African American and Caucasian) attending a weight management treatment program. This study also examined whether there was an effect of program participation in the entire sample on psychosocial functioning, HRQOL, and weight changes regardless of ethnic group or intervention condition. This study found that Caucasians and African Americans reported positive trends across several HRQOL scales from intake to follow-up assessments, regardless of intervention condition or change in zBMI score. These trends can be discussed with families so they are aware of potential benefits of attending weight management programs, which may increase families' motivation to enroll in treatment programs and increase adherence. A particularly important trend that was identified in this study was that Caucasian parent-proxy report and self-report measures indicated a reduction in emotional distress after attending The Program, even though this finding was not statistically significant. This finding is noteworthy because research suggests that overweight and obese Caucasians experience greater emotional distress than African Americans (Parnell, Sargent, Thompson, & Duhe, 1996), and further highlights the importance of attending a weight management program. Additionally, despite not finding a statistically significant difference between ethnic groups in zBMI change scores in youth who attended The Program, Caucasians displayed greater negative zBMI scores from intake to follow-up (-0.13 vs -0.07), regardless of intervention condition. It is important because there was an

effect of program participation in the entire sample regardless of ethnicity or intervention condition, indicating a statistically significant decrease in zBMI scores from intake to follow-up assessments. Although results were not statistically significant when examining differential weight change based on ethnicity or intervention condition, this information can help researchers, clinicians, and multidisciplinary teams cater interventions for overweight and obese youth to be culturally sensitive to ethnic differences.

This study has several limitations. Participants included in this study were not randomly assigned to the IG program or SOC treatment. Thus, it is not possible to know if participant responses in outcome measures post treatment are due solely to the intervention group. Additionally, pre-treatment HRQOL scales differed between intervention conditions, which makes interpretation of intervention effects less clear. However, the four scales with pre-treatment differences were controlled for in subsequent analyses by including the initial pre-treatment HRQOL score as a covariate in the model. Participants in the IG program had higher HRQOL scores across several rating scales compared to participants in the SOC treatment. However, change scores were not statistically different for participants in either group. Future studies should incorporate a qualitative component to gain a better understanding of youth's psychosocial responses to weight management interventions across ethnic groups and intervention conditions. This information can help identify areas to target in future interventions to improve quality of care. Another limitation of the current study is that youth's responses to The Program may not be generalizable to populations outside of lower income urban cities or attending other weight management programs.

Study limitations also include high attrition rates, which resulted in a relatively small sample size. Similar to other weight management studies, the current study is underpowered, which limits the conclusions that can be drawn from this study. Additionally, the high attrition rate in the current study limits the interpretation of treatment effects. However, this study still provides information on African American and Caucasian youth who are overweight or obese attending a weight management clinic, which can be used to increase motivation to participate in treatment programs. For example, highlighting that positive trends were displayed across most HRQOL scales, regardless of intervention condition may help increase retention rates. Due to the small sample size and the significant time difference from intake to follow-up assessments between groups (IG vs. SOC), it is still not clear whether results for this study may have yielded different findings in HRQOL and zBMI change scores across intervention conditions and ethnic groups if they were compared at 1-year post intake (which is customary in the literature). Due to high attrition rates, future studies should examine larger samples by oversampling prior to the start of the treatment program. Future studies should assess responses approximately 1-year post intake to gain a better understanding of outcome responses across treatment conditions in HRQOL and zBMI change scores between ethnic groups. Additionally, this study consisted of primarily obese youth, rather than a more even distribution between overweight and obese youth, which could also impact the results of intervention effects. Despite limitations, positive trends were still present for both Caucasian and African American overweight and obese youth across most HRQOL scales, with Caucasians having generally greater increases in their scores.

Future treatment programs can explore reasons for differences, leading to more culturally sensitive interventions.

Additionally, limited information is available on psychosocial responses to weight management treatment programs in samples comprised of mostly ethnic minority youth. Despite the limited sample size, this study contributes to the literature by examining psychosocial responses, HRQOL, and weight changes to treatment in a sample of mostly African American youth. Results from this study can be utilized to improve success of lifestyle maintenance programs in ethnic minority populations. Future providers may want to discuss patient expectations about weight loss and benefits of attending a program consistently at the initial intake appointment to increase program retention rates and decide which intervention program is best for each family. Additionally, if two treatment programs result in similar outcomes, then consumers may want to enroll in the more cost-effective treatment approach. The literature clearly demonstrates that untreated pediatric obesity can lead to long-term health complications (e.g., type 2 diabetes, and other comorbid medical conditions) in adulthood (Atman & Wilfley, 2015).

The current study utilized generic HRQOL and psychological functioning measures, rather than disease specific measures (e.g., Impact of Quality of Life-kids, Kolotkin et al., 2006) to assess impairments due to a specific health condition (e.g., obesity). Thus, it is possible that disease-specific measures would be more sensitive from intake to follow-up assessments. Regardless of potential limitations, findings from this study contribute to the understanding of outcome responses across ethnicity and intervention conditions in overweight and obese youth attending weight management programs in low-income urban areas.

Appendix A

Summary of study. This research study compared HRQOL, psychosocial responses, and body weight changes in two ethnic groups (African Americans and Caucasians) attending a pediatric weight management program. This study also examined whether there was an effect of program participation in the entire sample on zBMI scores, psychological functioning, and HRQOL regardless of ethnic group or intervention condition.

Q1a: Do African American and Caucasian youth have differential response to the IG Program?
H1a: Change in self-reported self-esteem, interpersonal relations, and depression scores will be greater for Caucasians than African Americans. Change in parent-reported depression and withdrawal scores will be greater for Caucasians than African Americans.
Analysis: Repeated measures ANOVA (ethnicity x time)
DVs: Self-reported self-esteem, interpersonal relations, depression
Parent proxy report depression, withdrawal
Covariate: Age
Q1b: Is there an effect of program participation in the entire sample on psychosocial functioning regardless of ethnic group?
H1b: Psychosocial functioning scores would improve for all participants in the entire sample (regardless of ethnicity) post program completion.
Analysis: Separate paired sample t-tests were conducted for each psychosocial functioning scale (Self-reported self-esteem, interpersonal relations, depression, and Parent proxy report depression and withdrawal) at intake and follow-up

Q2a: Do African American and Caucasian youth have differential response (HRQOL) to the weight management program (IG Program vs. SOC Treatment)?
H2a: Self and parent-proxy report HRQOL scales (physical, emotional, social, school and total overall QOL) will be higher for African American youth than Caucasian youth. Participants in the intensive group program will display greater improvements across all QOL scales compared to participants receiving standard of care treatment.
Analysis: Two way ANCOVA (ethnicity x intervention group)
DVs: Change scores for Self-report HRQOL scales
Change scores for Parent proxy-report HRQOL scales
Covariate: Age and four scales with pre-treatment differences (parent proxy reports for youth overall functioning, emotional functioning, school functioning, and youth self-report for emotional functioning)
Q2b: Is there an effect of program participation in the entire sample on HRQOL regardless of intervention condition or ethnic group?
H2b: HRQOL scores would improve for all participants in the entire sample (regardless of ethnicity or intervention condition) post program completion.
Analysis: Separate paired sample t-tests were conducted for each HRQOL scale at intake to follow-up

Q3a: Do African American and Caucasian youth have differential response (zBMI scores) to the weight management program (intensive group program vs. standard of care)?
H3a: Caucasian youth in both groups will display greater reductions in zBMI scores compared to African American youth. Youth in the intensive group program will display greater reductions in zBMI scores compared to youth receiving standard of care treatment. Younger children will demonstrate greater reductions in zBMI scores compared to older children.
Analysis: Two way ANCOVA (ethnicity x intervention)
DV: zBMI change score
Covariate: Age
Q3b: Is there an effect of program participation in the entire sample on change in zBMI scores regardless of ethnic group or intervention condition?
H3b: Participants in the entire sample (regardless of ethnic group or intervention condition) would demonstrate a reduction in zBMI scores post program completion.
Analysis: Paired sample t-test with zBMI scores at intake to follow-up

Why this study is important: Findings from this study provide information on African American and Caucasian youth who are overweight or obese attending a weight management clinic. Limited information is available on psychosocial responses, HRQOL, and body weight changes to weight management treatment programs in samples comprised of mostly ethnic minority youth. This study helps provide a better understanding of youth's responses to The Program, and identified potential reasons for why outcome responses may not have varied across ethnicity and intervention condition. This study found that Caucasians and African Americans reported positive trends across several HRQOL scales from intake to follow-up assessments, with Caucasians exhibiting generally greater increases in HRQOL scales regardless of intervention condition or change in zBMI score. These trends can be discussed with families so they are aware of potential benefits of attending weight management programs, which may increase families' motivation to enroll in treatment programs and increase adherence. This information can help identify areas to target in future treatment programs, leading to more culturally sensitive interventions. Lastly, this study contributes to the literature by examining outcome responses to a treatment program in a sample of mostly African American youth. Results from this study can be utilized to improve success of lifestyle maintenance programs in ethnic minority populations.

Mt. Washington Pediatric Hospital

Weigh Smart• Program

New Patient Information Form

1708 West Rogers Avenue • Baltimore, Maryland 21209-4596
(410) 578-5145 or (410) 367-2222 • FAX: (410) 578-2654

Place Label Here or Insert

Last Name *First Name*

*Med Rec #*_____ *and*

*Date of Birth*_____

PLEASE HAVE YOUR CHILD'S PRIMARY CARE PHYSICIAN SEND ANY GROWTH CHARTS, LAB WORK RESULTS, AND/OR VISIT NOTES TO US VIA FAX OR MAIL.

Today's Date: _____

Name of person completing the form and relationship to child: _____
Do you have custody of child: Yes No If not, who does: _____
If applicable, what type of custody (please circle): Joint Sole Other
Patient Name: _____ Sex:_____
Date of Birth: _____Age:_____ Current Weight: _____Ht: _____
Patient Ethnicity: (Please note: for informational purposes and is optional) **PLEASE CIRCLE**

0-Caucasian
1-African American
2-Hispanic
3-Asian
4-Other_____

Parent(s) name(s): _____
Home Phone:_____ Cell Phone: _____ Work Phone: _____
E-mail Address: _____
Address: _____
City, State, & Zip Code: _____
Referring Physician: _____ Phone: _____
Why are you interested in our program: _____

BIRTH HISTORY:

Weight:_____Length:_____Full Term: **Yes No** Premature: **Yes No**

Which hospital?_____

If premature, at what week was child born:_____

Please Describe:

Problems during pregnancy: Yes No _____
Problems during delivery: Yes No _____
Problems in the first month: Yes No _____

PAST MEDICAL HISTORY:

What childhood illnesses have your child been treated for: _____
Has your child ever been hospitalized: Yes No, please list: _____
Has your child ever had surgery: Yes No, please list: _____
Has your child had any accidents: Yes No, please list: _____
Has your child had any special medical treatments for a medical condition: Yes No
If yes, please list: _____

Place Label Here or Insert

Last Name, First Name

Med Rec #_____ and

Date of Birth_____

EATING STYLE:

Does your child eat large meals: Yes No

Likes to nibble: Yes No

Skips meal: Yes No If yes, which meal or meals - **Please Circle**

Breakfast Lunch Dinner

Number of fast food meals/week: _____ Which restaurant(s): _____

How many meals eaten outside the home/ week: _____ Where: _____

Does the child eat school breakfast? Yes or No School lunch? Yes or No

Have you previously tried diets to help any of your children lose weight: Yes No

If yes, which one(s): _____

ALLERGIES:

Allergy to Food: Yes No, please list: _____

Allergy to Medicine: Yes No, please list: _____

Allergy to Latex: Yes No

Immunizations up to date? Yes No

FAMILY HISTORY:

Biological Parents:

Mother: Age: _____ Ht: _____ Current Wt: _____ Most you've weighed: _____

Father: Age: _____ Ht: _____ Current Wt: _____ Most you've weighed: _____

Siblings:	Age	Ht.	Wt.	Male/Female
Full – Half – Step	_____	_____	_____	M F
Full – Half – Step	_____	_____	_____	M F
Full – Half – Step	_____	_____	_____	M F
Full – Half – Step	_____	_____	_____	M F
Full – Half – Step	_____	_____	_____	M F
Full – Half – Step	_____	_____	_____	M F

Circle if there is a family history of: (note: includes extended family- grandparents, aunts, uncles, cousins…)

Diabetes	Thyroid Problems	Obesity	Weight loss surgery
Peptic Ulcer	Reflux	Cancer	Eating Disorders
Gallbladder	Liver Disease	ADHD	Seizure
Pancreatitis	Constipation	Anxiety	Depression
Arthritis	Hypertension	Mental Retardation	Learning Problems
Stroke	Heart Disease	Personality Disorder	Other:_____
Infertility	Kidney disease	Schizophrenia	

Place Label Here or Insert

Last Name First Name

Med Rec # and

Date of Birth

SOCIAL HISTORY:

Who lives at home with your child: **CIRCLE ALL THAT APPLY**

0-Mother 1-Father 2-Sibling(s) 3-Grandparent(s) 4- Extended Family

What school and grade is your child in: _____

Does your child have either an IEP: Yes No or 504 plan: Yes No

If yes, please detail: _____

Physical activity at home: _____ Parents involved: Yes No

Physical Education at school: Yes No, How often: _____

Hours of after-school organized sports a week: _____

Mother's highest level of education: **PLEASE CIRCLE**

0-High School
1-GED
2-Some College
3-College Degree
4-Graduate Degree

Mother's Occupation: _____ and number of hours worked/week: _____

Father's highest level of education: **PLEASE CIRCLE**

0-High School
1-GED
2-Some College
3-College Degree
4-Graduate Degree

Father's Occupation: _____ and number of hours worked/week: _____

Primary caregiver's work schedule: **CIRCLE ALL THAT APPLY**

0-Weekends
1-Weekdays
2-Days
3-Nights

Any significant changes in the family in the past 6 months: _____

Is there anyone involved in the child's life that may not be supportive of weight loss: Yes No

If yes, what is their relationship to your child: _____

Physical activity at home: _____ Parents involved: Yes No

MEDICATIONS: Please list all medications within the last 3 months (include vitamins, health food remedies, etc.)_____

_____

_____

Place Label Here or Insert

Last Name First Name

Med Rec # and

Date of Birth

REVIEW OF SYSTEMS:

Does your child have any of these symptoms:

			Comments
Allergy	Yes	No	
Bleeding Tendency	Yes	No	
Recurrent Headaches	Yes	No	

If yes: At least 5 separate headaches severe enough to require he/she stop activities or take pain medication Yes No

Headaches accompanied by nausea or vomiting Yes No

Headaches with sensitivity to light Yes No

Headaches with visual disturbances and/or temporary numbness/tingling Yes No

Morning Headaches	Yes	No	
Trouble breathing	Yes	No	
Shortness of Breath	Yes	No	
Heavy Breathing	Yes	No	
Asthma	Yes	No	
Snoring	Yes	No	Sleep study:
Snores Loudly	Yes	No	
Mouth open during the day	Yes	No	
Heartburn	Yes	No	
Abdominal Pain	Yes	No	
Constipation	Yes	No	
Diarrhea	Yes	No	
Bedwetting/urinary problems	Yes	No	
Joint problems	Yes	No	
Any other complaints of pain	Yes	No	
Tired in the morning	Yes	No	
Sleepy in school	Yes	No	
Easily distracted	Yes	No	
Difficulty organizing	Yes	No	
Interrupts conversations	Yes	No	
Wears glasses	Yes	No	
Trouble following directions	Yes	No	
Irregular period	Yes	No	

Has your child ever been treated for the following conditions: Comments

ADHD	Yes	No	
ODD	Yes	No	
Anxiety	Yes	No	
Depression	Yes	No	
Mental Health Conditions	Yes	No	please describe:
Legal issues	Yes	No	
Behavior issues	Yes	No	please describe:

Does your child currently see a mental health professional? (school counselor, social worker, psychologist, psychiatrist, etc) Yes No

Please provide their name and reasons for therapy:

Place Label Here or Insert

Last Name First Name

Med Rec #_____ and

Date of Birth

Has your child seen a mental health professional in the past?
(school counselor, social worker, psychologist, psychiatrist, etc) Yes No

Is the child currently on or has been on any psychiatric medications? Yes No
If so, please list_____
_____

FOR THE **CHILD** TO ANSWER: Do you want to lose weight? Yes No

FOOD INTAKE RECORD: Instructions: Write down everything your child eats (include sauces and drinks) **for one day**. To ensure accurate results, record the information whenever anything is eaten and/or any beverages.

Time of Day	Food/Drink Description	Amount Eaten	Location of Meal	How I Feel

Please return your completed form to MWPH.

Mail to: Weigh Smart® Program
1708 West Rogers Ave
Baltimore, MD 21209

Fax to us: 410-578-2654

Use our secure email system – call Molly at 410-578-5145 for the instructions to email this form using our secure messaging system.

If you chose to email this form to Mt. Washington Pediatric Hospital using unencrypted email, please sign below that you understand your child's personal and health information may be at risk if sent using an unsecured email system.
Include this consent with your form

_____ _____

Signature, parent/guardian Date

ID#_____

Date:_____

PedsQL™

Pediatric Quality of Life Inventory

Version 4.0

PARENT REPORT for **TEENS** (ages **13-18**)

DIRECTIONS

On the following page is a list of things that might be a problem for **your teen**. Please tell us **how much of a problem** each one has been for **your teen** during the **past ONE month** by circling:

0 if it is **never** a problem
1 if it is **almost never** a problem
2 if it is **sometimes** a problem
3 if it is **often** a problem
4 if it is **almost always** a problem

There are no right or wrong answers.
If you do not understand a question, please ask for help.

*In the past **ONE month,** how much of a **problem** has your teen had with …*

PHYSICAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Walking more than one block	0	1	2	3	4
2. Running	0	1	2	3	4
3. Participating in sports activity or exercise	0	1	2	3	4
4. Lifting something heavy	0	1	2	3	4
5. Taking a bath or shower by him or herself	0	1	2	3	4
6. Doing chores around the house	0	1	2	3	4
7. Having hurts or aches	0	1	2	3	4
8. Low energy level	0	1	2	3	4

EMOTIONAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Feeling afraid or scared	0	1	2	3	4
2. Feeling sad or blue	0	1	2	3	4
3. Feeling angry	0	1	2	3	4
4. Trouble sleeping	0	1	2	3	4
5. Worrying about what will happen to him or her	0	1	2	3	4

SOCIAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Getting along with other teens	0	1	2	3	4
2. Other teens not wanting to be his or her friend	0	1	2	3	4
3. Getting teased by other teens	0	1	2	3	4
4. Not able to do things that other teens his or her age can do	0	1	2	3	4
5. Keeping up with other teens	0	1	2	3	4

SCHOOL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Paying attention in class	0	1	2	3	4
2. Forgetting things	0	1	2	3	4
3. Keeping up with schoolwork	0	1	2	3	4
4. Missing school because of not feeling well	0	1	2	3	4
5. Missing school to go to the doctor or hospital	0	1	2	3	4

ID# _____

Date: _____

PedsQL™

Pediatric Quality of Life Inventory

Version 4.0

PARENT REPORT for **CHILDREN** (ages **8-12**)

DIRECTIONS

On the following page is a list of things that might be a problem for **your child**. Please tell us **how much of a problem** each one has been for **your child** during the **past ONE month** by circling:

0 if it is **never** a problem
1 if it is **almost never** a problem
2 if it is **sometimes** a problem
3 if it is **often** a problem
4 if it is **almost always** a problem

There are no right or wrong answers.
If you do not understand a question, please ask for help.

*In the past **ONE month,** how much of a **problem** has your child had with …*

PHYSICAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Walking more than one block	0	1	2	3	4
2. Running	0	1	2	3	4
3. Participating in sports activity or exercise	0	1	2	3	4
4. Lifting something heavy	0	1	2	3	4
5. Taking a bath or shower by him or herself	0	1	2	3	4
6. Doing chores around the house	0	1	2	3	4
7. Having hurts or aches	0	1	2	3	4
8. Low energy level	0	1	2	3	4

EMOTIONAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Feeling afraid or scared	0	1	2	3	4
2. Feeling sad or blue	0	1	2	3	4
3. Feeling angry	0	1	2	3	4
4. Trouble sleeping	0	1	2	3	4
5. Worrying about what will happen to him or her	0	1	2	3	4

SOCIAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Getting along with other children	0	1	2	3	4
2. Other kids not wanting to be his or her friend	0	1	2	3	4
3. Getting teased by other children	0	1	2	3	4
4. Not able to do things that other children his or her age can do	0	1	2	3	4
5. Keeping up when playing with other children	0	1	2	3	4

SCHOOL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Paying attention in class	0	1	2	3	4
2. Forgetting things	0	1	2	3	4
3. Keeping up with schoolwork	0	1	2	3	4
4. Missing school because of not feeling well	0	1	2	3	4
5. Missing school to go to the doctor or hospital	0	1	2	3	4

ID# _____

Date: _____

PedsQL™

Pediatric Quality of Life Inventory

Version 4.0

TEEN REPORT (ages **13-18**)

DIRECTIONS

On the following page is a list of things that might be a problem for you. Please tell us **how much of a problem** each one has been for you during the past **ONE month** by circling:

0 if it is **never** a problem
1 if it is **almost never** a problem
2 if it is **sometimes** a problem
3 if it is **often** a problem
4 if it is **almost always** a problem

There are no right or wrong answers.
If you do not understand a question, please ask for help.

*In the past **ONE month**, how much of a **problem** has this been for you …*

ABOUT MY HEALTH AND ACTIVITIES *(problems with...)*	Never	Almost Never	Some-times	Often	Almost Always
1. It is hard for me to walk more than one block	0	1	2	3	4
2. It is hard for me to run	0	1	2	3	4
3. It is hard for me to do sports activity or exercise	0	1	2	3	4
4. It is hard for me to lift something heavy	0	1	2	3	4
5. It is hard for me to take a bath or shower by myself	0	1	2	3	4
6. It is hard for me to do chores around the house	0	1	2	3	4
7. I hurt or ache	0	1	2	3	4
8. I have low energy	0	1	2	3	4

ABOUT MY FEELINGS *(problems with...)*	Never	Almost Never	Some-times	Often	Almost Always
1. I feel afraid or scared	0	1	2	3	4
2. I feel sad or blue	0	1	2	3	4
3. I feel angry	0	1	2	3	4
4. I have trouble sleeping	0	1	2	3	4
5. I worry about what will happen to me	0	1	2	3	4

HOW I GET ALONG WITH OTHERS *(problems with...)*	Never	Almost Never	Some-times	Often	Almost Always
1. I have trouble getting along with other teens	0	1	2	3	4
2. Other teens do not want to be my friend	0	1	2	3	4
3. Other teens tease me	0	1	2	3	4
4. I cannot do things that other teens my age can do	0	1	2	3	4
5. It is hard to keep up with my peers	0	1	2	3	4

ABOUT SCHOOL *(problems with...)*	Never	Almost Never	Some-times	Often	Almost Always
1. It is hard to pay attention in class	0	1	2	3	4
2. I forget things	0	1	2	3	4
3. I have trouble keeping up with my schoolwork	0	1	2	3	4
4. I miss school because of not feeling well	0	1	2	3	4
5. I miss school to go to the doctor or hospital	0	1	2	3	4

ID# _____

Date: _____

PedsQL™

Pediatric Quality of Life Inventory

Version 4.0

CHILD REPORT (ages **8-12**)

DIRECTIONS

On the following page is a list of things that might be a problem for you. Please tell us **how much of a problem** each one has been for you during the **past ONE month** by circling:

0 if it is **never** a problem
1 if it is **almost never** a problem
2 if it is **sometimes** a problem
3 if it is **often** a problem
4 if it is **almost always** a problem

There are no right or wrong answers.
If you do not understand a question, please ask for help.

*In the past **ONE month**, how much of a **problem** has this been for you …*

ABOUT MY HEALTH AND ACTIVITIES *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. It is hard for me to walk more than one block	0	1	2	3	4
2. It is hard for me to run	0	1	2	3	4
3. It is hard for me to do sports activity or exercise	0	1	2	3	4
4. It is hard for me to lift something heavy	0	1	2	3	4
5. It is hard for me to take a bath or shower by myself	0	1	2	3	4
6. It is hard for me to do chores around the house	0	1	2	3	4
7. I hurt or ache	0	1	2	3	4
8. I have low energy	0	1	2	3	4

ABOUT MY FEELINGS *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. I feel afraid or scared	0	1	2	3	4
2. I feel sad or blue	0	1	2	3	4
3. I feel angry	0	1	2	3	4
4. I have trouble sleeping	0	1	2	3	4
5. I worry about what will happen to me	0	1	2	3	4

HOW I GET ALONG WITH OTHERS *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. I have trouble getting along with other kids	0	1	2	3	4
2. Other kids do not want to be my friend	0	1	2	3	4
3. Other kids tease me	0	1	2	3	4
4. I cannot do things that other kids my age can do	0	1	2	3	4
5. It is hard to keep up when I play with other kids	0	1	2	3	4

ABOUT SCHOOL *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. It is hard to pay attention in class	0	1	2	3	4
2. I forget things	0	1	2	3	4
3. I have trouble keeping up with my schoolwork	0	1	2	3	4
4. I miss school because of not feeling well	0	1	2	3	4
5. I miss school to go to the doctor or hospital	0	1	2	3	4

Appendix D

Behavioral Assessment System for Children, Second Edition (BASC-2) Parent-Rating Scales

Instructions: On the pages that follow are phrases that describe how children may act. Please read each phrase, and mark the response that describes how this child has behaved recently (in the last several months).

Circle **N** if the behavior **never** occurs.
Circle **S** if the behavior **sometimes** occurs.
Circle **O** if the behavior **often** occurs.
Circle **A** if the behavior **almost always** occurs.

Items by scales:

Depression Scale (Parent Rating Scales- Child, ages 6-11)

1. Is easily upset… N S O A
2. Complains about being teased… N S O A
3. Cries Easily… N S O A
4. Says, "Nobody understands me."… N S O A
5. Complains about not having friends… N S O A
6. Says, "Nobody likes me."… N S O A
7. Is negative about things… N S O A
8. Says, "I don't have any friends."… N S O A
9. Says, "I want to die" or "I wish I were dead."… N S O A
10. Says, "I hate myself."… N S O A
11. Is sad… N S O A
12. Seems lonely… N S O A
13. Says, "I want to kill myself."… N S O A
14. Changes moods quickly… N S O A

Depression Scale (Parent Rating Scales- Adolescent, ages 12-21)

1. Cries Easily… N S O A
2. Complains about being teased… N S O A
3. Says, "Nobody understands me."… N S O A
4. Is negative about things… N S O A
5. Says, "I hate myself."… N S O A
6. Says, "I want to kill myself."… N S O A
7. Changes moods quickly… N S O A
8. Is easily upset… N S O A
9. Says, "I want to die" or "I wish I were dead."… N S O A
10. Seems lonely… N S O A
11. Says, "Nobody likes me."… N S O A

12. Says, “I don’t have any friends.”… N S O A
13. Is sad… N S O A

Withdrawal Scale (Parent Rating Scales- Child, ages 6-11)

1. Makes friends easily… N S O A
2. Refuses to join group activities… N S O A
3. Will change direction to avoid having to greet someone… N S O A
4. Avoids competing with other children… N S O A
5. Is chosen last by other children for games… N S O A
6. Is shy with other children… N S O A
7. Quickly joins group activities… N S O A
8. Shows fear of strangers… N S O A
9. Avoids other children… N S O A
10. Has trouble making new friends… N S O A
11. Prefers to be alone… N S O A
12. Is shy with adults… N S O A

Withdrawal Scale (Parent Rating Scales- Adolescent, ages 12-21)

1. Makes friends easily… N S O A
2. Refuses to join group activities… N S O A
3. Is shy with other adolescents… N S O A
4. Prefers to be alone… N S O A
5. Quickly joins group activities… N S O A
6. Is chosen last by other adolescents for games… N S O A
7. Will change direction to avoid having to greet someone… N S O A
8. Avoids competing with other children… N S O A
9. Has trouble making new friends… N S O A
10. Avoids other adolescents … N S O A

Behavioral Assessment System for Children, Second Edition (BASC-2) Child-Rating Scales (ages 6-11)

Directions: This booklet contains sentences that some boys and girls think or feel or act. Read each sentence carefully. For the first group of sentences, you will have two answer choices: **T** or **F.**

Circle **T** for **True** if you agree with a sentence.
Circle **F** for **False** if you do not agree with a sentence.

For the second group of sentences, you will have four answer choices.

Circle **N** if the sentence **never** describes you or how you feel.
Circle **S** if the sentence **sometimes** describes you or how you feel.
Circle **O** if the sentence **often** describes you or how you feel.
Circle **A** if the sentence **almost always** describes you or how you feel.
Items by scales:

Items by scale:

Depression Scale (Child Rating Scale, ages 6-11)

1. Nothing ever goes right for me… T F
2. I used to be happier… T F
3. Nothing goes my way… T F
4. I have too many problems… T F
5. Nobody ever listens to me… T F
6. Nothing is fun anymore… T F
7. I don't seem to do anything right… T F
8. Nothing about me is right… T F
9. I just don't care anymore… T F
10. I feel depressed… N S O A
11. No one understands me… N S O A
12. I feel sad… N S O A
13. I feel like my life is getting worse and worse… N S O A

Interpersonal Relations Scale (Child Rating Scale, ages 6-11)

1. My classmates don't like me… T F
2. Other children don't like to be with me… T F
3. Other kids hate to be with me… N S O A
4. My classmates make fun of me… N S O A
5. I feel that nobody likes me… N S O A
6. Other people make fun of me… N S O A

Self-Esteem Scale (Child Rating Scale, ages 6-11)

1. I think I am a good person… T F
2. I wish I were different… T F
3. I feel good about myself… T F
4. I like who I am… T F
5. I wish I were someone else… T F
6. I like the way I look… N S O A
7. My looks bother me… N S O A
8. I get upset about my looks… N S O A

Behavioral Assessment System for Children, Second Edition (BASC-2) Adolescents-Rating Scales (ages 12-21)

Directions: This booklet contains sentences that young people may use to describe how they think or feel or act. Read each sentence carefully. For the first group of sentences, you will have two answer choices: **T** or **F.**

Circle **T** for **True** if you agree with a sentence.
Circle **F** for **False** if you do not agree with a sentence.

For the second group of sentences, you will have four answer choices.

Circle **N** if the sentence **never** describes you or how you feel.
Circle **S** if the sentence **sometimes** describes you or how you feel.
Circle **O** if the sentence **often** describes you or how you feel.
Circle **A** if the sentence **almost always** describes you or how you feel.

Items by scale:

Depression Scale (Adolescent Rating Scale, ages 8-21)

1. Nothing goes my way… T F
2. I used to be happier… T F
3. Nothing is fun anymore… T F
4. Nobody ever listens to me… T F
5. I just don't care anymore… T F
6. I don't seem to do anything right… T F
7. Nothing ever goes right for me… T F
8. Nothing about me is right… T F
9. I feel like my life is getting worse and worse… N S O A
10. I feel depressed… N S O A
11. No one understands me… N S O A
12. I feel sad… N S O A

Interpersonal Relations Scale (Adolescent Rating Scale, ages 8-21)

1. My classmates don't like me… T F
2. Other children don't like to be with me… T F
3. Other kids hate to be with me… N S O A
4. I feel that nobody likes me… N S O A
5. People think I am fun to be with… N S O A
6. I am slow to make new friends… N S O A
7. I am liked by others… N S O A

Self-Esteem Scale (Adolescent Rating Scale, ages 8-21))

1. I like who I am… T F
2. I wish I were different… T F
3. I wish I were someone else… T F
4. I feel good about myself… T F
5. I like the way I look… N S O A
6. I get upset about my looks… N S O A
7. I am good at things… N S O A
8. My looks bother me… N S O A

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