DISORDERED EATING AND HEALTH-RELATED QUALITY OF LIFE IN OVERWEIGHT AND OBESE YOUTH

By

MARISSA A. GOWEY

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To my parents, Kim and Lori Gowey

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TABLE OF CONTENTS

LIST OF TABLES

Abstract of Thesis Presented to the Graduate School
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Marissa A. Gowey

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Research suggests that overweight and obese children have significantly lower health-related quality of life (HRQOL). However, the role of demographics in relation to HRQOL remains unclear. Additionally, factors with negative physical and psychosocial outcomes, such as disordered eating, have not been thoroughly investigated in association with HRQOL. The current study examines the relationship between demographic variables, disordered eating attitudes and behaviors, unhealthy weight control behaviors, and HRQOL. Participants were 181 overweight or obese youth ages 7-12 years and their parents in a behavioral weight management program. Prior to treatment, children were measured for height and weight and completed questionnaires regarding disordered eating attitudes and behaviors and HRQOL, while parents completed questionnaires regarding demographics and child HRQOL. Almost 17% of the sample endorsed clinically significant disordered eating attitudes and behaviors, while over two-thirds endorsed unhealthy weight control behaviors. Younger children endorsed more disordered eating and lower HRQOL, while children with higher BMI z-scores reported more unhealthy weight control behaviors and lower HRQOL. No significant relationships were found between gender and other variables. Disordered

eating attitudes and behaviors and unhealthy weight control behaviors were negatively associated with HRQOL, although differences were revealed among parent-proxy and child-self report of HRQOL. This study suggests that a subset of overweight and obese children engage in disordered eating attitudes and unhealthy weight control behaviors, which has important implications for assessment and treatment. Furthermore, discrepancies between HRQOL reports underline the utility of multiple informants in research and practice.

CHAPTER 1
INTRODUCTION

It has been well established over the past few decades that pediatric obesity has become a major health concern in the United States as well as other regions of the world (Ebbeling, Pawlak, & Ludwig, 2002). Recent data suggests that although previously increasing levels of childhood overweight appear to be leveling off, approximately 32% of youth in the United States are currently overweight while almost 17% of the nation's youth are obese (Ogden, Carroll, Kit, & Flegal, 2012). This has significant implications for the physical health of these children and adolescents, as childhood obesity has been associated with various chronic medical conditions such as type II diabetes, metabolic syndrome, sleep apnea, and a number of cardiovascular risk factors such as hyperlipidemia and hypertension (Dietz, 1998; Must & Strauss, 1999). In addition to the physical complications, the psychosocial functioning of children who are overweight is adversely impacted as well. Relative to non-overweight peers, overweight and obese children are more likely to experience problems with self-esteem and body image (Erermis et al., 2004; Strauss, 2000; Pesa, Syre, & Jones, 2000), depression (Erermis et al., 2004; Erickson, Robinson, Haydel, & Killen, 2000), and peer victimization (Janssen, Craig, Boyce, & Pickett, 2004; Storch et al., 2007). Furthermore, children who are overweight are more likely than non-overweight children to be overweight or obese in adulthood (Ferraro, Thorpe, & Wilkinson, 2003), highlighting the potential for sustained physical and psychosocial problems in these children.

Disordered Eating Attitudes and Behaviors

Children who are overweight are at increased risk for engaging in disordered eating attitudes and behaviors (Tanofsky-Kraff et al., 2004; Neumark-Sztainer &

Hannan, 2000). Disordered eating attitudes are generally conceptualized as excessive concerns about shape and weight, excessive thoughts about food, and strong emotions or beliefs related to these concepts (e.g., feeling guilty after eating), while disordered eating behaviors include unhealthy dieting, binge eating, and a range of other unhealthy methods used to attempt to lose or maintain one's weight. These unhealthy weight control behaviors are described in greater detail in the following section. A number of studies have linked disordered eating to impaired psychosocial functioning in youth, including depression, anxiety, low self-esteem, negative body image, and substance abuse (Abrams, Allen, & Gray, 1993; Lock, Reisel, & Steiner, 2001; Stice, Hayward, Cameron, Killen, & Taylor, 2000). Binge eating and emotional overeating, two types of disordered eating, have been highly studied and documented in the literature. There is evidence to support that these unhealthy behaviors are associated with more perceived barriers to weight loss (Sherwood, Jeffery, & Wing, 1999), underlining the importance of preventing, identifying, and managing disordered eating in at-risk individuals, as well as those participating in weight management programs, and the effect these behaviors may have on other aspects of functioning.

Several attempts have been made to identify distinguishing demographic and anthropometric characteristics among overweight youth who engage in disordered eating. Specifically, trends in age, sex, and weight status related to disordered eating have been clearly established in the adolescent and young adult literature. Although the literature suggests that both non-overweight and overweight youth engage in disordered eating, weight-related concerns and behaviors tend to be more prevalent in overweight youth, particularly those who are obese (Neumark-Sztainer, Story, Hannan, Perry, &

Irving, 2002). The prevalence of disordered eating attitudes and behaviors has been consistently higher in females than males (Croll, Neumark-Sztainer, Story, & Ireland, 2002; Keel, Fulkerson, & Leon, 1997; Presnell, Bearman, & Stice, 2004). However, this gender difference has not been clearly established in younger populations. Thelen and colleagues (1992) found no gender differences in body image and eating-related concerns of second graders in contrast to fourth and sixth graders who displayed greater concern among females. Alternatively, Shapiro and colleagues (1997) studied a sample of 8-10 year-old children of which girls were significantly more distressed over becoming fat than boys. Thus, the role of gender in disordered eating in younger children has yet to be fully understood.

In general, older children have been identified as more likely to engage in disordered eating practices. In particular, puberty has been identified as an at-risk time for youth (Killen et al., 1993; Ackard & Peterson, 2001). Accordingly, a significant portion of the literature has been devoted to the adolescent population, as this age group has frequently endorsed higher rates of disordered eating attitudes and unhealthy weight control behaviors compared to younger children (Adams, Katz, Beauchamp, Cohen, & Zavis, 1993; Neumark-Sztainer et al., 2002). However, data suggests that many children, as young as 8 years old, have significant shape- and weight-related concerns and use/have used unhealthy weight control methods to try to lose weight, including dieting and extreme behaviors such as vomiting and diet pill/laxative use (Killen et al., 1993; Shapiro et al., 1997; Thomas et al., 2000). As children are becoming overweight at alarmingly young ages, it is becoming increasingly important to gather data on these concepts in younger age groups. Furthermore, similar to adolescents,

younger children who are overweight are exposed to messages from the social media regarding the “ideal” thin body image, struggle with low self-esteem and negative body image, which have been linked to disordered eating attitudes and behaviors, and experience the negative psychosocial and physical consequences of being overweight (Burrows & Cooper, 2002; Carney & Louw, 2006). Thus, we might expect younger, preadolescent children who are overweight to be at a similar increased risk for engaging in disordered eating attitudes and behaviors as overweight adolescents and consider this a crucial window for prevention and potentially intervention. Nonetheless, more research is needed to determine the frequency and severity of disordered eating in younger children who are overweight and the impact it has on their functioning.

Although subthreshold and partial eating disorders have not generated as much attention as full-syndromal eating disorders in the literature, they are more prevalent and associated with functional impairment and distress, medical and psychological problems, progression to full-syndromal eating disorders, and can be difficult to distinguish from full-syndromal disorders as they appear to have comparable levels of shape- and weight-related concerns (Crow, Agras, Halmi, Mitchell, & Kraemer, 2002; Stice, Marti, Shaw, & Jaconis, 2009; Striegel-Moore, Seeley, & Lewinsohn, 2003). As most adolescents seeking treatment for disordered eating do not meet the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV*; APA, 1994) diagnostic criteria for an eating disorder (Fairburn & Harrison, 2003; Herzog, Hopkins, & Burns, 1993), it is imperative that more research is conducted in the area of subclinical disordered eating in this developmental range. The Eating Attitudes Test (EAT; Garner & Garfinkel, 1979) is a disordered eating measure that has been successful in serving as a dual

assessment tool that acts as a screener for eating disorders (i.e., clinically significant disordered eating) with the use of a clinical cutoff score and also measures disordered eating on a continuum. Tools like this provide researchers and clinicians the ability to assess disordered eating in multiple ways, which may be particularly useful for evaluating individuals endorsing subclinical symptoms.

Unhealthy Weight Control Behaviors

Compared to the broad concept of disordered eating attitudes and behaviors, unhealthy weight control behaviors are one component of disordered eating which encompass a number of behaviors that individuals may engage in to attempt to maintain or lose weight. In contrast to healthy weight control behaviors, which include methods such as eating more fruits and vegetables and less high fat foods and exercising, engaging in unhealthy weight control behaviors often involves dieting or skipping meals, as well as more extreme behaviors such as vomiting or using diet pills or laxatives.

Research suggests that approximately 20% of boys and 40% of girls who are overweight engage in some form of unhealthy weight control behavior (Neumark-Sztainer, Wall, Story, & Perry, 2003). Moreover, longitudinal research reveals that adolescents who engage in unhealthy weight control behaviors continue to exhibit these behaviors as young adults and may even increase their level of engagement in these harmful behaviors (Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011). Many unhealthy weight control behaviors, particularly those thought to be more extreme or severe, have harmful short- and long-term consequences. A child who engages in these behaviors has the potential to experience a range of physical consequences such as nutritional insufficiencies, delayed puberty, and more severe complications as a result of bulimic behaviors (Story, Neumark-Sztainer, Sherwood, Stang, & Murray, 1998;

Pomeroy & Mitchell, 2002). Beyond physical complications, these children experience psychosocial difficulties similar to those associated with broad disordered eating attitudes and behaviors (Stice, Presnell, & Spangler, 2002). Moreover, unhealthy weight control behaviors are predictive of subsequent eating disorder psychopathology (Killen et al., 1996; Patton, Selzer, Coffey, Carlin, & Wolfe, 1999). Notably, these unhealthy behaviors have been associated with further weight gain (Field et al., 2003; Neumark-Sztainer et al., 2006), complicating an already serious problem for overweight youth and creating additional barriers to treatment.

Health-Related Quality of Life (HRQOL)

As evidence has accumulated for the harmful physical and psychosocial effects of obesity on children, researchers have begun to focus on how much children are affected by their weight status and factors such as mood and disordered eating attitudes and behaviors. One tool used in measuring the influences of these factors is a concept known as health-related quality of life (HRQOL), which assesses subjective physical and mental health and has been widely studied in overweight and obese children in recent years (Pinhas-Hamiel et al., 2006; Zeller & Modi, 2006). The PedsQL (Varni, Seid, & Rode, 1999) is a well-validated, general measure of HRQOL that has been widely used to study multiple acute and chronic health conditions in children including obesity (Keating, Moodie, & Swinburn, 2011; Varni, Limbers, Bryant, & Wilson, 2010; Varni, Limbers, & Burwinkle, 2007). While HRQOL generally measures overall physical and psychosocial health, it is also often broken down into several domains. In addition to a total score, the PedsQL yields scores for Physical, Emotional, Social, and School Functioning domains, all of which have been negatively impacted by childhood overweight or obesity (Keating et al., 2011; Pinhas-Hamiel et al., 2006), although the

Physical and Social domains appear to be most consistently impacted regardless of degree of overweight.

According to the literature, HRQOL in overweight children is significantly lower than their healthy-weight peers and comparable to rates of children with cancer (Schwimmer, Burwinkle, & Varni, 2003). In fact, research in overweight youth suggests that as weight status increases, HRQOL decreases (Pinhas-Hamiel et al., 2006; Williams, Wake, Hesketh, Maher, & Waters, 2005). Children who are extremely obese, with BMIs greater than or equal to 40, experience the most significant impact on HRQOL and report the most physical and psychosocial impairments (Zeller, Roehrig, Modi, Daniels, & Inge, 2006).

While research on the relationship between BMI and HRQOL has been largely consistent among children and adolescent samples, the roles of age and gender have been less clear across varying age groups. Although many studies on gender and HRQOL in overweight and obese youth have failed to find a significant association between the two variables (Hughes, Farewell, Harris, & Reilly, 2007; Pinhas-Hamiel et al., 2006; Schwimmer et al., 2003), other research has suggested that girls are more likely than boys to report impairments in general health, physical symptoms and limitations, depression, and low self-esteem (Swallen, Reither, Haas, & Meier, 2005). Similarly, the literature on gender and HRQOL in overweight and obese youth has been mixed. Among overweight youth, there is some evidence that adolescents have poorer psychosocial functioning than children (Kaplan & Wadden, 1986). Although other studies conducted on obese youth samples have found age-specific associations with HRQOL, (Schwimmer et al., 2003; Swallen et al., 2005), no patterns have emerged. As

such, further exploration into factors such as age and gender is needed to properly identify and treat children who may be at risk for or experiencing decreased psychosocial and physical impairments.

Lower HRQOL in chronically ill children has been linked to increased healthcare utilization, disease severity and medical complications, higher intensity treatment, behavioral and emotional problems, and decreased self-worth (Landolt, Vollrath, Niggli, Gnehm, & Sennhauser, 2006; Marino et al., 2010). Specifically, poorer HRQOL in obese children has been associated with depression (Zeller et al., 2006). As suggested by Zeller and colleagues (2006), depression has been identified as a barrier to pediatric weight management programs (Zeller et al., 2004). In addition, HRQOL has been associated with lower perceived social support (Zeller & Modi, 2006), which has been identified as a barrier to healthy eating practices and physical activity in children (O'Dea, 2003). In line with the previously mentioned factors, researchers have begun to explore disordered eating as another barrier to weight management in relation to HRQOL. To our knowledge, only two studies have been identified in the literature that have investigated this relationship, both of which found a significant relationship between disordered eating and HRQOL. Consistent with previous disordered eating research, both studies focused on adolescents (Doyle, le Grange, Goldschmidt, & Wilfley, 2007; Herpertz-Dahlmann, Wille, Hölling, Vloet, & Ravens-Sieberer, 2008). Thus, similar studies are needed with overweight children who are younger in order to elucidate the mechanisms of lower HRQOL in this preadolescent population. This will enable researchers and clinicians to target those factors (e.g., disordered eating) in terms of preventative efforts toward HRQOL in these children.

Study Purpose

As the negative impact of childhood overweight on HRQOL has been well studied, a plausible next step is to identify specific factors that contribute to poorer HRQOL in these children. Considering the significant negative impact that disordered eating attitudes and unhealthy weight control behaviors have on the physical and psychosocial health of overweight children, in combination with increased risk to engage in these unhealthy beliefs and activities, we suspect that disordered eating is associated with lower HRQOL in these children. Furthermore, disordered eating has been identified as a barrier to pediatric weight management, emphasizing the at-risk status of overweight children for engaging in these unhealthy attitudes and behaviors and the potential harmful consequences. However, few studies have thoroughly investigated the relationship between disordered eating attitudes and behaviors and HRQOL in overweight children. Among existing studies, samples have primarily consisted of adolescents.

Thus, it is important to examine these relationships in greater depth including a more extensive analysis of disordered eating and how it relates to HRQOL. Moreover, multiple informant data offers a broadened perspective of children's daily functioning. In particular, the child self- and parent proxy- report used in the current study provides an opportunity to learn about the subjective experience of both the child and parent in terms of the relationship between being overweight and overall daily functioning of the child, as well as specific physical, emotional, social, and school functioning, which may have important implications for assessment and intervention techniques.

The current study has two main purposes: (1) to identify the role that demographic and anthropometric variables play in disordered eating attitudes and

behaviors, unhealthy weight control behaviors, and child health-related quality of life in young, overweight children and (2) to examine the relationship between disordered eating and health-related quality of life. Within the latter purpose, there are important distinctions to be made: (2a) two measures are used to examine the concept of disordered eating exhaustively: a broad disordered eating attitudes and behaviors questionnaire and an unhealthy weight control behaviors checklist; these are measured in separate analyses against HRQOL; (2b) disordered eating attitudes and behaviors and unhealthy weight control behaviors are used both dichotomously and continuously for analyses; (2c) both child self- and parent proxy-report of HRQOL are used and examined dseparately in their relationships with disordered eating.

Based on previous research, it is hypothesized that (1) children who are older, female, and have a higher weight status will be more likely to engage in (1a) clinically significant disordered eating attitudes and behaviors; (1b) more total disordered eating attitudes and behaviors; (1c) at least one (vs. zero) unhealthy weight control behaviors; (1d) more total unhealthy weight control behaviors. Based on limited previous research and the link between disordered eating and child physical and psychosocial functioning, it is hypothesized that (2a) clinically significant disordered eating attitudes and behaviors will be significantly associated with both parent- and child-report of HRQOL. In addition, (2b) children who engage in more total disordered eating behaviors will have lower child- and parent-reported HRQOL. Furthermore, we hypothesize that (2c) children who endorse at least one unhealthy weight control behavior (vs. zero) will have lower parent- and child-reported HRQOL. Lastly, it is hypothesized that (2d) children

who engage in more total unhealthy weight control behaviors will have lower parent- and child-reported HRQOL.

CHAPTER 2
METHODS AND PROCEDURES

Participants

The sample included 181 overweight or obese children ages 7-12 and their parent/legal guardian participating in one of two behavioral weight management programs or an education control condition (Janicke et al., 2010). Although children were required to be 8 or older to participate, a small portion of children in the sample were age 7 at their screening or baseline visits who turned 8 by the time treatment began. This sample contains data from the first 2 treatment waves, representing part of the larger sample, as an additional wave of treatment was yet to be completed. Eligibility criteria included: (1) children 8-12 years of age at the start of treatment, (2) children with a Body Mass Index (BMI) at or above the 85th percentile for age and gender, (3) participating parent or legal guardian 75 years old or less, and (4) living in a rural, medically underserved area. Families were excluded if either the child or parent (1) had dietary or exercise restrictions, (2) had a medical condition that contraindicated mild energy restriction and moderate physical activity, (3) were on antipsychotic agents, systemic cortiocosteroids, antibiotics for HIV or tuberculosis, chemotherapeutic drugs, or prescription weight loss drugs (4) were participating in another weight management program, or (5) displayed conditions or behaviors likely to affect their participation in the study.

Procedures

The study was approved by the governing Institutional Review Board. Recruitment consisted of direct mailings of study advertisements, distribution of brochures via local schools and physician's offices, newspaper press releases, and

presentations at community events. A toll free telephone number was provided to interested families to call to learn more about the study and participate in a brief telephone screening with a trained research team member to determine preliminary eligibility for the study. In-person screenings were then scheduled for interested and eligible families at which informed consent/assent procedures, height and weight measurements, medical history, and initial health and psychosocial questionnaires were completed. After final eligibility was established, in-person baseline assessments were completed within three weeks of intervention commencement, where additional health and psychosocial questionnaires were completed. At the conclusion of the baseline visit, families were informed of the intervention condition to which they were randomized. A total of 182 families completed screening and baseline procedures for the first 2 waves of treatment. One family was excluded due to missing questionnaire data, resulting in a final sample of 181.

Measures

Anthropometric Information

The study nurse or medical technician took double measurements of both child height and weight, and averages were used for statistical analyses. Child height was measured without shoes to the nearest 0.1 centimeter using a Harpendon stadiometer. Child weight was measured with one layer of clothes and without shoes to the nearest 0.1 kilogram using a calibrated digital scale. Child BMI was calculated using the following formula: BMI = weight(kg) / height(m^2). BMI was converted to z-scores, which were used to represent child weight status in statistical analyses.

Demographic Information

The parent/guardian completed a questionnaire created for this study assessing various background information, such as child and parent sex, age, and race, parent marital status, and family income.

Health-Related Quality of Life (HRQOL)

The Pediatric Quality of Life Inventory (PedsQL; Varni, Seid, & Rode, 1999) was used to assess child health-related quality of life (HRQOL). Both child self- and parent proxy-report forms of the PedsQL were obtained and used in separate statistical analyses in this study. The measure consists of 23 items on a 5-point Likert scale, which yield a Total Scale Score and four subscale scores, Physical, Emotional, Social, and School Functioning. The PedsQL has been used with healthy children, as well as children with acute and chronic illnesses. The internal consistency, validity, and factors of the measure have been well supported (Varni, Bulwinkle, Seid, & Skarr, 2003; Varni, Seid, & Kurtin, 2001). In the current sample, Cronbach's Alpha was .91 for the parent-report version and .87 for the child-report version.

Disordered Eating Attitudes and Behaviors

The Children's Eating Attitudes Test (ChEAT) was used to assess broad disordered eating attitudes and behaviors in children. This child self-report measure consists of 26-items on a 6-point Likert scale. However, item responses are scored as follows: Always = 3, Very Often = 2, Often = 1, Sometimes, Rarely, or Never = 0. A total continuous score was used to assess the range of disordered eating attitudes and behaviors, while the published clinical cutoff score (≥ 20; Garner, Olmsted, Bohr, & Garfinkel, 1982) was used to identify children who engaged in clinically significant disordered eating, creating a dichotomous variable. The ChEAT has good internal

reliability, concurrent validity, and support for the factors noted above (Maloney, McGuire, & Daniels, 1988; Smolak & Levine, 1994). Cronbach's Alpha for the current sample was .78.

Unhealthy Weight Control Behaviors

The Child Lifestyle Behavior Checklist (CLBC) is a child-report questionnaire adapted from a measure created by Neumark-Sztainer and colleagues (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006) used to assess healthy and unhealthy weight control behaviors that children have engaged in over the past year. As the healthy behaviors were not relevant to the purpose of this study, the remaining unhealthy behavior items were used for statistical analyses. A total of 10 items were used to assess unhealthy weight control behaviors in a yes/no checklist format. This tool is a more specific measure of disordered eating which assesses specific disordered eating behaviors rather than broad disordered eating attitudes and behaviors. While a total continuous score was used to assess the range of unhealthy weight control behaviors, a dichotomous score also was created to identify children who did not report engaging in any unhealthy weight control behaviors versus those who engaged in at least one unhealthy weight control behavior.

Statistical Analyses

Participants' screening and baseline data was used for analyses. All statistical analyses were conducted using Predictive Analytics SoftWare (PASW® Statistics 18.0). Variable normality was assessed via skewness and kurtosis values, as well as standardized residuals where appropriate. Normality was within acceptable limits for all variables except the continuous ChEAT variable. Thus, a square root transformation was conducted, which successfully normalized the data.

Independent samples t-tests, Pearson correlation coefficients, Pearson chi-square coefficients, and simple linear regressions were used to detect significant relationships between demographic/anthropometric variables (i.e., age, gender, BMI-z) and variables of interest (i.e., continuous disordered eating attitudes, dichotomous disordered eating attitudes, continuous unhealthy weight control behaviors, dichotomous unhealthy weight control behaviors, child self- and parent proxy-report HRQOL, and HRQOL subscales) in an effort to identify necessary covariates in subsequent analyses of covariance and hierarchical regressions.

The relationships between disordered eating attitudes and HRQOL were examined using two different statistical procedures. One-way analyses of covariance, controlling for variables that differed across IV groups, were used to examine differences in child- and parent-report of HRQOL between children who endorsed clinically significant disordered eating attitudes and behaviors versus those who did not. Hierarchical multiple regressions were conducted to determine whether the overall level of disordered eating attitudes and behaviors was significantly related to child- and parent-report of HRQOL. The first block in each regression analysis contained the covariate(s). The second block included the continuous disordered eating attitudes and behaviors variable.

Similarly, one-way analyses of variance and hierarchical multiple regressions were used to identify significant relationships between unhealthy weight control behaviors and HRQOL using both continuous and dichotomous unhealthy weight control variables. One-way ANOVAS were used to examine differences in child- and parent-report of HRQOL between children who did not endorse any unhealthy weight

control behaviors and those who endorsed one or more unhealthy weight control behaviors. Hierarchical multiple regressions were conducted to determine whether the overall level of unhealthy weight control behaviors was significantly related to child- and parent-report of HRQOL. The first block in each regression analysis contained the covariate(s), followed by the continuous unhealthy weight control behaviors variable in block 2.

Separate hierarchical multiple and simple linear regression analyses were conducted to examine whether significant relationships existed between disordered eating attitudes and behaviors and HRQOL subscales (i.e., Physical, Emotional, Social, and School Functioning). The first block in each hierarchical multiple regression analysis contained the covariate(s), followed by the second block consisting of the disordered eating attitudes variable.

CHAPTER 3
RESULTS

Sample Descriptives

Descriptive statistics are displayed in Table 3-1. Children were 7-12 years of age (*M* = 9.94, *SD* = 1.45). The majority of the sample was obese as approximately 67% of the sample had a BMI z-score of 2.00 or greater (*M* = 2.15, *SD* = 0.40). Just over half of the sample was female (54.1%; *n* = 98). Most of the children in the sample were Caucasian (64.1%); however, a fair number of children were identified as ethnic minorities, including African-American (16.6%), Hispanic (12.2%), Other (6.6%), and Asian (0.6%). The median family reported income was $40,000 - $59,999. The majority of participating parents and legal guardians were married (63.5%). The average age of adult participants was 40.37 years (*SD* = 6.90).

Statistically significant relationships were found between age and clinically significant disordered eating attitudes and behaviors [$t(179) = 1.976$, $p = .05$], total disordered eating attitudes and behaviors [$r = -.170$, $p = .022$], and child self-reported HRQOL [$r = .209$, p = .005], suggesting that younger children in this sample engaged in more clinically significant and total disordered eating attitudes and behaviors and endorsed lower HRQOL than older children. In addition, BMI z-scores were significantly related to unhealthy weight control behaviors [$r = .204$, $p = .006$] and child- [$r = -.165$, p = .026] and parent-reported HRQOL [$r = -.197$, $p = .008$]. Thus, children with higher weight statuses endorsed more unhealthy weight control behaviors and lower HRQOL by both self- and parent- report. Results revealed that gender was not significantly related to disordered eating attitudes and behaviors, unhealthy weight control behaviors, or HRQOL.

Descriptive information related to the individual variables of interest (i.e., disordered eating attitudes, unhealthy weight control behaviors, HRQOL) is presented in Table 3-2. The average total score on the ChEAT, indicating the level of disordered eating attitudes and behaviors endorsed by each child, was well below clinical cutoff (*M* = 12.0, *SD* = 9.0). However, 16.6% of the sample (*n* = 30) endorsed disordered eating attitudes and behaviors in the clinically significant range (total score ≥ 20). On average, children endorsed between 1 and 2 unhealthy weight control behaviors (*M* = 1.48, *SD* = 1.44) on the Child Lifestyle Behavior Checklist, and almost 70% of the sample (*n* = 121) endorsed at least 1 of these behaviors. Children rated their HRQOL slightly higher than their parents did (child: *M* = 75.7, *SD* = 14.0; parent: *M* = 73.4, *SD* = 15.2).

Disordered Eating Attitudes and Behaviors and HRQOL

The relationships between disordered eating attitudes and behaviors and child self- and parent-proxy report of HRQOL were examined using two different statistical procedures. First, one-way analyses of covariance were conducted with age as a covariate to examine differences in child- and parent-report of HRQOL between children who endorsed clinically significant disordered eating attitudes and behaviors versus those who did not. Results indicated that children who reported clinically significant levels of disordered eating attitudes and behaviors on the ChEAT had lower self-reported HRQOL compared to those who did not report clinically significant levels of disordered attitudes and behaviors [$F(1,178) = 4.30$, $p = .04$]. However, parent-proxy report of child HRQOL was not significantly different between children who endorsed clinically significant disordered eating and those who did not [$F(1,179) = 2.03$, NS]. Results for the corresponding mean, standard deviation, partial n^2, and R^2 levels of

HRQOL in children who reached or exceeded clinical cutoff of the ChEAT versus those who did not are displayed in Table 3-3.

Hierarchical multiple regression analyses were used to examine the unique effect of total disordered eating attitudes and behaviors on child- and parent-report of HRQOL. The child-report HRQOL model included age and BMI z-score as covariates in block 1 and the continuous total score variable on the ChEAT in block 2. The parent-report HRQOL model consisted of BMI z-score as a covariate in block 1, while block 2 included the continuous total score variable on the ChEAT. Results revealed that while disordered eating attitudes and behaviors were significantly associated with lower parent-reported HRQOL [b = -2.13, B = -.182, p = .01; $F(2,178) = 6.83$, p = .001], their relationship with child-reported HRQOL only bordered on statistical significance [b = -1.54, B = -.142, p = .055; $F(3,177) = 5.76$, p = .001]. Table 3-4 presents hierarchical regression results for the relationship between disordered eating attitudes and behaviors and child self-report of HRQOL. Table 3-5 displays regression results for disordered eating and parent-proxy report of HRQOL.

One-way analyses of variance and hierarchical multiple regressions were both used to examine the relationships between unhealthy weight control behaviors on the Child Lifestyle Behavior Checklist and HRQOL. One-way ANOVAs were conducted to analyze differences in child self- and parent proxy-report of HRQOL between children who did not endorse any unhealthy weight control behaviors and those who endorsed one or more unhealthy weight control behaviors. Children endorsing at least one unhealthy weight control behavior had significantly lower self-reported HRQOL than those who did not report any [$F(1,179) = 10.54$, p = .001]. However, parent-report of

child HRQOL did not reveal a significant relationship [$F(1,179) = 0.52$, NS]. Means, standard deviations, and effect sizes are provided for these ANOVA analyses in Table 3-6.

Hierarchical multiple regressions were used to detect whether the total number of unhealthy weight control behaviors was significantly related to child- and parent-report of HRQOL. The first block of the child-report HRQOL model contained the covariates age and BMI z-score, and the second block consisted of the continuous CLBC unhealthy weight control behaviors variable. The parent-report HRQOL model included BMI z-score as the only covariate in block 1 and the continuous CLBC variable in block 2. According to results, unhealthy weight control behaviors were significantly associated with lower child-reported HRQOL [$b = -1.96$, $B = -.200$, $p = .007$; $F(3,177) = 7.13$, $p = .000$] but not parent-reported HRQOL [$b = -0.023$, $B = -.002$, NS; $F(2, 178) = 3.61$, $p = .029$].Table 3-7 displays regression results for unhealthy weight control behaviors and child self-reported HRQOL, while Table 3-8 includes regression results for unhealthy behaviors and parent-reported child HRQOL.

Exploratory Analyses

Significant relationships found between both measures of disordered eating (i.e., ChEAT and CLBC) and HRQOL supported further analyses to investigate which domains of HRQOL (i.e., Physical, Emotional, Social, and School Functioning) were linked to disordered eating. The broader measure of disordered eating (i.e., ChEAT) was used in these analyses as it assessed both disordered eating attitudes and behaviors rather than behaviors only. Separate hierarchical multiple regressions and simple linear regression analyses were run to examine these relationships. T-tests and Pearson’s correlations were conducted to identify covariates. Results indicated that BMI

z-score was significantly related to child and parent-report of Physical (child: $r = -.23$, $p = .002$; parent: $r = -.22$, $p = .004$) and Social Functioning (child: $r = -.18$, $p = .017$; parent: $r = -.22$, $p = .002$). In addition, significant relationships between age and child-report of Physical ($r = .23$, $p = .002$) and Emotional Functioning ($r = .16$, $p = .034$) were identified. Gender was not significantly related to any of the PedsQL subscales. Thus, BMI z-score and age were controlled for accordingly.

A significant association was found between disordered eating attitudes and behaviors and emotional functioning by both child self- [$b = -3.82$, $B = -.237$, $p = .001$; $F(2,178) = 7.69$, $p = .001$; $\Delta R^2 = .055$] and parent-proxy report [$b = -2.31$, $B = -.163$, $p = .029$; $F(1,179) = 4.86$, $p = .029$; $\Delta R^2 = .026$]. Additionally, parent-report of child school functioning was significantly related to disordered eating [$b = -3.11$, $B = -.216$, $p = .004$; $F(1,179) = 8.72$, $p = .004$, $\Delta R^2 = .046$]. However, children's self-report of their physical [$b = -.687$, $B = -.059$, NS; $F(3,177) = 6.94$, $p = .000$], social [$b = -1.71$, $B = -.110$, NS; $F(2,178) = 4.04$, $p = .019$], and school functioning [$b = -1.01$, $B = -.075$, NS; $F(1,179) = 1.01$, NS] were not significantly related to disordered eating. No significant relationships were identified between disordered eating and parent proxy-report of child physical [$b = -2.14$, $B = -.140$, NS; $F(2,178) = 6.27$, $p = .002$] and social functioning [$b = -1.15$, $B = -.076$, NS; $F(2, 178) = 5.23$, $p = .006$] although the unique relationship between parent-report of child physical functioning and disordered eating bordered significance ($p = .057$).

Table 3-1. Descriptive sample characteristics

Demographic Characteristic	N	M	SD	%
Child Age	181	9.94	1.45	
Child Gender				
Female	98			54.1
Male	83			45.9
Child Race/Ethnicity				
Caucasian	116			64.1
African American	30			16.6
Hispanic	22			12.2
Asian	1			0.6
Other	12			6.6
Parent Age	181	40.37	6.90	
Parent Marital Status				
Married	115			63.5
Not Married	66			36.6
Family Income				
Below $19,999	33			18.3
$20,000-$39,999	48			26.7
$40,000-$59,999	42			23.3
$60,000-$79,999	26			14.4
Above $80,000	31			17.2

Table 3-2. Descriptive characteristics of key independent and dependent variables

Measure	Mean	SD	Actual Min-Max	Poss. Min-Max
ChEAT	12.0	9.0	0-53	0-69
CLBC - Unhealthy	1.48	1.44	0-7	0-10
PedsQL - Child	75.7	14.0	30.43-100	0-100
PedsQL - Parent	73.4	15.2	32.61-100	0-100

PedsQL = Pediatric Quality of Life Inventory; ChEAT = Children's Eating Attitudes Test; CLBC = Child Lifestyle Behavior Checklist

Table 3-3. ANOVA results for clinically significant disordered eating attitudes and behaviors and child self- and parent-proxy report HRQOL

	<20		≥ 20				
	Mean	SD	Mean	SD	p-value	partial η^2	R^2
PedsQL-Child	76.80	13.23	70.04	16.91	.040*	.024	.066
PedsQL-Parent	74.14	14.82	69.81	17.02	.133	.013	.014

PedsQL = Pediatric Quality of Life Inventory
*p<.05, **p<.01

Table 3-4. Hierarchical regression results for total disordered eating attitudes and behaviors and child self-report HRQOL

		B	SE B	β	t	p	R^2	ΔR^2
	Constant	67.975	9.021		7.535	.000		
	Age	2.009	.704	.206**	2.854	.005		
Step 1	BMI-Z	-5.700	2.550	-.162*	-2.236	.027	.070	.070
	Constant	73.514	9.403		7.818	.000		
	Age	1.797	.707	.185**	2.541	.012		
	BMI-Z	-4.997	2.556	-.142	-1.955	.052		
Step 2	ChEAT	-1.535	.796	-.142	-1.929	.055	.089	.019

ChEAT = Children's Eating Attitudes Test
B = Unstandardized Beta, β = Standardized Beta
*p< .05, **p<.01

Table 3-5. Hierarchical regression results for total disordered eating attitudes and behaviors and parent proxy-report HRQOL

		B	SE B	β	t	p	R^2	ΔR^2
	Constant	89.638	6.123		14.639	0		
Step 1	BMI-Z	-7.533	2.798	-.197**	-2.692	.008	.039	.039
	Constant	94.363	6.328		14.912	.000		
	BMI-Z	-6.540	2.787	-.171*	-2.346	.020		
Step 2	ChEAT	-2.133	.857	-.182*	-2.488	.014	.071	.032

ChEAT = Children's Eating Attitudes Test
B = Unstandardized Beta, β = Standardized Beta
*p< .05, **p<.01

Table 3-6. ANOVA results for dichotomized unhealthy weight control behaviors and child self- and parent-proxy report HRQOL

	0		1 & above				
	Mean	SD	Mean	SD	p-value	partial η^2	R^2
PedsQL-Child	80.38	12.50	73.35	14.28	.001**	.056	.056
PedsQL-Parent	74.58	14.46	72.85	15.64	.474	.003	.003

PedsQL = Pediatric Quality of Life Inventory
*p<.05, **p<.01

Table 3-7. Hierarchical regression results for CLBC total unhealthy weight control behaviors and child self-report HRQOL

		B	SE B	β	t	p	R^2	ΔR^2
	Constant	67.975	9.021		7.535	.000		
	Age	2.009	.704	.206**	2.854	.005		
Step 1	BMI-Z	-5.700	2.550	-.162*	-2.236	.027	.070	.070
	Constant	65.904	8.892		7.412	.000		
	Age	2.194	.695	.225**	3.159	.002		
	BMI-Z	-4.246	2.559	-.120	-1.659	.099		
Step 2	CLBC	-1.957	.712	-.200**	-2.747	.007	.108	.038

CLBC = Child Lifestyle Behavior Checklist
B = Unstandardized Beta, β = Standardized Beta
*p< .05, **p<.01

Table 3-8. Hierarchical regression results for CLBC total unhealthy weight control behaviors and parent proxy-report HRQOL

		B	SE B	β	t	p	R^2	ΔR^2
	Constant	89.638	6.123		14.639	0		
Step 1	BMI-Z	-7.533	2.798	-0.197**	-2.692	0.008	.039	.039
	Constant	89.635	6.141		14.597	0		
	BMI-Z	-7.516	2.866	-0.197**	-2.622	0.009		
Step 2	CLBC	-0.02	0.795	-0.002	-0.029	0.977	.039	.000

CLBC = Child Lifestyle Behavior Checklist
B = Unstandardized Beta, β = Standardized Beta
*p< .05, **p<.01

CHAPTER 4
DISCUSSION

The current study set out to identify the role of demographics in relation to disordered eating and health-related quality of life (HRQOL) in overweight and obese children and examine the relationships between various types and degrees of disordered eating and HRQOL. Our study is unique in that it is one of the few studies to investigate the association between disordered eating and HRQOL in overweight and obese youth. Results from the current study extend the literature by providing prevalence rates of children, rather than adolescents, engaging in clinically significant disordered eating as well as total disordered eating attitudes and unhealthy weight control behaviors. To our knowledge, this is the first study to provide evidence that disordered eating is associated with lower HRQOL in preadolescent overweight and obese children. Furthermore, the current study's results regarding child self- and parent proxy- report of HRQOL in relation to disordered eating are unique due to the differences noted between child and parent perceptions of HRQOL. Contrary to extant research, younger children in our sample endorsed more disordered eating attitudes and unhealthy weight control behaviors than older children, while gender was not a significant factor.

The literature suggests that overweight youth have significantly lower HRQOL than their non-overweight peers (Schwimmer et al., 2003), which has been associated with barriers to pediatric weight management and healthy practices, such as depression and lower perceived social support (O'Dea, 2003; Zeller et al., 2006). Although disordered eating has also been identified as a significant risk factor in children who are overweight and a barrier to pediatric weight management (Sherwood et al., 1999;

Tanofsky-Kraff et al., 2004), little is known about how disordered eating is related to HRQOL in overweight youth, specifically younger children. To our knowledge, there are only two studies that have investigated this relationship, both of which focused on adolescents (Doyle et al., 2007; Herpertz-Dahlmann et al., 2008). However, previous research has documented significant disordered eating attitudes and behaviors in younger, overweight/obese children (Killen et al., 1993; Shapiro et al., 1997; Thomas et al., 2000). Thus, the lack of data in this at-risk, young population is problematic, calling for investigation into these unhealthy practices and their relationship to children's overall physical and psychosocial functioning. The results of the current study have begun to fill those gaps in the literature.

Prevalence of Disordered Eating

While the average level of disordered eating endorsed on the ChEAT was well below the clinical cutoff, almost 17% of children in the current sample endorsed clinically significant disordered eating attitudes and behaviors. This is somewhat higher than rates of young children engaging in clinically significant levels of disordered eating found in the literature (Maloney, McGuire, Daniels, & Specker, 1989; Razenhofer et al., 2008). Furthermore, over two-thirds of the sample endorsed at least one unhealthy weight control behavior, which is a substantially larger portion of individuals sampled in comparison to other studies, which have indicated approximately 10-40% participation in these behaviors (Shapiro et al., 1997; Neumark-Sztainer et al., 2003). However, children in the current sample endorsed between one and two unhealthy weight control behaviors on average, which is slightly below the 2-2.5 average behaviors endorsed in a large adolescent sample (Neumark-Sztainer et al., 2003). Nonetheless, the high proportion of obese children in the sample may explain the increase in clinically

significant disordered eating and endorsement of unhealthy behaviors, as increases in weight status are associated with greater psychosocial and physical impairments (Pinhas-Hamiel et al., 2006; Williams et al., 2005; Zeller et al., 2006).

Demographics in Disordered Eating and HRQOL

Among the analyses conducted between demographics, disordered eating, and HRQOL, age and gender results were most noteworthy. Compared to older children in the sample, younger children engaged in more clinically significant and overall total disordered eating attitudes and behaviors. These findings are generally inconsistent with the literature, which emphasizes adolescence and puberty as high-risk periods for engaging in disordered eating (Adams et al., 1993; Killen et al., 1993; Neumark-Sztainer et al., 2002). Accordingly, younger children in the sample may have had difficulty understanding the abstract concepts of disordered eating, endorsing those items without fully comprehending their meaning. In addition, compared to adolescents, younger children may be less aware of the adverse nature of these concepts and behaviors, making them less susceptible to response bias and more likely to provide truthful responses.

Furthermore, children who were younger endorsed lower HRQOL. In particular, younger children reported lower HRQOL in Physical and Emotional Functioning domains. These results are in contrast with the limited research in this area, which indicates that older children are more likely to exhibit impairments in HRQOL than younger children (Kaplan & Wadden, 1986). While it is quite possible that additional factors not accounted for here may be responsible for lower HRQOL levels, the inconsistencies and limited amount of research in this area render the validity of these results probable as well. Moreover, contradictory to a large body of research indicating

that disordered eating is more prevalent in females than males (Croll et al., 2002; Keel et al., 1997; Presnell et al., 2004), gender was not significantly related to disordered eating attitudes or unhealthy weight control behaviors in the current sample. Similarly, gender was not related to total HRQOL or any of the subdomains of HRQOL. As disordered eating has been largely studied in adolescent and young adult populations, where gender differences have been apparent, these differences simply may not be relevant in younger populations. One reason may be that younger children may be less aware of the gender disparity among eating disorders; thus, males may feel less pressure to suppress psychological distress and refrain from reporting disordered eating attitudes and behaviors. Alternatively, additional unidentified factors (e.g., family/parental variables, environmental factors, social functioning) may be accountable, as previously stated. As anticipated, children with higher weight status endorsed more unhealthy weight control behaviors, in line with existing literature (Neumark-Sztainer et al., 2002). Children with increased weight statuses and their parents also reported lower HRQOL, specifically in the areas of Physical and Social Functioning, suggesting that childhood overweight and obesity is associated with HRQOL in preadolescence and has a distinct link to their physical health and social skills and interactions.

Disordered Eating and HRQOL

With evidence of the early association between increased weight status and lower health-related quality of life, the significance of our findings regarding the relationships between disordered eating attitudes, unhealthy weight control behaviors, and HRQOL becomes evident. The degree of both disordered eating attitudes and behaviors and unhealthy weight control behaviors were negatively associated with HRQOL, although differences were revealed among child self- and parent proxy-report

of child HRQOL. Children who engaged in clinically significant disordered eating attitudes and behaviors reported lower HRQOL than their peers who did not endorse clinically significant levels of disordered eating, although parents did not report significant differences in HRQOL between groups. Additionally, children who endorsed more total disordered eating attitudes and behaviors overall had lower parent-reported HRQOL but did not self-report significantly lower levels of HRQOL. Thus, children who engage in significant, problematic disordered eating behaviors appear to recognize and report problems in their physical and psychosocial functioning although their parents do not seem to observe or report similar difficulties. Taking into consideration the nature of some of the behaviors children may be endorsing to reach a clinically significant level of disordered eating, parents may not be aware that their children are engaging in such extreme weight control behaviors. Thus, they may be unaware of the associated emotional, social, physical or school problems their children are experiencing. Interestingly, youth who engage in more total disordered eating attitudes and behaviors do not report significantly more problems with their physical and mental health, but their parents report that these children experience more difficulties. In this case, children may not feel as much pressure to keep less extreme behaviors to themselves (e.g., dieting), as they may perceive these to be more acceptable forms of weight management. Thus, parents may have increased concern regarding their children's HRQOL, although their children may not view these behaviors as problematic or impairing. On the contrary, unhealthy behaviors were significantly associated with lower child-reported HRQOL but not parent-reported HRQOL. Therefore, children appear to be experiencing lower HRQOL in relation to unhealthy weight control behaviors, although their parents do not

seem to observe similar impairments. As the majority of children in the current sample did not endorse a large number of unhealthy weight behaviors, parents may not have been as aware of their children's participation in these behaviors or may have underestimated the problems associated with their children's functioning as the quantity of behaviors endorsed was rather low in general.

Exploratory analyses were conducted to identify which domains of HRQOL were related to disordered eating attitudes and behaviors, revealing the link between disordered eating and the emotional health and school performance of children. Both children and parents reported significantly more problems in Emotional Functioning in children who engaged in more total disordered eating practices. In addition, parents reported that School Functioning was significantly lower for children who reported more total disordered eating than others, indicating that children may not be as aware of their school performance or how their unhealthy eating habits may be related to their ability to function during the school day and on school-related tasks. However, child- and parent-report of Physical and Social Functioning, as well as child report of School Functioning, were not significantly associated with disordered eating. Parents' report of children's Physical Functioning bordered significance, which is consistent with the physical difficulties with which disordered eating is often associated.

Child Self- and Parent Proxy-Report HRQOL

The only known study of disordered eating and HRQOL to use both child self- and parent proxy-report of HRQOL suggests that there is general agreement among child and parent report of HRQOL in overweight children engaging in disordered eating (Herpertz-Dahlmann et al., 2008), while the current study's results indicate that children and parents often have different perceptions of child HRQOL related to these concepts

and behaviors. In the current study, parents' ratings were slightly lower than children's overall ratings of HRQOL, indicating that parents subjectively rated their children's physical and psychosocial functioning as slightly worse than their children did. As found in other studies, this could have been a slight overestimation of children's difficulties by parents as a result of their own distress (Canning, Hanser, Shade, & Boyce, 1992; Levi & Drotar, 1999). Otherwise, this may have been due to minor underreporting of problems by the children or a lack of insight into one or more domains of functioning on either the child or parent's end (e.g., child may not fully understand physical impairments, parent may not be aware of all social problems). Certainly this is an area requiring further investigation as data regarding child and parent perceptions have strong implications for both assessment and treatment.

Implications

The results of the current study revealed lower HRQOL in children who endorsed clinically significant disordered eating attitudes and behaviors by reaching the clinical cutoff on the ChEAT, as well as those who reported more total disordered eating attitudes on the ChEAT and total unhealthy weight control behaviors on the CLBC. As demonstrated here, there is utility in viewing disordered eating attitudes and behaviors and unhealthy weight control behaviors on a continuum and using cutoffs, particularly for assessment purposes. As previously discussed, child and parent report was incongruent at times, highlighting the importance of multiple informants to obtain a broad description of functioning. As the roles of gender and age in HRQOL remain unclear, continuing to explore these relationships will be essential as identifying risk factors remains an important task. The identification of risk factors in these children aids in treatment referral and provides researchers, clinicians, and other professionals with

guidance in the appropriate distribution of resources and education on disordered eating. Unfortunately, the current sample is not representative of children from low-SES backgrounds who are in distress but lacking resources and unable to seek treatment. For this reason, it will be increasingly important for physicians, teachers, and other professionals and paraprofessionals to be aware of the warning signs and indicators of disordered eating and associated psychological distress. Overweight and obese children should be monitored closely for the development of these behaviors.

Regarding treatment, there is certainly a need to improve HRQOL in this population. The current study found that overweight children who engaged in disordered eating had significantly lower HRQOL. Treatment tailored to these groups of children can be developed from research in this area. Components of treatment should include developmentally appropriate materials related to disordered eating attitudes, unhealthy weight control behaviors, and issues often related to these concepts, such as body image, self-esteem, and depressive symptoms. These treatment materials could potentially be integrated into a pediatric weight management program or given as independent resources at primary care offices, schools, or local community agencies.

Strengths and Limitations

The current study features a number of strengths. The sample consisted of overweight and obese children who were in the preadolescent age range, which has been studied less frequently than other age groups in the literature on disordered eating and weight control behaviors. Multiple informants were used in assessing child HRQOL to provide a more comprehensive perspective of this concept. The measures used in this study were well-validated and widely used with overweight and obese children (i.e., ChEAT, PedsQL). As discussed earlier, there are few studies examining the

relationships between disordered eating and HRQOL. These findings are generally consistent with those results; however, this study also examines unhealthy weight control behaviors, in addition to conceptualizing disordered eating and unhealthy weight control behaviors dichotomously and continuously, which allowed us to report and apply valuable information toward assessment and treatment.

The following limitations should be considered in the context of the current study. Although significant relationships were found between disordered eating and HRQOL, the amount of variance accounted for by disordered eating attitudes and unhealthy weight control behaviors was small. This highlights the importance of further research in this area and places emphasis on our implications pertaining to the integration of these components into a weight management or similar multifaceted program. The measures used in the current study were primarily self-report, which may be associated with social desirability and inaccuracy. Unfortunately, no comparison group was used in this study, such as a non-overweight sample. The current sample included treatment-seeking children with many from mid-SES, two-parent households, limiting generalizability. Finally, as this was a cross sectional study, no cause and effect relationships can be drawn from the data. Although relationships were established between disordered eating and HRQOL, the directional nature of these associations is unknown. Thus, we cannot assume that disordered eating leads to lower HRQOL as the opposite is possible.

Future Directions

Moving forward, longitudinal studies are necessary to determine the directionality and impact of disordered eating attitudes and unhealthy weight control behaviors on HRQOL over time, as cross sectional studies only allow us to determine an association.

Clearly, the role of demographics needs to be further explored. Particularly, the roles of age, gender, and race/ethnicity in relation to HRQOL are areas for future research. Certainly, more research is needed with younger populations as they appear to be an at-risk group. Non-treatment seeking youth should be studied through venues such as schools and physician's offices to determine the prevalence of disordered eating in younger, overweight/obese children and the impact on HRQOL in this population. Using developmentally appropriate tools to measure cognitions, emotions, and behaviors to decrease misinterpretation and increase validity of responses will be a key factor in working with these younger populations. This might incorporate interviewing techniques, diagrams, and extra instruction, explanation, or resources beyond paper and pencil questionnaires.

With existing knowledge of the relationship between unhealthy weight control behaviors and HRQOL and the potentially damaging effects of these behaviors, the impact of extreme unhealthy weight control behaviors (e.g., fasting, vomiting, diet pills) on HRQOL should be explored. We suspect that children will report significantly lower HRQOL when engaging in severe disordered eating behaviors, as they may experience a greater negative impact in their psychosocial and physical health given the hazardous nature of these behaviors. Now that we have begun to investigate disordered eating more closely, additional factors that may be accounting for variability in HRQOL should be explored, such as SES, medical comorbidities, psychological comorbidities, family functioning, social functioning, and peer victimization.

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BIOGRAPHICAL SKETCH

Marissa Gowey received a bachelor's degree in psychology at the University of Minnesota in 2008. She is currently a graduate student in the Clinical and Health Psychology doctoral program at the University of Florida. Marissa received her master's degree in May 2012 and is continuing her doctoral training in clinical psychology at the University of Florida.