

PEER VICTIMIZATION, DEPRESSION, AND SOCIAL SKILLS AS PREDICTORS OF  
DISORDERED EATING ATTITUDES AND BEHAVIORS

By

SARAH J. MAYER-BROWN

A THESIS PRESENTED TO THE GRADUATE SCHOOL  
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
MASTER OF SCIENCE

UNIVERSITY OF FLORIDA

2013

© 2013 Sarah J. Mayer-Brown

To my Pop, Harry S. Mayer, Jr.

## ACKNOWLEDGMENTS

I thank David Janicke, Ph.D., for his continual support and exceptional mentoring. I thank the entire E-FLIP team for their hard work, which made this project possible. Finally, I thank my parents for their endless encouragement to pursue my dreams.

## TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGMENTS.....	4
LIST OF TABLES.....	7
LIST OF FIGURES.....	8
ABSTRACT .....	9
CHAPTER	
1 INTRODUCTION .....	11
Disordered Eating Attitudes and Behaviors .....	11
Demographic and Psychosocial Factors Related to Disordered Eating Behaviors.....	14
Peer Victimization .....	17
The Interpersonal Model .....	20
Study Purpose .....	22
Aims and Hypotheses .....	22
Rates of Disordered Eating Attitudes and Behaviors.....	22
Peer Victimization and Disordered Eating Attitudes and Behaviors .....	23
Interpersonal Model.....	23
2 METHODS AND PROCEDURES .....	25
Participants .....	25
Procedures .....	25
Measures .....	26
Anthropometric Information .....	26
Demographic Information .....	26
Disordered Eating Attitudes and Behaviors .....	27
Peer Victimization.....	27
Social Skills .....	28
Depression .....	28
Statistical Analyses.....	28
3 RESULTS .....	31
Sample Descriptive Statistics.....	31
Aim 1.....	32
Aim 2.....	32
Aim 3.....	33

4 DISCUSSION ..... 39

    Prevalence and Demographics of Disordered Eating ..... 39

    Predictors of Disordered Eating Attitudes and Behaviors ..... 41

    Implications..... 43

    Strengths and Limitations ..... 44

    Future Directions ..... 45

APPENDIX

A CHILDREN'S EATING ATTITUDES TEST ..... 47

B SOCIAL EXPERIENCE QUESTIONNAIRE ..... 50

C SOCIAL SKILLS IMPROVEMENT SYSTEM ..... 52

D CHILD BEHAVIOR CHECKLIST ..... 55

LIST OF REFERENCES ..... 56

BIOGRAPHICAL SKETCH ..... 65

## LIST OF TABLES

<u>Table</u>	<u>page</u>
3-1 Descriptive sample characteristics .....	34
3-2 Descriptive characteristics of key independent and dependent variables.....	35
3-3 Hierarchical regression analysis of disordered eating attitudes and behaviors...	36
3-4 Conditional indirect effects of peer victimization on disordered eating at values of the moderator (social skills).....	37
A-1 Children's eating attitudes test.....	47
B-1 Social experience questionnaire.....	50
C-1 Social skills improvement system .....	52
D-1 Child behavior checklist.....	55

## LIST OF FIGURES

<u>Figure</u>	<u>page</u>
1-1 The interpersonal model of eating disorder behaviors.....	24
3-1 Moderated mediation model.....	38

Abstract of Thesis Presented to the Graduate School  
of the University of Florida in Partial Fulfillment of the  
Requirements for the Degree of Master of Science

PEER VICTIMIZATION, DEPRESSION, AND SOCIAL SKILLS AS PREDICTORS OF  
DISORDERED EATING ATTITUDES AND BEHAVIORS

By

Sarah J. Mayer-Brown

May 2013

Chair: David Janicke

Major: Psychology

Pediatric obesity continues to be a significant public health concern due to high prevalence rates and numerous negative physical and psychosocial outcomes. While prevention and intervention programs encourage youth to make gradual and sensible changes to their eating and physical activity behaviors, overweight and obese children are more likely to engage in disordered eating attitudes and behaviors as compared to their nonoverweight peers. In addition, overweight and obese youth are more likely to experience social problems, such as peer victimization, which is also associated with increased disordered eating attitudes and behaviors. The current study uses the interpersonal model to examine the impact of peer victimization, anxiety/depression, and social skills on disordered eating attitudes and behaviors among overweight youth participating in a behavioral weight management program. It was hypothesized that anxiety/depression would mediate the relationship between peer victimization and disordered eating attitudes and behaviors and that social skills would moderate this relationship. Results indicated that peer victimization was related to disordered eating attitudes and behaviors, but anxiety/depression did not mediate the relationship, nor did

social skills act as a moderator. Future research should aim to study this model longitudinally to help better understand the impact of psychosocial factors on disordered eating attitudes and behaviors.

## CHAPTER 1 INTRODUCTION

Obesity continues to be a public health epidemic in the United States. Research suggests that about 32% of American youth, aged 2-19, are currently overweight (BMI at or above the 85th percentile for age and sex), while approximately 17% of youth are classified as obese (BMI at or above the 95th percentile for age and sex) (Ogden, Carroll, Kit, & Flegal, 2012). This is a concern because of the numerous physical and psychological consequences of obesity. Children and adolescents who are obese are more likely to experience cardiovascular risk factors, such as hyperlipidemia and hypertension, as well as various chronic medical conditions, such as type II diabetes, and sleep apnea (Dietz, 1998; Must & Strauss, 1999; Reilly & Kelly, 2011). It has also been shown that overweight and obese youth experience additional psychosocial problems compared to their healthy weight peers, including lower self-esteem (Strauss, 2000), more body dissatisfaction (Davison, Markey, & Birch, 2003), lower health-related quality of life (Friedlander, Larkin, Rosen, Palermo, & Redline, 2003), more social problems (Falkner et al., 2001) and an increased risk of being diagnosed with depression (Erickson, Robinson, Haydel, & Killen, 2000; Needham & Crosnoe, 2005). Compared to their healthy weight peers, overweight and obese youth also have greater risk of displaying disordered eating behaviors and attitudes (Neumark-Sztainer & Hannan, 2000; Tanofsky-Kraff et al., 2004).

### **Disordered Eating Attitudes and Behaviors**

Overweight youth are at an increased risk for engaging in disordered eating behaviors and experiencing associated disordered eating attitudes or cognitions (Neumark-Sztainer et al., 2007; Tanofsky-Kraff et al., 2004). Disordered eating attitudes

are usually conceptualized as an overvaluation of shape or weight, high levels of body dissatisfaction, and strong emotions or beliefs related to eating (e.g., feeling guilty after eating), while disordered eating behaviors include dieting, binge eating, and unhealthy weight control behaviors. Unhealthy weight control behaviors consist of skipping meals, fasting, excessive exercise, as well as more extreme measures, such as vomiting and using laxatives and diet pills. Research on these specific unhealthy weight control behaviors will be discussed in further detail in subsequent paragraphs.

Dieting is common among youth, with approximately 46% of youth trying to currently lose weight nationwide (Eaton et al., 2012). However, overweight and obese youth may be even more likely to engage in disordered eating behaviors. A population-based study among middle school and high school students found that approximately 24% of overweight girls and 12% of overweight boys reportedly engaged in extreme weight control behaviors, compared to 22% of all girls and 7% of all boys in the study (Neumark-Sztainer et al., 2007). Research has also shown that weight-related concerns and behaviors are positively correlated with weight status, meaning that obese youth are even more likely to endorse disordered eating attitudes and behaviors compared to their overweight peers (Neumark-Sztainer, Story, Hannan, Perry, & Irving, 2002).

Engaging in disordered eating behaviors is associated with numerous potential negative outcomes for youth. Children and adolescents who utilize disordered eating behaviors are at risk for physical health problems, such as nutritional deficiencies (French & Jeffery, 1994; Larson, Neumark-Sztainer, & Story, 2009) and delayed growth and puberty (Daee et al., 2002). In addition, multiple studies have demonstrated that the use of disordered eating behaviors, specifically unhealthy weight control behaviors, is

predictive of further weight gain (Field et al., 2003; Neumark-Sztainer, Wall, Guo, et al., 2006; Stice, Presnell, Shaw, & Rohde, 2005). Possibly even more concerning, engaging in unhealthy weight control behaviors is predictive of later full-syndromal eating disorders (Kotler, Cohen, Davies, Pine, & Walsh, 2001; Neumark-Sztainer, Wall, Guo, et al., 2006). Beyond negative physical health outcomes, youth who engage in disordered eating behaviors experience various psychosocial difficulties (French & Jeffery, 1994), such as depression (Crow, Eisenberg, Story, & Neumark-Sztainer, 2006; Doyle, le Grange, Goldschmidt, & Wilfley, 2007), lower self-esteem (Daee et al., 2002; Tanofsky-Kraff, Faden, Yanovski, Wilfley, & Yanovski, 2005), increased body dissatisfaction (Crow et al., 2006), and impaired social functioning (Doyle et al., 2007). Research also suggests that youth are more likely to exhibit additional risky or health compromising behaviors, such as suicidal ideation and suicide attempts, tobacco and drug use, and alcohol consumption when utilizing disordered eating behaviors (Crow et al., 2006; Neumark-Sztainer, Story, Dixon, & Murray, 1998).

Continuing to examine disordered eating attitudes and behaviors is of particular concern because of the significant pressure on many youth to lose weight. Research has demonstrated that families, peers, the media, and society influence youth's body images and attitudes about their bodies (Ata, Ludden, & Lally, 2007; Wertheim, Paxton, Schutz, & Muir, 1997). While youth may be encouraged to maintain a normal weight or lose weight with healthy methods, such as increasing exercise, limiting fat intake, and increasing fruit and vegetable consumption, research has suggested that not all youth use these healthy strategies. Instead, many engage in unhealthy weight control behaviors, and as previously discussed, evidence has accumulated about the harmful

effects of disordered eating attitudes and behaviors. Thus, it is imperative to further investigate which populations are most at risk for engaging in certain disordered eating behaviors and identify predictors of disordered eating attitudes and behaviors to assist in developing efficacious prevention and intervention programs.

### **Demographic and Psychosocial Factors Related to Disordered Eating Behaviors**

Researchers have attempted to identify demographic characteristics that are correlated with disordered eating attitudes and behaviors. As previously discussed, it has been well established that weight status is significantly related to disordered eating attitudes and behaviors, with heavier youth endorsing more disordered eating attitudes and behaviors (Neumark-Sztainer, Falkner, et al., 2002; Neumark-Sztainer et al., 2007). Gender and age are two other demographic characteristics that have been commonly examined in the literature. In regards to gender, numerous school-based studies have found that adolescent females tend to display more disordered eating attitudes and behaviors than males (Croll, Neumark-Sztainer, Story, & Ireland, 2002; Neumark-Sztainer, Story, Falkner, Beuhring, & Resnick, 1999). However, the relationship between gender and disordered eating attitudes and behaviors is less clear among younger youth. Hill and colleagues (1994) found that nine-year-old girls reported significantly higher body dissatisfaction than nine-year-old boys. Similarly, fifth through ninth grade girls endorsed significantly more weight and eating concerns compared to boys. Other studies have also found that girls, as young as six or seven, do not report significantly more disordered eating attitudes and behaviors than boys (Flannery-Schroeder & Chrisler, 1996; Thelen, Powell, Lawrence, & Kuhnert, 1992). While the role of gender in disordered eating attitudes and behaviors is well-established in older youth, it remains unclear about gender's role among younger children.

The literature on the importance of age when considering disordered eating attitudes and behaviors has demonstrated that older youth report more of these behaviors, relative to younger youth. More specifically, females in eighth and twelfth grade reported engaging in significantly more disordered eating behaviors and having significantly more body dissatisfaction than fifth grade girls (Adams, Katz, Beauchamp, Cohen, & Zavis, 1993). Neumark-Sztainer et al. (1999) also demonstrated that females in eleventh grade endorsed significantly higher rates of dieting and disordered eating compared to females in seventh grade. Research suggests that mid to late adolescence may be a critical period for disordered eating behaviors, as a significant increase in extreme weight control behaviors (e.g. using diet pills) among both males and females was observed (Neumark-Sztainer, Wall, Eisenberg, Story, & Hannan, 2006), possibly because youth go through puberty during this period in their lives and are simultaneously at risk for lower self-esteem and higher body dissatisfaction (O'Dea & Abraham, 1999). Although older adolescents appear to experience more disordered eating attitudes and behaviors, research has shown that youth in elementary and middle school report significant problems as well. Data suggests that children as young as five have reported significant weight-related concerns and children as young as seven years old have used unhealthy weight control behaviors to try to lose weight (Davison et al., 2003; Killen et al., 1993; Maloney, McGuire, Daniels, & Specker, 1989; Shapiro, Newcomb, & Loeb, 1997; Thomas, Ricciardelli, & Williams, 2000). Thus, even younger children are concerned about their weight and have engaged in disordered eating behaviors.

In addition to identifying salient demographic characteristics, researchers have begun to examine specific psychosocial factors that may predict disordered eating attitudes and behaviors among youth. Among these factors, body dissatisfaction is one of the most well-documented predictors (Stice, 2001; Wertheim, Koerner, & Paxton, 2001). In a longitudinal study, Gustafsson et al. (2010) found that baseline body dissatisfaction predicted disordered eating four to five years later among adolescent girls in a population-based sample. Moreover, a school-based study including sixth, eighth, ninth, and tenth grade females demonstrated that body dissatisfaction becomes a more salient predictor of dieting behaviors as girls get older (Gralen, Levine, Smolak, & Murnen, 2006). While less studied than body dissatisfaction, the literature suggests that lower self-esteem and perceived pressure to be thin (Stice, Presnell, & Spangler, 2002), as well as negative affect are also predictors of later disordered eating attitudes and behaviors among youth (Leon, Fulkerson, Perry, Keel, & Klump, 1999; Stice, Killen, Hayward, & Taylor, 1998; Wertheim et al., 2001).

Research has also demonstrated that positive general family functioning and positive mealtime family functioning are both negatively associated with youth's use of unhealthy weight control behaviors (Berge et al., 2012; Fulkerson, Strauss, Neumark-Sztainer, Story, & Boutelle, 2007; Neumark-Sztainer, Wall, Story, & Fulkerson, 2004). Additionally, there is evidence that mothers' own disordered eating behaviors are predictive of children's use of these behaviors (Cromley, Neumark-Sztainer, Story, & Boutelle, 2010; Neumark-Sztainer et al., 2010), but parental comments about weight appear to be even more important (Smolak, Levine, & Schermer, 1999). Numerous studies have determined that children and adolescents who are encouraged to diet by

their parents are more likely to engage in unhealthy weight control behaviors (Armstrong & Janicke, 2012; Meesters, Muris, Hoefnagels, & van Gemert, 2007), especially when mothers are the ones encouraging their children to diet (Neumark-Sztainer et al., 2010).

### **Peer Victimization**

Research has demonstrated that there are social factors that are predictive of disordered eating attitudes and behaviors. One such factor of importance is peer victimization, which is a term used to describe physical, verbal or psychological bullying, with the intention to cause harm. Researchers have defined two main subgroups of victimization- overt victimization and covert or relational victimization. Examples of overt victimization are hitting, cursing, and making threats, while relational victimization takes the form of spreading rumors, social exclusion, and teasing. Girls tend to report more relational victimization, and boys report experiencing more overt victimization (Pearce, Boergers, & Prinstein, 2002; Storch & Ledley, 2005). According to the Youth Risk Behavior Surveillance from 2011, over 20% of adolescents experienced bullying while at school over the past year (Eaton et al., 2012), which is similar to estimates from a large, school-based study of sixth through twelfth graders (Carlyle & Steinman, 2007). However, research has consistently shown that victimization is higher in earlier childhood, peaking during middle school, and then steadily decreasing over time (Nansel et al., 2001; Pellegrini & Long, 2002). Not only do younger youth experience more peer victimization, but overweight and obese youth do as well (Pearce et al., 2002; Storch & Ledley, 2005). In a large, representative sample of youth aged 11 to 16, researchers demonstrated that overweight and obese participants were more likely to report being the victims of bullying than their normal-weight peers (Janssen, Craig,

Boyce, & Pickett, 2004). However, to our knowledge, there has been no research examining the relationship between the degree of overweight status and peer victimization in a sample with elementary-aged overweight and obese children.

The literature on peer victimization has demonstrated that peer victimization is associated with a number of other psychosocial factors among cross-sectional studies. For instance, peer victimization has been shown to be positively associated with depression, and a meta-analysis suggested that victimization was most strongly related to depression but also associated with loneliness, anxiety, and self-worth (Hawker & Boulton, 2000). Furthermore, a study with fourth and fifth grade children and a separate study with preschool-aged children both demonstrated that children who are victimized (overt or relational victimization) experience more adjustment problems, such as loneliness, emotional distress, and peer acceptance (Crick & Bigbee, 1998; Crick, Casas, & Ku, 1999). Children who are victimized also appear to have poorer social skills, as a study found that students, aged 9-11 years, and teachers rated victims of peer victimization as being more behaviorally vulnerable (e.g., “looks scared,” “looks weak”) (Fox & Boulton, 2005). Longitudinal research on peer victimization has further explained the relationship between victimization and psychosocial outcomes. A study of first, second, and fourth graders found that early peer victimization predicted aggressive behavior, attention problems, delinquency, anxiety/depression, and low levels of popularity two years later (Hanish & Guerra, 2002). Because of the findings on the negative implications of peer victimization, there has also been research on possible moderators of this relationship, such as social support. According to the literature, receiving support from peers, as well as family, buffers the association between

victimization and internalizing behaviors, such as depressive symptoms (Hodges, Boivin, Vitaro, & Bukowski, 1999; Machmutow, Perren, Sticca, & Alsaker, 2012; Prinstein, Boergers, & Vernberg, 2001).

Although peer victimization is associated with numerous psychosocial factors, one particular area of importance is the relationship between peer victimization and disordered eating attitudes and behaviors. One of the only studies to look at the general concept of peer victimization and disordered eating attitudes and behaviors among overweight youth found that peer victimization at baseline was predictive of disordered eating attitudes one year later among a treatment-seeking population of overweight and obese youth (Follansbee-Junger, Janicke, & Sallinen, 2010). Several retrospective studies of adult women suggested that experiencing weight-related teasing as a child was negatively correlated with body image and positively correlated with body dissatisfaction as an adult (Grilo, Wilfley, Brownell, & Rodin, 1994; Rieves & Cash, 1996). Furthermore, appearance- and weight-related teasing by family members and peers was a significant predictor of disordered eating attitudes and behaviors (Keery, Boutelle, van den Berg, & Thompson, 2005; Libbey, Story, Neumark-Sztainer, & Boutelle, 2008) among overweight and non-overweight boys and girls alike (Neumark-Sztainer, Falkner, et al., 2002).

While these findings are significant, it is important to note that many studies only examined weight-related teasing, which is just one small facet of peer victimization. In addition, few studies have included younger populations of youth, who tend to experience more peer victimization than adolescents, as previously discussed. Another limitation of much of the literature in this area is that some studies only use single items

or dichotomous measures to assess teasing, which limits their psychometric properties. However, meta-analyses conducted by Menzel et al. (2010) found moderate effect sizes for the relationships between weight teasing and body dissatisfaction ( $r = .39$ ), appearance teasing and body dissatisfaction ( $r = .32$ ), weight teasing and dietary restraint ( $r = .35$ ), and weight teasing and bulimic behaviors ( $r = .36$ ), which suggests that there is significant support in the literature for at least one aspect of peer victimization being associated with disordered eating attitudes and behaviors.

### **The Interpersonal Model**

Although research has identified risk factors and predictors of disordered eating attitudes and behaviors, including mediators or moderators would assist in clarifying the pathways in which these factors work together. One model used to help explain disordered eating attitudes and behaviors is the interpersonal model. According to the interpersonal model, interpersonal problems cause low self-esteem and negative affect, which results in dysfunctional behaviors or psychopathology. The process in the proposed model starts with a person experiencing negative social evaluation (see Figure 1-1), which could be actual or perceived negative feedback about one's value to others or a group. In addition, the person may be receiving inadequate positive feedback from the environment. This negative social evaluation then leads to negative self evaluation and negative affect, which in turn, results in specific, problematic functioning or behaviors.

The interpersonal model was originally developed to help conceptualize and treat patients with depression but has since been extended to eating disorders, especially binge eating disorder (Wilfley, MacKenzie, Welch, Ayres, & Weissman, 2000), and is frequently applied to explain eating disorder symptoms in adults. When considering this

model and eating disorder symptomatology, a person experiences negative social evaluation directly (i.e., critical comments from others) or indirectly (i.e. social comparison), which causes negative affect and results in the person engaging in disordered eating behaviors in an attempt to cope with negative self-evaluation and the associated negative affect (Rieger et al., 2010). Rieger and colleagues (2010) hypothesize that eating disorder behaviors may be a more reliable source of esteem and affect regulation than what the person is receiving through their social interactions. Unfortunately, the eating disorder symptoms exacerbate interpersonal problems in a number of ways, such as the person being increasingly irritable and eliciting more negative reactions or having a family become resentful of the sick family member and their disorder. Interpersonal therapy, which aims to improve areas of social functioning that maintain psychological symptoms, has shown to be an effective treatment for adults with binge eating disorder (Wilfley et al., 2002; Wilson, Wilfley, Agras, & Bryson, 2010); therefore, providing some support for the underlying theoretical model.

A major limitation of the literature in this area is that research has almost exclusively been done with adults. To our knowledge, only one study utilized the interpersonal model with youth. Elliott et al. (2010) examined whether the interpersonal model extended to youth with loss of control (LOC) eating who were non-treatment-seeking and aged 8-17. Participants completed measures of negative affect and the Eating Disorder Examination or Eating Disorder Examination adapted for children, while interpersonal problems were assessed with the parent report of the Child Behavior Checklist. The data demonstrated that social problems were positively related to LOC eating and that negative affect mediated this relationship. This study provides initial

support for the application of the interpersonal model with youth, but this was a convenient sample of adolescents who volunteered to be in a study about eating behaviors. Thus, a plausible next step is to further extend the literature by testing this model with treatment seeking, overweight and obese youth.

### **Study Purpose**

There has been an abundant amount of research of the negative impact of childhood obesity on psychosocial functioning and disordered eating attitudes and behaviors. In addition, the literature has demonstrated the utility of conceptualizing types of disordered eating with the interpersonal model in adults. Considering the significant role that negative social interactions, social functioning and depressive symptoms contribute to overweight youth's disordered eating attitudes and behaviors, we believe that this model can also help explain sub-threshold disordered eating attitudes and behaviors in younger, treatment-seeking, overweight and obese youth. However, to our knowledge, only one study has applied the interpersonal model to children and adolescent's disordered eating (Elliott et al., 2010). Therefore, it is important to further examine the relationships among youth's social functioning and psychological functioning and how they relate to disordered eating attitudes and behaviors, especially in those youth at greater risk for such behaviors.

### **Aims and Hypotheses**

#### **Rates of Disordered Eating Attitudes and Behaviors**

Aim 1: Identify the occurrence of disordered eating attitudes and behaviors among treatment-seeking, overweight and obese youth. Hypothesis 1.1: Youth who are older, female, and have a higher degree of overweight will be more likely to engage in clinically significant disordered eating attitudes and behaviors. Hypothesis 1.2: Youth

who are older, female, and have a higher degree of overweight will be more likely to engage in more total disordered eating attitudes and behaviors.

### **Peer Victimization and Disordered Eating Attitudes and Behaviors**

Aim 2: Examine the relationship between child report of peer victimization and child report of disordered eating attitudes and behaviors. Hypothesis 2.1: Peer victimization will be positively related to disordered eating attitudes and behaviors.

### **Interpersonal Model**

Aim 3: Apply the interpersonal model and examine whether parent report of child anxious/depressed symptoms mediates the relationship between peer victimization and disordered eating attitudes and behaviors and whether social skills moderates this simple mediation model. Hypothesis 3.1: Anxious/depressed symptoms will mediate the relationship between peer victimization and disordered eating attitudes and behaviors, and social skills will moderate this mediation.

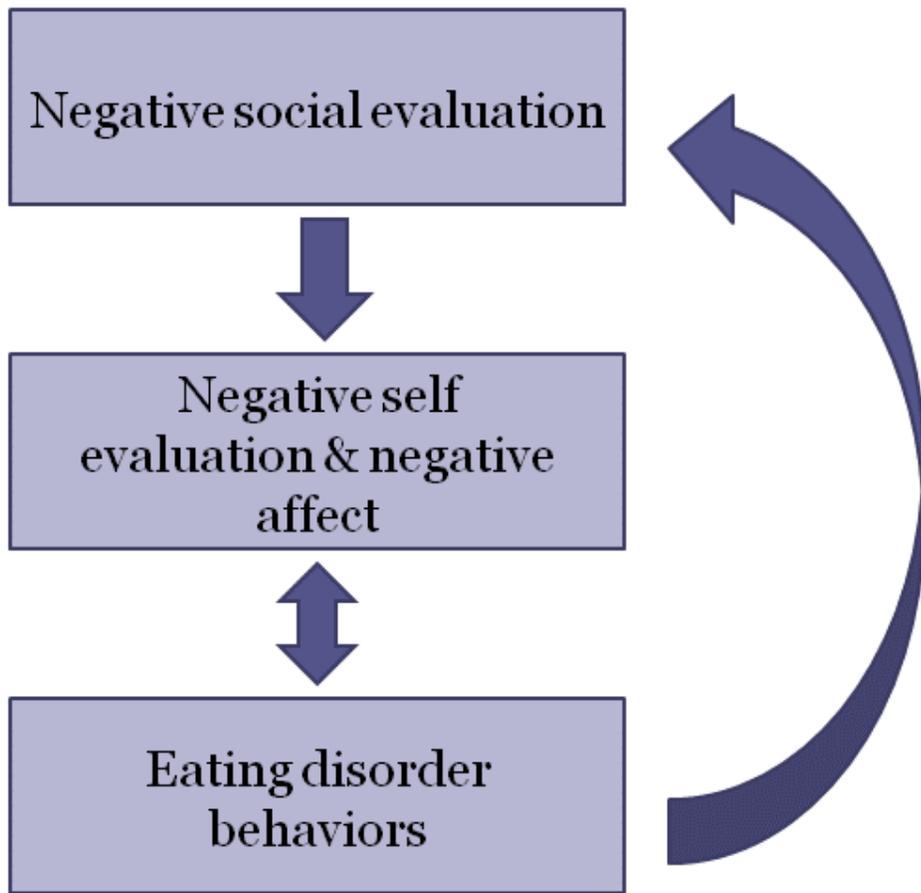


Figure 1-1. The interpersonal model of eating disorder behaviors

## CHAPTER 2 METHODS AND PROCEDURES

### **Participants**

The sample included 222 overweight or obese children ages 7-12 and their parent/legal guardian who were participating in a larger randomized control trial (RCT), examining the effectiveness of two behavioral lifestyle interventions addressing pediatric obesity. Although children were required to be 8 or older at the start of the intervention to participate in the larger RCT, a small portion of children in the sample were age 7 at their screening or baseline visits and turned 8 by the time treatment began. This sample contains data from all four treatment waves. 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 85<sup>th</sup> percentile for age and gender, (3) participating parent or legal guardian 75 years old or less, and (4) living in a rural county, based on the Office of Management and Budget's classifications (Hart, Larson, & Lishner, 2005). 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 corticosteroids, 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. A total of 222 families completed all screening and baseline questionnaires and procedures across the four study cohorts.

## **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:  $BMI = \text{weight(kg)} / \text{height(m}^2\text{)}$ . BMI was converted to z-scores based on age and gender norms from the CDC (Kuczmarski et al., 2002), 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 including child and parent sex, age, and race, ethnicity, parent marital status, and family income.

## **Disordered Eating Attitudes and Behaviors**

The Children's Eating Attitudes Test (ChEAT) was used to assess broad disordered eating attitudes and behaviors. 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. Example items include "I have been dieting" and "I feel very guilty after eating." A total continuous score was used to assess the range of disordered eating attitudes and behaviors, while the published clinical cutoff score of 20 or greater (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, and it has been validated among 8-13 year old children (Maloney, McGuire, & Daniels, 1988; Smolak & Levine, 1994). Cronbach's Alpha for the current sample was 0.78.

## **Peer Victimization**

The Social Experience Questionnaire (SEQ) was used to assess total peer victimization. This 15-item, child self-report measure consists of three subscales (i.e., relational victimization, overt victimization, and receipt of prosocial behavior) consisting of five items each. For the purpose of this study, only the relational and overt victimization subscales were used. These scales were combined to form a total peer victimization scale. Children rate items on a 5-point Likert scale, ranging from "Never" to "All the time." Examples of questions include "How often are you left out on purpose when it is time to do an activity?" and "How often does another kid yell at you and call you mean names?" The SEQ has been shown to have good test-retest reliability and internal reliability (Crick, 1996; Crick & Grotpeter, 1996).

## **Social Skills**

Children's perceptions of their social skills were assessed with the Social Skills Improvement System (SsiS). This self-report measure consists of 75 items that are rated on a 4-point Likert scale, ranging from "Not true" to "Very true." For the purpose of the current study, only the total social skills subscale was used, which consists of 46 questions. Example items include "I make friends easily," "I stay calm when I am teased," and "I help my friends when they are having a problem." There is extensive evidence of good reliability and validity estimates provided in the SsiS manual (Gresham & Elliott, 2008).

## **Depression**

The Child Behavior Checklist (CBCL/6-18) was completed by parents and guardians as a measure of their children's psychosocial functioning. Items are rated on a 3-point Likert scale, ranging from "Not true" to "Very often true." This 113-item measure assesses for a broad range of internalizing and externalizing behavior problems. The current study utilized the T-score from the Anxious/Depressed subscale of the CBCL to assess youth depressive symptoms, which consisted of 13 items. Example items from this subscale include "Cries a lot," "Feels worthless or inferior," and "Worries." This measure has demonstrated excellent test-retest reliability and internal consistency (Achenbach & Rescorla, 2001).

## **Statistical Analyses**

All statistical analyses were conducted using IBM SPSS 20 Statistics Developer Version 20. Bivariate correlations were conducted to examine relationships among the variables of interest (e.g. disordered eating attitudes and behaviors, peer victimization, social skills, anxiety/depression) and demographic variables (e.g. age, gender, income).

Demographic variables that were significantly related to any of the outcome or predictor variables were controlled for as covariates in the subsequent analyses.

For Aim 1, Pearson correlation coefficients and simple linear regressions were used to detect significant relationships between demographic/anthropometric variables (e.g., age, gender, BMI-z) and variables of interest (e.g., continuous ChEAT scores, dichotomous ChEAT scores).

For Aim 2, a hierarchical multiple linear regression was conducted to examine whether peer victimization predicted disordered eating attitudes and behaviors. Variables were entered into blocks on a hierarchical fashion to assess the contribution of successive predictors after controlling for previously entered variables. In Block 1, child age, child gender, child BMI-z score, and family income were entered into the regression, as they were significantly correlated with the variables of interest (e.g., peer victimization, disordered eating attitudes and behaviors). In Block 2, peer victimization was entered into the regression. The outcome variable in the regression was disordered eating attitudes and behaviors.

For Aim 3, the SPSS macro “Process” was utilized to conduct a bootstrapped moderated mediation (A.F. Hayes, in press) to examine whether anxious/depressive symptoms mediated the relationship between peer victimization and disordered eating attitudes and behaviors, as well as whether social skills moderated this mediation. Bootstrapping is a statistical method that involves drawing repeated samples from the data with replacement in order to obtain multiple estimates of the indirect effect (Preacher & Hayes, 2008). For the purpose of this study, we generated 5000 bootstrapped samples. Using this statistical approach to testing mediation, as compared

to Baron and Kenny's approach (Baron & Kenny, 1986), is advantageous because it does not impose the assumption of normality of the sampling distribution and maintains control over Type I error. Conditional indirect effects of peer victimization on disordered eating attitudes and behaviors through depressive symptoms were examined, and the full moderated mediation was analyzed to determine whether social skills moderated the effects of the simple mediation model. The macro allows for covariates to be entered into the model.

## CHAPTER 3 RESULTS

### Sample Descriptive Statistics

Descriptive statistics are displayed in Table 3-1. Children were 7-12 years of age ( $M = 9.84$ ,  $SD=1.41$ ), and slightly more than half of these children were female (53.6%;  $n = 119$ ). A majority of the children in the sample were Caucasian (70.3%), while almost one third identified as racial/ethnic minorities. The median family income reported for the sample was \$40,000-\$59,999, although the largest number of participants reported earning \$20,000-\$39,999 (29.3%).

Statistically significant relationships were found between gender and perceived peer victimization [ $r = -.147$ ,  $p = .028$ ], as well as social skills [ $r = .182$ ,  $p = .007$ ], which suggests that females reported experiencing less peer victimization but better social skills than boys. In addition, age was significantly and negatively correlated with total disordered eating attitudes and behaviors [ $r = -.167$ ,  $p = .013$ ] and clinically significant disordered eating attitudes and behaviors [ $r = -.136$ ,  $p = .043$ ], such that as age increased, the score on the ChEAT decreased. Age was also negatively correlated with social skills [ $r = -.220$ ,  $p = .001$ ]. BMI z-scores were significantly and positively associated with clinically significant disordered eating attitudes and behaviors [ $r = .148$ ,  $p = .028$ ] Finally, family income was significantly and negatively associated with disordered eating attitudes and behaviors [ $r = -.164$ ,  $p = .014$ ] and parent-reported child anxiety/depression symptomatology [ $r = -.188$ ,  $p = .005$ ], suggesting that higher income families have children with fewer disordered eating attitudes and behaviors, as well as fewer symptoms of anxiety/depression. Results revealed that child race/ethnicity was not significantly related to disordered eating attitudes and behaviors,

anxiety/depression, peer victimization, or social skills. Gender, age, BMI z-scores, and family income were controlled for in subsequent models as covariates.

### **Aim 1**

Descriptive information related to the individual variables of interest 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 the clinical cutoff ( $M = 11.87$ ,  $SD = 9.079$ ). However, 17.1% of the sample ( $n = 38$ ) endorsed disordered eating attitudes and behaviors in the clinically significant range (total score  $\geq 20$ ). Parents endorsed an average number of anxious/depressed symptoms among their children ( $M = 55.55$ ,  $SD = 6.756$ ; T-score of 50 = average), with 3.6% of parents reporting clinically significant anxious/depressed symptoms among their children. On average, children reported minimal perceived peer victimization ( $M = 18.95$ ,  $SD = 8.089$ ), as the possible range of scores is 10-50. In addition, children in this sample reported social skills in the average range ( $M = 100.74$ ,  $SD = 15.744$ ; Standard score of 100 = average).

### **Aim 2**

Demographic variables (e.g., child race, child gender, child BMI-z score, and family income) were entered into Block 1 of the regression and peer victimization was entered into Block 2. Model 1, which included only Block 1, was significant ( $F(4,217) = 4.245$ ,  $p = .002$ ,  $R^2 = .073$ ). Model 2, which controlled for the variance explained by the demographic variables in Block 1, was also significant ( $F(5,216) = 7.025$ ,  $p < .001$ ,  $R^2 = .140$ ). Furthermore, the 6.7% of additional variance accounted for in Model 2 was a significant increase from Model 1 ( $p < .001$ ). Therefore, peer victimization significantly

predicts disordered eating attitudes and behaviors, above and beyond demographic variables. A summary of statistical results is presented in Table 3-3.

### **Aim 3**

Predictors of disordered eating attitudes and behaviors were examined using a moderated mediation model (See Figure 3-1). Bootstrapped confidence intervals were obtained, as recommended by Hayes (2009), and demonstrated that the conditional indirect (meditational) effects were non-significant, as the bootstrapped confidence intervals contained zero (See Table 3-4). More specifically, there was no value of the social skills variable that produced a significant conditional indirect effect. Even though the moderated mediation model did not support the hypothesis that anxiety/depression mediates the relationship between peer victimization and disordered eating attitudes and behaviors, and that this relationship is not moderated by social skills, the overall model still accounted for approximately 15% of the variance in disordered eating attitudes and behaviors ( $R^2 = .1502$ ). In comparison, the model accounts for 9% of the variance ( $R^2 = .0897$ ) when not controlling for age, gender, BMI z-scores, and family income.

Looking at the specific paths of the model, it was revealed that peer victimization was not a significant predictor of anxiety/depression ( $B = .0175$ ,  $t = .2985$ ,  $p = .7656$ ). The interaction term, peer victimization x social skills, was not a significant predictor of the mediator (anxiety/depression) ( $B = .0009$ ,  $t = .2620$ ,  $p = .7935$ ). Finally, it was found that the path between anxiety/depression and disordered eating attitudes and behaviors was also non-significant ( $B = .1422$ ,  $t = 1.6313$ ,  $p = .1043$ ). Unstandardized coefficients for the model can be found in Figure 2.

Table 3-1. Descriptive sample characteristics

Demographic Characteristic	N	M	SD	%
Child Age	222	9.84	1.41	
Child Gender				
Female	119			53.6%
Male	103			46.4%
Child Race/Ethnicity				
Caucasian	156			70.3%
African American	32			14.4%
Hispanic	28			12.6%
Asian	3			1.4%
Other	3			1.3%
Family Income				
Below \$19,999	38			17.1%
\$20,000-\$39,999	65			29.3%
\$40,000-\$59,999	50			22.5%
\$60,000-\$79,999	33			14.9%
\$80,000-\$99,999	17			7.7%
Above \$100,000	19			8.6%

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

Measure	M	SD	Actual Min-Max	Possible Min-Max
ChEAT	11.87	9.079	0-53	0-69
SEQ- Peer Vic	18.95	8.089	10-48	10-50
CBCL- Anx/Dep	55.55	6.756	50-82	T scores
SsiS – Social Skills	100.74	15.744	54-128	Standard scores

ChEAT = Children's Eating Attitudes Test; SEQ = Social Experience Questionnaire; Peer Vic = Peer Victimization; CBCL = Child Behavior Checklist; Anx/Dep = Anxiety/Depression subscale; SsiS = Social Skills Improvement System

Table 3-3. Hierarchical regression analysis of disordered eating attitudes and behaviors

<i>Predictors</i>	<i>B</i>	<i>SE</i>	<i>p</i>	<i>R</i> <sup>2</sup>	<i>p</i>	<i>F</i>
Model 1				.073	.002*	4.245
Child gender	1.464	1.197	.219			
Family income	-.979	.391	.011*			
Child age	-1.072	.421	.011*			
Child BMI-z score	2.434	1.339	.073			
Model 2				.140	.000**	7.025
Child gender	2.230	1.144	.055			
Family income	-.797	.385	.040*			
Child age	-.855	.415	.040*			
Child BMI-z score	3.134	1.238	.010*			
Peer victimization	.300	.081	.000**			

\* $p \leq .05$ ; \*\* $p \leq .001$

Table 3-4. Conditional indirect effects of peer victimization on disordered eating at values of the moderator (social skills)

Mediator	Social Skills Value	Effect	Boot SE	Boot LLCI	Boot ULCI
Anx/Dep	-15.7438	.0004	.0127	-.0235	.0317
Anx/Dep	.0000	.0025	.0105	-.0113	.0335
Anx/Dep	15.7438	.0046	.0153	-.0132	.0529

Anx/Dep = Anxiety/Depression subscale on the Child Behavior Checklist;

Boot SE = Bootstrapped standard error;

Boot LLCI = Bootstrapped lower level confidence interval;

Boot ULCI = Bootstrapped upper level confidence interval

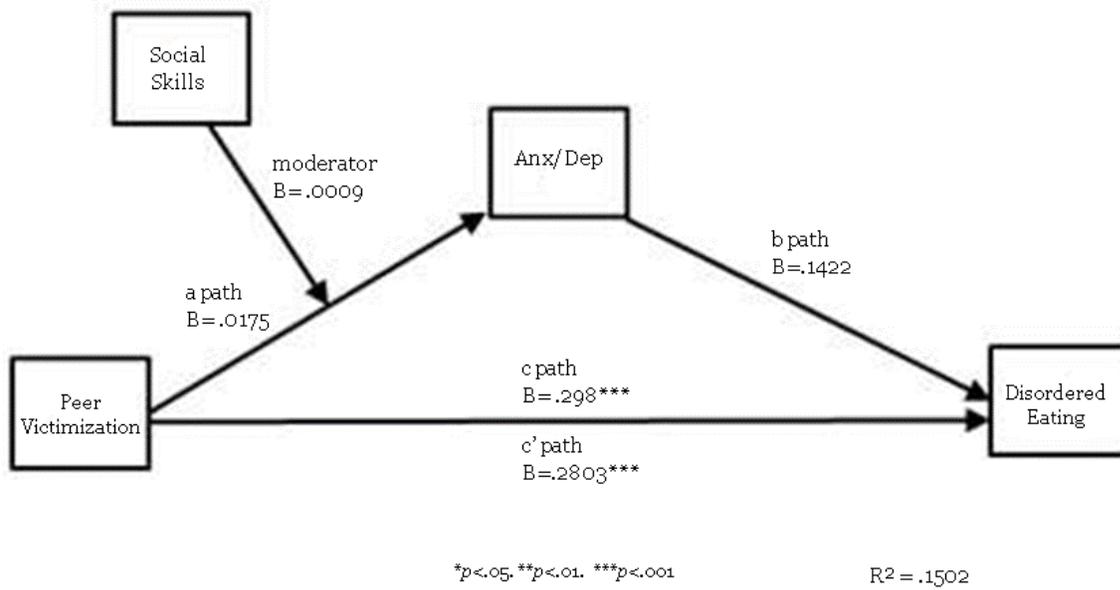


Figure 3-1. Moderated mediation model

## CHAPTER 4 DISCUSSION

While dieting and other unhealthy weight control behaviors are common among youth, the literature has consistently shown that overweight and obese youth are at an increased risk to experience disordered eating attitudes and behaviors compared to their healthy weight peers (Goldschmidt, Aspen, Sinton, Tanofsky-Kraff, & Wilfley, 2008; Neumark-Sztainer, Story, et al., 2002; Neumark-Sztainer et al., 2007; Tanofsky-Kraff et al., 2004). These overweight and obese youth are at an increased risk for experiencing social problems (Falkner et al., 2001; Zeller, Saelens, Roehrig, Kirk, & Daniels, 2004) and depressive symptoms (Needham & Crosnoe, 2005). Research suggests that social impairments and depression or anxiety may negatively impact weight outcomes in treatment-seeking youth (Epstein, Wisniewski, & Weng, 1994). Thus, the current study aimed to identify whether peer victimization, social skills and anxiety/depression predicted of disordered eating attitudes and behaviors among treatment-seeking overweight and obese youth. Our study is unique in that it is one of the few studies to examine sub-threshold disordered eating among elementary-aged youth, in the context of the interpersonal model.

### **Prevalence and Demographics of Disordered Eating**

While the average level of disordered eating attitudes and behaviors endorsed by children on the ChEAT was below the clinical cutoff, approximately 17% of youth in the sample endorsed clinically significant disordered eating attitudes and behaviors. This is consistent with a previous study that demonstrated 17.9% of treatment-seeking, overweight, 8-13 year olds reported engaging in clinically significant disordered eating attitudes and behaviors (Follansbee-Junger et al., 2010). However,

the results are considerably higher than studies among healthy weight children, which have demonstrated the presence of clinically significant disordered eating attitudes and behaviors among 6.9-10.5% of youth (Maloney et al., 1989; McVey, Tweed, & Blackmore, 2004). The high proportion of obese children in the current study's sample may explain the increased levels of clinically significant disordered eating attitudes and behaviors, as weight status is positively correlated with greater disordered eating attitudes and behaviors (Neumark-Sztainer, Falkner, et al., 2002; Neumark-Sztainer et al., 2007).

Among the analyses conducted between demographic variables (e.g., age, gender, BMI) and disordered eating attitudes and behaviors, age was the only significant predictor. In the current study, younger children engaged in more clinically significant and overall total disordered eating attitudes and behaviors, compared to older children. These findings are consistent with a previous study among treatment-seeking, overweight and obese, 8-13 year old rural children. Specifically Follansbee-Junger et al. (2010) found that child age was negatively correlated with disordered eating attitudes and behaviors, as measured by the ChEAT [ $r = -.292, p = .019$ ]. Although the literature has previously suggested that puberty is an especially high-risk period for experiencing increased disordered eating attitudes and behaviors (Ackard & Peterson, 2001; Adams et al., 1993), these studies have primarily used population based samples that include a large majority of healthy-weight youth. Therefore, it is possible that the relationship between age and disordered eating attitudes and behaviors is different for treatment-seeking, overweight and obese youth, such that younger child report higher symptomology, at least in the restricted age range of our

sample. It may be that among treatment-seeking, overweight and obese youth, there is an earlier age of onset possibly due to earlier pressure from parents to lose weight, which may lead to increased disordered eating attitudes and behaviors.

While it is possible that treatment-seeking, overweight and obese youth experience a different developmental trajectory of disordered eating attitudes and behaviors, several additional factors should be considered. First, it is important to consider that the current study and the work done by Follansbee-Junger and colleagues (2010) focus on rural youth, which is a unique population among the literature. There may be something about the rural setting, such as limited lack of health care resources, that impacted this sample. Moreover, results may in part be due to younger children being less susceptible to response bias compared to adolescents, who may be more aware of the adverse nature of these concepts. In addition, younger children may not fully comprehend the complex nature of disordered eating, endorsing items that they did not fully understand. However, the ChEAT has been well validated among youth, as young as eight-years-old (Maloney et al., 1989; Maloney et al., 1988; Smolak & Levine, 1994), but these studies have primarily focused on middle-income neighborhoods, as compared to lower-income and rural neighborhoods.

### **Predictors of Disordered Eating Attitudes and Behaviors**

The current study demonstrated that peer victimization was a significant predictor of disordered eating attitudes and behaviors, which is consistent with previous research demonstrating that peer victimization is significantly predictive of disordered eating attitudes and behaviors in nonclinical samples (Keery et al., 2005; Neumark-Sztainer, Falkner, et al., 2002). Limited research has looked at this association among treatment-seeking samples, but the current study's results are consistent with a previous study on

the longitudinal relationship between peer victimization and disordered eating attitudes and behaviors among overweight, treatment-seeking youth (Follansbee-Junger et al., 2010). Follansbee-Junger and colleagues (2010) demonstrated that child psychosocial factors, including peer victimization, accounted for approximately 14% of the variance in eating attitudes. This finding is similar to the current study, which found that 14% of the variance in disordered eating attitudes and behaviors was accounted for by peer victimization and demographic variables. The current study's findings regarding peer victimization are especially noteworthy, as few studies have analyzed the broad concept of peer victimization and instead have focused on smaller components of it, such as weight-based teasing.

It was hypothesized that the relationship between peer victimization and disordered eating attitudes and behaviors would be mediated by depression/anxiety scores and that this simple mediation would be moderated by social skills. This hypothesis was not supported, as the moderated mediation model was not significant. The non-significant mediation did not support Elliott et al.'s (2010) research, which demonstrated that the relationship between social problems and loss of control eating was mediated by negative affect, among non-treatment-seeking youth. However, the current study assessed for a broader range of disordered eating attitudes and behaviors, compared to previous work. It is also possible that these inconsistencies are due to the limited range of anxiety/depression, as less than 4% of parents endorsed clinically significant anxious/depression symptoms among their children. Previous research has typically assessed negative affect (i.e., depression) with child-report measures, such as the Children's Depression Inventory (Kovacs, 1995), instead of the

current study's use of the parent-reported CBCL. Thus, combining a parent-reported variable with child-reported data may have contributed the non-significant model.

### **Implications**

Results of the current study demonstrated that and peer victimization is associated with disordered eating attitudes and behaviors. Clearly additional longitudinal research is needed to provide more support for a causative link. However, this line of research, including findings from Follansbee-Junger et al (2010), suggest that early identification of overweight or obese youth, who experience peer victimization may attenuate the risk of negative outcomes, such as disordered eating attitudes and behaviors. From an intervention standpoint, it might be beneficial to provide school-based educational programs to youth to teach about the potential harmful effects of bullying and teasing peers. Furthermore, while our data did not support an interaction effect between social skills and peer victimization on disordered eating attitudes and behaviors, it would be reasonable that efforts to also help improve youth's social interactions could mitigate the frequency of peer teasing, which may in turn decrease the risk for disordered eating and further weight gain. Again, longitudinal research is needed to further investigate this possibility.

Although the interpersonal model has some research data to support the proposed explanation of eating disorders, such as binge eating disorder, among female adults, there is a dearth of research in this area concerning children and adolescents. The current study demonstrated that younger, overweight and obese children experience disordered eating attitudes and behaviors. For this reason, it is especially critical that physicians, teachers, and other professionals are especially vigilant for warning signs of disordered eating attitudes and behaviors among overweight and

obese youth in elementary-aged children. The lack of additional significant findings make it difficult to provide further clinical implications. However, if the current model had been supported, it would have suggested the need for prevention and intervention programs to tailor treatments to more at-risk populations. For instance, if the current study demonstrated that depression mediated the relationship between peer victimization and disordered eating attitudes and behaviors only for children with lower social skills, then it would indicate that assessing for the level of social skills would be crucial to predict which populations would be more likely to experience disordered eating outcomes. Moreover, it would suggest the importance of bolstering at-risk children's social skills to mitigate the effects of peer victimization. As the utility of the interpersonal model with a younger, overweight and obese population remains unclear, continuing to explore relationships between psychosocial variables and sub-threshold disordered eating will be essential, as identifying risk factors remains an important task.

### **Strengths and Limitations**

The current study features several strengths. The sample consisted of overweight and obese youth in the preadolescent age range, which has been studied less frequently than other age groups in the disordered eating literature. The sample included an almost even distribution of males and females, which is unique given the focus on females among much of the literature. Additionally, the use of an ethnically-diverse population, who live in rural areas, is novel. Finally, the measure utilized to assess disordered eating attitudes and behaviors (i.e., ChEAT) is well validated and widely used with overweight and obese youth.

The following limitations should be considered in the context of the current study. Although the relationship between peer victimization and disordered eating attitudes

and behaviors was significant, it only accounted for approximately 7% of the variance in the dependent variable. Furthermore, the non-significant moderated mediation model only accounted for about 13% of the variance. This emphasizes the importance of further research in this area and considering additional psychosocial variables that might impact the relationship between peer victimization and disordered eating attitudes and behaviors. The measures used in the current study were primarily self-report, which may be associated with social desirability and inaccuracy. Additionally, not all of the measures used in the current study are typical of research in this area. For instance, utilizing a parent-report measure of child anxious/depressed symptoms may have not accurately captured children's symptoms, and a measure, such as the well-supported Children's Depression Inventory (Kovacs, 1995) may have yielded different results. No comparison group was used in this study to examine the differences between overweight and normal weight children. Finally, the cross-sectional nature of this data precludes conclusions about causation.

### **Future Directions**

In the future, longitudinal research is necessary to determine the impact of peer victimization on anxious/depressed symptoms and disordered eating attitudes and behaviors over time. The role of demographics needs to be further explored, particularly the influence of gender and age in relation to disordered eating attitudes and behaviors. Similarly, additional research is needed with younger populations, as they have been typically under-studied and appear to be an at-risk group, but it will be important to utilize measures that ensure children's understanding of more complex disordered eating concepts. Extending the literature to include non-treatment seeking, overweight/obese younger youth will aid in determining the prevalence of peer

victimization, anxious/depressed symptoms, and disordered eating attitudes and behaviors in a more generalizable population, compared to treatment-seeking populations.

APPENDIX A  
CHILDREN'S EATING ATTITUDES TEST

Table A-1. Children's eating attitudes test

---

Always    Very  
            Often

Often    Sometimes    Rarely    Never

---

I am scared about being  
overweight.

I stay away from eating when I  
am hungry.

I think about food a lot of the  
time.

I have gone on eating binges  
where I feel that I might not be  
able to stop.

I cut my food into small pieces.

I am aware of the energy  
(calorie) content in foods that I  
eat.

I try to stay away from foods  
such as breads, potatoes, and  
rice.

I feel that others would like me  
to eat more.

I vomit after I have eaten.

---

Table A-1. Continued

---

Always    Very  
            Often

Often    Sometimes    Rarely    Never

---

I feel very guilty after eating.

I think a lot about wanting to be thinner.

I think about burning up energy (calories) when I exercise.

Other people think I'm too thin.

I think a lot about having fat on my body.

I take longer than others to eat my meals.

I stay away from foods with sugar in them.

I eat diet foods.

I think that food controls my life.

I can show self control around food.

I feel that others pressure me to eat.

---

Table A-1. Continued

---

Always    Very  
            Often    Often    Sometimes    Rarely    Never

---

I give too much time and thought  
to food.

I feel uncomfortable after eating  
sweets.

I have been dieting.

I like my stomach to be empty.

I enjoy trying new, rich foods.

I have the urge to vomit after  
eating.

---

Instructions: Please place an X under the word which best applies to the statements

APPENDIX B  
SOCIAL EXPERIENCE QUESTIONNAIRE

Table B-1. Social experience questionnaire

	Never	Almost Never	Sometimes	Almost all the Time	All the Time
How often are you left out on purpose when it is time to do an activity?*	1	2	3	4	5
How often does a kid who is mad at you try to get back at you by not letting you be in their group anymore?*	1	2	3	4	5
How often does another kid give you help when you need it?	1	2	3	4	5
How often has another kid told lies about you to make other kids not like you or be mad at you?*	1	2	3	4	5
How often does another kid say they won't like you unless you do what they want you to do?*	1	2	3	4	5
How often does another kid try to cheer you up when you feel sad or upset?	1	2	3	4	5
How often does another kid try to keep others from liking you by saying mean things about you?*	1	2	3	4	5
How often do you get hit by another kid at school?*	1	2	3	4	5
How often do other kids share things with you?	1	2	3	4	5

Table B-1. Continued

	Never	Almost Never	Sometimes	Almost all the Time	All the Time
How often do you get pushed around or shoved?*	1	2	3	4	5
How often does another kid do something that makes you feel happy?	1	2	3	4	5
How often does another kid say something nice to you?	1	2	3	4	5
How often does another kid yell at you and call you mean names?*	1	2	3	4	5
How often do kids yell or curse at you?*	1	2	3	4	5
How often do other kids say they will beat you up if you don't do what they want you to do?*	1	2	3	4	5

Instructions: The following are some things that happen to some kids. For each question, circle the number that describes how often this happened to you over the last month.

\*Items followed by an asterisk make up the peer victimization subscale and were used for analyses

APPENDIX C  
SOCIAL SKILLS IMPROVEMENT SYSTEM

Table C-1. Social skills improvement system

	Not true	A Little True	A Lot True	Very True
I ask for information when I need it.	N	L	A	V
I pay attention when others present their ideas.	N	L	A	V
I try to forgive others when they say “sorry.”	N	L	A	V
I’m careful when I use things that aren’t mine.	N	L	A	V
I stand up for others when they are not treated well.	N	L	A	V
I say “please” when I ask for things.	N	L	A	V
I feel bad when others are sad.	N	L	A	V
I get along with other children/adolescents.	N	L	A	V
I ignore others who act up in class.	N	L	A	V
I take turns when I talk with others.	N	L	A	V
I show others how I feel.	N	L	A	V
I do what the teacher asks me to do.	N	L	A	V
I try to make others feel better.	N	L	A	V
I do my part in a group.	N	L	A	V
I let people know when there’s a problem.	N	L	A	V
I look at people when I talk to them.	N	L	A	V
I help my friends when they are having a problem.	N	L	A	V
I make friends easily.	N	L	A	V

Table C-1. Continued

	Not true	A Little True	A Lot True	Very True
I do my work without bothering others.	N	L	A	V
I am polite when I speak to others.	N	L	A	V
I stay calm when I am teased.	N	L	A	V
I follow school rules.	N	L	A	V
I ask other to do things with me.	N	L	A	V
I am well-behaved.	N	L	A	V
I say nice things about myself without bragging.	N	L	A	V
I stay calm when people point out my mistakes.	N	L	A	V
I try to think about how others feel.	N	L	A	V
I meet and greet new people on my own.	N	L	A	V
I do the right thing without being told.	N	L	A	V
I smile or wave at people when I see them.	N	L	A	V
I try to find a good way to end a disagreement.	N	L	A	V
I pay attention when the teacher talks to the class.	N	L	A	V
I play games with others.	N	L	A	V
I do my homework on time.	N	L	A	V
I tell others when I'm not treated well.	N	L	A	V
I stay calm when dealing with problems.	N	L	A	V
I am nice to others when they are feeling bad.	N	L	A	V
I ask to join others when they are doing things I like.	N	L	A	V

Table C-1. Continued

	Not true	A Little True	A Lot True	Very True
I keep my promises.	N	L	A	V
I say "thank you" when someone helps me.	N	L	A	V
I stay calm when others bother me.	N	L	A	V
I work well with my classmates.	N	L	A	V
I try to make new friends.	N	L	A	V
I tell people when I have made a mistake.	N	L	A	V
I ask for help when I need it.	N	L	A	V
I stay calm when I disagree with others.	N	L	A	V

Instructions: This form contains a list of things kids your age may do and has two parts. Please read each sentence and think about yourself.

Decide how true each sentence is for you

If you think it is not true for you, circle the N

If you think it is a little true for you, circle the L

If you think it is a lot true for you, circle the A

If you think it is very true for you, circle the V

Please answer all questions with the best response for you for each sentence, even if it is hard for you to make up your mind. There are no right or wrong answers. Please ask questions if you do not know what to do. Begin working when told to do so.

\*Forty-six items included make up the social skills subscale

APPENDIX D  
CHILD BEHAVIOR CHECKLIST

Table D-1. Child behavior checklist

	0 = Not True	1 = Somewhat or Sometimes True	2 = Very True or Often True
Cries a lot	0	1	2
Fears certain animals, situations, or places, other than school	0	1	2
Fears going to school	0	1	2
Fears he/she might think or do something bad	0	1	2
Feels he/she has to be perfect	0	1	2
Feels or complains that no one loves him/her	0	1	2
Feels worthless or inferior	0	1	2
Nervous, highstrung, or tense	0	1	2
Too fearful or anxious	0	1	2
Feels too guilty	0	1	2
Self-conscious or easily embarrassed	0	1	2
Talks about killing self	0	1	2
Worries	0	1	2

Instructions: Above is a list of items that describe children and youths. For each item, mark the item that best describes your child now or within the past 6 months. Please mark the box labeled 2 if the item is very true or often true of your child. Mark the box labeled 1 if the item is somewhat or sometimes true of your child. If the item is not true of your child, mark the box labeled 0. Please answer all items as well as you can, even if some do not seem to apply to your child.

\*Thirteen items included make up the anxious/depressed subscale

## LIST OF REFERENCES

- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA School-Age Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, and Families.
- Ackard, D. M., & Peterson, C. B. (2001). Association between puberty and disordered eating, body image, and other psychological variables. *International Journal of Eating Disorders, 29*(2), 187-194. doi: Doi 10.1002/1098-108x(200103)29:2<187::Aid-Eat1008>3.0.Co;2-R
- Adams, P. J., Katz, R. C., Beauchamp, K., Cohen, E., & Zavis, D. (1993). Body dissatisfaction, eating disorders, and depression: A developmental perspective. *Journal of Child and Family Studies, 2*(1), 37-46.
- Armstrong, B., & Janicke, D. M. (2012). Differentiating the effects of maternal and peer encouragement to diet on child weight control attitudes and behaviors. *Appetite, 59*(3), 723-729. doi: 10.1016/j.appet.2012.06.022
- Ata, R. N., Ludden, A. B., & Lally, M. M. (2007). The effects of gender and family, friend, and media influences on eating behaviors and body image during adolescence. *Journal of Youth and Adolescence, 36*, 1024-1037.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *J Pers Soc Psychol, 51*(6), 1173-1182.
- Berge, J. M., Wall, M., Larson, N., Eisenberg, M. E., Loth, K. A., & Neumark-Sztainer, D. (2012). The unique and additive associations of family functioning and parenting practices with disordered eating behaviors in diverse adolescents. *J Behav Med. doi: 10.1007/s10865-012-9478-1*
- Carlyle, K. E., & Steinman, K. J. (2007). Demographic differences in the prevalence, co-occurrence, and correlates of adolescent bullying at school. *J Sch Health, 77*(9), 623-629. doi: 10.1111/j.1746-1561.2007.00242.x
- Crick, N. R. (1996). The role of overt aggression, relational aggression, and prosocial behavior in the prediction of children's future social adjustment. *Child Dev, 67*(5), 2317-2327.
- Crick, N. R., & Bigbee, M. A. (1998). Relational and overt forms of peer victimization: a multiinformant approach. *J Consult Clin Psychol, 66*(2), 337-347.
- Crick, N. R., Casas, J. F., & Ku, H. C. (1999). Relational and physical forms of peer victimization in preschool. *Dev Psychol, 35*(2), 376-385.

- Crick, N. R., & Grotpeter, J. K. (1996). Children's treatment by peers: Victims of relational and overt aggression. *Development and Psychopathology*, 8(2), 367-380.
- Croll, J., Neumark-Sztainer, D., Story, M., & Ireland, M. (2002). Prevalence and risk and protective factors related to disordered eating behaviors among adolescents: relationship to gender and ethnicity. *J Adolesc Health*, 31(2), 166-175.
- Cromley, T., Neumark-Sztainer, D., Story, M., & Boutelle, K. N. (2010). Parent and family associations with weight-related behaviors and cognitions among overweight adolescents. [Research Support, Non-U.S. Gov't]. *J Adolesc Health*, 47(3), 263-269. doi: 10.1016/j.jadohealth.2010.02.009
- Crow, S., Eisenberg, M. E., Story, M., & Neumark-Sztainer, D. (2006). Psychosocial and behavioral correlates of dieting among overweight and non-overweight adolescents. *J Adolesc Health*, 38(5), 569-574. doi: 10.1016/j.jadohealth.2005.05.019
- Daele, A., Robinson, P., Lawson, M., Turpin, J. A., Gregory, B., & Tobias, J. D. (2002). Psychologic and physiologic effects of dieting in adolescents. [Review]. *South Med J*, 95(9), 1032-1041.
- Davison, K. K., Markey, C. N., & Birch, L. L. (2003). A longitudinal examination of patterns in girls' weight concerns and body dissatisfaction from ages 5 to 9 years. [Research Support, U.S. Gov't, P.H.S.]. *Int J Eat Disord*, 33(3), 320-332. doi: 10.1002/eat.10142
- Dietz, W. H. (1998). Health consequences of obesity in youth: childhood predictors of adult disease. [Review]. *Pediatrics*, 101(3 Pt 2), 518-525.
- Doyle, A. C., le Grange, D., Goldschmidt, A., & Wilfley, D. E. (2007). Psychosocial and physical impairment in overweight adolescents at high risk for eating disorders. *Obesity (Silver Spring)*, 15(1), 145-154. doi: 10.1038/oby.2007.515
- Eaton, D. K., Kann, L., Kinchen, S., Shanklin, S., Flint, K. H., Hawkins, J., . . . Prevention. (2012). Youth risk behavior surveillance - United States, 2011. *MMWR Surveill Summ*, 61(4), 1-162.
- Elliott, C. A., Tanofsky-Kraff, M., Shomaker, L. B., Columbo, K. M., Wolkoff, L. E., Ranzenhofer, L. M., & Yanovski, J. A. (2010). An examination of the interpersonal model of loss of control eating in children and adolescents. *Behav Res Ther*, 48(5), 424-428. doi: 10.1016/j.brat.2009.12.012
- Epstein, L. H., Wisniewski, L., & Weng, R. (1994). Child and parent psychological problems influence child weight control. [Research Support, N.I.H., Extramural]. *Obes Res*, 2(6), 509-515.

- Erickson, S. J., Robinson, T. N., Haydel, K. F., & Killen, J. D. (2000). Are overweight children unhappy?: Body mass index, depressive symptoms, and overweight concerns in elementary school children. [Research Support, U.S. Gov't, P.H.S.]. *Arch Pediatr Adolesc Med*, *154*(9), 931-935.
- Falkner, N. H., Neumark-Sztainer, D., Story, M., Jeffery, R. W., Beuhring, T., & Resnick, M. D. (2001). Social, educational, and psychological correlates of weight status in adolescents. *Obes Res*, *9*(1), 32-42. doi: 10.1038/oby.2001.5
- Field, A. E., Austin, S. B., Taylor, C. B., Malspeis, S., Rosner, B., Rockett, H. R., . . . Colditz, G. A. (2003). Relation between dieting and weight change among preadolescents and adolescents. *Pediatrics*, *112*(4), 900-906.
- Flannery-Schroeder, E. C., & Chrisler, J. C. (1996). Body esteem, eating attitudes, and gender-role orientation in three age groups of children. *Current Psychology: Developmental, Learning, Personality, Social*, *15*(3), 235-248.
- Follansbee-Junger, K., Janicke, D. M., & Sallinen, B. J. (2010). The influence of a behavioral weight management program on disordered eating attitudes and behaviors in children with overweight. *J Am Diet Assoc*, *110*(11), 1653-1659. doi: 10.1016/j.jada.2010.08.005
- Fox, C. L., & Boulton, M. J. (2005). The social skills problems of victims of bullying: self, peer and teacher perceptions. *Br J Educ Psychol*, *75*(Pt 2), 313-328. doi: 10.1348/000709905X25517
- French, S. A., & Jeffery, R. W. (1994). Consequences of dieting to lose weight: effects on physical and mental health. *Health Psychol*, *13*(3), 195-212.
- Friedlander, S. L., Larkin, E. K., Rosen, C. L., Palermo, T. M., & Redline, S. (2003). Decreased quality of life associated with obesity in school-aged children. [Research Support, U.S. Gov't, P.H.S.]. *Arch Pediatr Adolesc Med*, *157*(12), 1206-1211. doi: 10.1001/archpedi.157.12.1206
- Fulkerson, J. A., Strauss, J., Neumark-Sztainer, D., Story, M., & Boutelle, K. (2007). Correlates of psychosocial well-being among overweight adolescents: the role of the family. *J Consult Clin Psychol*, *75*(1), 181-186. doi: 10.1037/0022-006X.75.1.181
- Garner, D. M., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The eating attitudes test: psychometric features and clinical correlates. [Research Support, Non-U.S. Gov't]. *Psychol Med*, *12*(4), 871-878.
- Goldschmidt, A. B., Aspen, V. P., Sinton, M. M., Tanofsky-Kraff, M., & Wilfley, D. E. (2008). Disordered eating attitudes and behaviors in overweight youth. *Obesity (Silver Spring)*, *16*(2), 257-264. doi: 10.1038/oby.2007.48

- Gralen, S. J., Levine, M. P., Smolak, L., & Murnen, S. K. (2006). Dieting and disordered eating during early and middle adolescence: Do the influences remain the same? *Int J Eat Disord*, *9*(5), 501-512.
- Gresham, F. M., & Elliott, S. N. (2008). *Social Skills Improvement System-Rating Scale manual*. Minneapolis, MN: Pearson Assessments.
- Grilo, C. M., Wilfley, D. E., Brownell, K. D., & Rodin, J. (1994). Teasing, Body-Image, and Self-Esteem in a Clinical-Sample of Obese Women. *Addictive Behaviors*, *19*(4), 443-450. doi: Doi 10.1016/0306-4603(94)90066-3
- Gustafsson, S. A., Edlund, B., Kjellin, L., & Norring, C. (2010). Characteristics measured by the Eating Disorder Inventory for children at risk and protective factors for disordered eating in adolescent girls. *Int J Womens Health*, *2*, 375-379. doi: 10.2147/IJWH.S12349
- Hanish, L. D., & Guerra, N. G. (2002). A longitudinal analysis of patterns of adjustment following peer victimization. [Research Support, U.S. Gov't, P.H.S.]. *Dev Psychopathol*, *14*(1), 69-89.
- Hart, L. G., Larson, E. H., & Lishner, D. M. (2005). Rural definitions for health policy and research. *Am J Public Health*, *95*(7), 1149-1155. doi: 10.2105/AJPH.2004.042432
- Hawker, D. S., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: a meta-analytic review of cross-sectional studies. *J Child Psychol Psychiatry*, *41*(4), 441-455.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium. *Communication Monographs*, *76*(4), 408-420. doi: Doi 10.1080/03637750903310360
- Hayes, A. F. (in press). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-based Approach*. New York, NY: The Guilford Press.
- Hill, A. J., Draper, E., & Stack, J. (1994). A weight on children's minds: body shape dissatisfactions at 9-years old. [Comparative Study]. *Int J Obes Relat Metab Disord*, *18*(6), 383-389.
- Hodges, E. V., Boivin, M., Vitaro, F., & Bukowski, W. M. (1999). The power of friendship: protection against an escalating cycle of peer victimization. [Research Support, Non-U.S. Gov't]. *Dev Psychol*, *35*(1), 94-101.
- Janssen, I., Craig, W. M., Boyce, W. F., & Pickett, W. (2004). Associations between overweight and obesity with bullying behaviors in school-aged children. [Research Support, Non-U.S. Gov't]. *Pediatrics*, *113*(5), 1187-1194.

- Keery, H., Boutelle, K., van den Berg, P., & Thompson, J. K. (2005). The impact of appearance-related teasing by family members. [Research Support, U.S. Gov't, P.H.S.]. *J Adolesc Health*, *37*(2), 120-127. doi: 10.1016/j.jadohealth.2004.08.015
- Killen, J. D., Taylor, C. B., Hammer, L. D., Litt, I., Wilson, D. M., Rich, T., . . . Varady, A. (1993). An Attempt to Modify Unhealthy Eating Attitudes and Weight Regulation Practices of Young Adolescent Girls. *International Journal of Eating Disorders*, *13*(4), 369-384. doi: Doi 10.1002/1098-108x(199305)13:4<369::Aid-Eat2260130405>3.0.Co;2-0
- Kotler, L. A., Cohen, P., Davies, M., Pine, D. S., & Walsh, B. T. (2001). Longitudinal relationships between childhood, adolescent, and adult eating disorders. *J Am Acad Child Adolesc Psychiatry*, *40*(12), 1434-1440. doi: 10.1097/00004583-200112000-00014
- Kovacs, M. (1995). The Children's Depression Inventory (CDI). *Psychopharmacology Bulletin*, *21*, 995-998.
- Kuczmarski, R. J., Ogden, C. L., Guo, S. S., Grummer-Strawn, L. M., Flegal, K. M., Mei, Z., . . . Johnson, C. L. (2002). 2000 CDC Growth Charts for the United States: methods and development. [Comparative Study]. *Vital Health Stat* *11*(246), 1-190.
- Larson, N. I., Neumark-Sztainer, D., & Story, M. (2009). Weight control behaviors and dietary intake among adolescents and young adults: longitudinal findings from Project EAT. [Research Support, U.S. Gov't, P.H.S.]. *J Am Diet Assoc*, *109*(11), 1869-1877. doi: 10.1016/j.jada.2009.08.016
- Leon, G. R., Fulkerson, J. A., Perry, C. L., Keel, P. K., & Klump, K. L. (1999). Three to four year prospective evaluation of personality and behavioral risk factors for later disordered eating in adolescent girls and boys. *Journal of Youth and Adolescence*, *28*(2), 181-196.
- Libbey, H. P., Story, M. T., Neumark-Sztainer, D. R., & Boutelle, K. N. (2008). Teasing, disordered eating behaviors, and psychological morbidities among overweight adolescents. [Research Support, Non-U.S. Gov't]. *Obesity (Silver Spring)*, *16* Suppl 2, S24-29. doi: 10.1038/oby.2008.455
- Machmutow, K., Perren, S., Sticca, F., & Alsaker, F. D. (2012). Peer victimisation and depressive symptoms: Can specific coping strategies buffer the negative impact of cybervictimisation. *Emotional and Behavioural Difficulties*, *17*(3-4), 403-420.
- Maloney, M. J., McGuire, J., Daniels, S. R., & Specker, B. (1989). Dieting behavior and eating attitudes in children. *Pediatrics*, *84*(3), 482-489.
- Maloney, M. J., McGuire, J. B., & Daniels, S. R. (1988). Reliability testing of a children's version of the Eating Attitude Test. *J Am Acad Child Adolesc Psychiatry*, *27*(5), 541-543. doi: 10.1097/00004583-198809000-00004

- McVey, G., Tweed, S., & Blackmore, E. (2004). Dieting among preadolescent and young adolescent females. *Canadian Medical Association Journal*, *170*(10), 1559-1561. doi: Doi 10.1503/Cmaj.1031247
- Meesters, C., Muris, P., Hoefnagels, C., & van Gemert, M. (2007). Social and family correlates of eating problems and muscle preoccupation in young adolescents. *Eat Behav*, *8*(1), 83-90. doi: 10.1016/j.eatbeh.2006.02.002
- Menzel, J. E., Schaefer, L. M., Burke, N. L., Mayhew, L. L., Brannick, M. T., & Thompson, J. K. (2010). Appearance-related teasing, body dissatisfaction, and disordered eating: A meta-analysis. *Body Image*, *7*(4), 261-270. doi: 10.1016/j.bodyim.2010.05.004
- Must, A., & Strauss, R. S. (1999). Risks and consequences of childhood and adolescent obesity. [Review]. *Int J Obes Relat Metab Disord*, *23 Suppl 2*, S2-11.
- Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among US youth - Prevalence and association with psychosocial adjustment. *Jama-Journal of the American Medical Association*, *285*(16), 2094-2100. doi: DOI 10.1001/jama.285.16.2094
- Needham, B. L., & Crosnoe, R. (2005). Overweight status and depressive symptoms during adolescence. *J Adolesc Health*, *36*(1), 48-55. doi: 10.1016/j.jadohealth.2003.12.015
- Neumark-Sztainer, D., Bauer, K. W., Friend, S., Hannan, P. J., Story, M., & Berge, J. M. (2010). Family weight talk and dieting: how much do they matter for body dissatisfaction and disordered eating behaviors in adolescent girls? *J Adolesc Health*, *47*(3), 270-276. doi: 10.1016/j.jadohealth.2010.02.001
- Neumark-Sztainer, D., Falkner, N., Story, M., Perry, C., Hannan, P. J., & Mulert, S. (2002). Weight-teasing among adolescents: correlations with weight status and disordered eating behaviors. [Research Support, U.S. Gov't, P.H.S.]. *Int J Obes Relat Metab Disord*, *26*(1), 123-131. doi: 10.1038/sj.ijo.0801853
- Neumark-Sztainer, D., & Hannan, P. J. (2000). Weight-related behaviors among adolescent girls and boys: results from a national survey. *Arch Pediatr Adolesc Med*, *154*(6), 569-577.
- Neumark-Sztainer, D., Story, M., Dixon, L. B., & Murray, D. M. (1998). Adolescents engaging in unhealthy weight control behaviors: are they at risk for other health-compromising behaviors? *Am J Public Health*, *88*(6), 952-955.
- Neumark-Sztainer, D., Story, M., Falkner, N. H., Beuhring, T., & Resnick, M. D. (1999). Sociodemographic and personal characteristics of adolescents engaged in weight loss and weight/muscle gain behaviors: who is doing what? *Prev Med*, *28*(1), 40-50. doi: 10.1006/pmed.1998.0373

- Neumark-Sztainer, D., Story, M., Hannan, P. J., Perry, C. L., & Irving, L. M. (2002). Weight-related concerns and behaviors among overweight and nonoverweight adolescents: implications for preventing weight-related disorders. [Research Support, U.S. Gov't, P.H.S.]. *Arch Pediatr Adolesc Med*, *156*(2), 171-178.
- Neumark-Sztainer, D., Wall, M., Eisenberg, M. E., Story, M., & Hannan, P. J. (2006). Overweight status and weight control behaviors in adolescents: longitudinal and secular trends from 1999 to 2004. *Prev Med*, *43*(1), 52-59. doi: 10.1016/j.ypmed.2006.03.014
- Neumark-Sztainer, D., Wall, M., Guo, J., Story, M., Haines, J., & Eisenberg, M. (2006). Obesity, disordered eating, and eating disorders in a longitudinal study of adolescents: how do dieters fare 5 years later? *J Am Diet Assoc*, *106*(4), 559-568. doi: 10.1016/j.jada.2006.01.003
- Neumark-Sztainer, D., Wall, M., Story, M., & Fulkerson, J. A. (2004). Are family meal patterns associated with disordered eating behaviors among adolescents? *J Adolesc Health*, *35*(5), 350-359. doi: 10.1016/j.jadohealth.2004.01.004
- Neumark-Sztainer, D., Wall, M. M., Haines, J. I., Story, M. T., Sherwood, N. E., & van den Berg, P. A. (2007). Shared risk and protective factors for overweight and disordered eating in adolescents. *Am J Prev Med*, *33*(5), 359-369. doi: 10.1016/j.amepre.2007.07.031
- O'Dea, J. A., & Abraham, S. (1999). Onset of disordered eating attitudes and behaviors in early adolescence: interplay of pubertal status, gender, weight, and age. *Adolescence*, *34*(136), 671-679.
- Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2012). Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. [Comparative Study]. *JAMA*, *307*(5), 483-490. doi: 10.1001/jama.2012.40
- Pearce, M. J., Boergers, J., & Prinstein, M. J. (2002). Adolescent obesity, overt and relational peer victimization, and romantic relationships. [Research Support, U.S. Gov't, P.H.S.]. *Obes Res*, *10*(5), 386-393. doi: 10.1038/oby.2002.53
- Pellegrini, A. D., & Long, J. D. (2002). A longitudinal study of bullying, dominance, and victimization during the transition from primary school through secondary school. *British Journal of Developmental Psychology*, *20*, 259-280. doi: Doi 10.1348/026151002166442
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. [Research Support, N.I.H., Extramural]. *Behav Res Methods*, *40*(3), 879-891.

- Prinstein, M. J., Boergers, J., & Vernberg, E. M. (2001). Overt and relational aggression in adolescents: social-psychological adjustment of aggressors and victims. [Research Support, U.S. Gov't, P.H.S.]. *J Clin Child Psychol*, 30(4), 479-491. doi: 10.1207/S15374424JCCP3004\_05
- Reilly, J. J., & Kelly, J. (2011). Long-term impact of overweight and obesity in childhood and adolescence on morbidity and premature mortality in adulthood: systematic review. *Int J Obes (Lond)*, 35(7), 891-898. doi: 10.1038/ijo.2010.222
- Rieger, E., Van Buren, D. J., Bishop, M., Tanofsky-Kraff, M., Welch, R., & Wilfley, D. E. (2010). An eating disorder-specific model of interpersonal psychotherapy (IPT-ED): causal pathways and treatment implications. [Review]. *Clin Psychol Rev*, 30(4), 400-410. doi: 10.1016/j.cpr.2010.02.001
- Rieves, L., & Cash, T. F. (1996). Social developmental factors and women's body-image attitudes. *Journal of Social Behavior and Personality*, 11(1), 63-78.
- Shapiro, S., Newcomb, M., & Loeb, T. B. (1997). Fear of fat, disregulated-restrained eating, and body-esteem: Prevalence and gender differences among eight- to ten-year-old children. *J Clin Child Psychol*, 26(4), 358-365. doi: DOI 10.1207/s15374424jccp2604\_4
- Smolak, L., & Levine, M. P. (1994). Psychometric properties of the Children's Eating Attitudes Test. *Int J Eat Disord*, 16(3), 275-282.
- Smolak, L., Levine, M. P., & Schermer, F. (1999). Parental input and weight concerns among elementary school children. *Int J Eat Disord*, 25(3), 263-271.
- Stice, E. (2001). A prospective test of the dual-pathway model of bulimic pathology: mediating effects of dieting and negative affect. [Research Support, U.S. Gov't, P.H.S.]. *J Abnorm Psychol*, 110(1), 124-135.
- Stice, E., Killen, J. D., Hayward, C., & Taylor, C. B. (1998). Age of onset for binge eating and purging during late adolescence: a 4-year survival analysis. *J Abnorm Psychol*, 107(4), 671-675.
- Stice, E., Presnell, K., Shaw, H., & Rohde, P. (2005). Psychological and behavioral risk factors for obesity onset in adolescent girls: a prospective study. [Research Support, U.S. Gov't, P.H.S.]. *J Consult Clin Psychol*, 73(2), 195-202. doi: 10.1037/0022-006X.73.2.195
- Stice, E., Presnell, K., & Spangler, D. (2002). Risk factors for binge eating onset in adolescent girls: a 2-year prospective investigation. *Health Psychol*, 21(2), 131-138.
- Storch, E. A., & Ledley, D. R. (2005). Peer victimization and psychosocial adjustment in children: current knowledge and future directions. [Review]. *Clin Pediatr (Phila)*, 44(1), 29-38.

- Strauss, R. S. (2000). Childhood obesity and self-esteem. *Pediatrics*, 105(1), e15.
- Tanofsky-Kraff, M., Faden, D., Yanovski, S. Z., Wilfley, D. E., & Yanovski, J. A. (2005). The perceived onset of dieting and loss of control eating behaviors in overweight children. *Int J Eat Disord*, 38(2), 112-122. doi: 10.1002/eat.20158
- Tanofsky-Kraff, M., Yanovski, S. Z., Wilfley, D. E., Marmarosh, C., Morgan, C. M., & Yanovski, J. A. (2004). Eating-disordered behaviors, body fat, and psychopathology in overweight and normal-weight children. [Research Support, U.S. Gov't, P.H.S.]. *J Consult Clin Psychol*, 72(1), 53-61. doi: 10.1037/0022-006X.72.1.53
- Thelen, M. H., Powell, A. L., Lawrence, C., & Kuhnert, M. E. (1992). Eating and body image concern among children. *Journal of Clinical Psychology*, 21(1), 41-46.
- Thomas, K., Ricciardelli, L. A., & Williams, R. J. (2000). Gender traits and self-concept as indicators of problem eating and body dissatisfaction among children. *Sex Roles*, 43(7-8), 441-458. doi: Doi 10.1023/A:1007163331749
- Wertheim, E. H., Koerner, J., & Paxton, S. J. (2001). Longitudinal predictors of restrictive eating and bulimic tendencies in three different age groups of adolescent girls. *Journal of Youth and Adolescence*, 30(1), 69-81.
- Wertheim, E. H., Paxton, S. J., Schutz, H. K., & Muir, S. L. (1997). Why do adolescent girls watch their weight? An interview study examining sociocultural pressures to be thin. [Research Support, Non-U.S. Gov't]. *J Psychosom Res*, 42(4), 345-355.
- Wilfley, D. E., MacKenzie, K. R., Welch, R. R., Ayres, V. E., & Weissman, M. M. (2000). *Interpersonal psychotherapy for group*. New York: Basic Books.
- Wilfley, D. E., Welch, R. R., Stein, R. I., Spurrell, E. B., Cohen, L. R., Saelens, B. E., . . . Matt, G. E. (2002). A randomized comparison of group cognitive-behavioral therapy and group interpersonal psychotherapy for the treatment of overweight individuals with binge-eating disorder. *Arch Gen Psychiatry*, 59(8), 713-721.
- Wilson, G. T., Wilfley, D. E., Agras, W. S., & Bryson, S. W. (2010). Psychological treatments of binge eating disorder. *Arch Gen Psychiatry*, 67(1), 94-101. doi: 10.1001/archgenpsychiatry.2009.170
- Zeller, M. H., Saelens, B. E., Roehrig, H., Kirk, S., & Daniels, S. R. (2004). Psychological adjustment of obese youth presenting for weight management treatment. *Obes Res*, 12(10), 1576-1586. doi: 10.1038/oby.2004.197

## BIOGRAPHICAL SKETCH

Sarah Mayer-Brown received a bachelor's degree in psychology from the George Washington University in 2009. She is currently a second year graduate student in the Clinical and Health Psychology doctoral program at the University of Florida, with a concentration in pediatric psychology. Sarah received her master's degree in May 2013 and is continuing her doctoral training in clinical psychology at the University of Florida.