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Social Competence Difficulties, Loneliness, and Victimization by Peers as Predictors of Eating Disturbance in Young Girls: A Longitudinal Investigation

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SOCIAL COMPETENCE DIFFICULTIES, LONELINESS, AND

VICTIMIZATION BY PEERS AS PREDICTORS OF EATING DISTURBANCE

IN YOUNG GIRLS: A LONGITUDINAL INVESTIGATION

by

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SOCIAL COMPETENCE DIFFICULTIES, LONELINESS, AND
VICTIMIZATION BY PEERS AS PREDICTORS OF EATING DISTURBANCE
IN YOUNG GIRLS: A LONGITUDINAL INVESTIGATION

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Abstract

Since the 1950s, epidemiological studies have shown a steady increase in the number of children and adolescents with eating disorders (American Academy of Pediatrics, 2003). Moreover, Anorexia Nervosa has the highest mortality rate of any mental illness (Sullivan, 1995). Historically, eating disorders were believed to occur predominantly in Caucasian adolescent and adult females from middle to upper socio-economic status (SES). Presently, studies are beginning to include more diversified samples and are discovering the presence of maladaptive eating behaviors. The current longitudinal study utilized a large community sample of girls who were assessed at age 9 and again at age 10. Further, the study examined a more racially and economically diverse sample than typically assessed in the eating disorder literature. First, the study examined the prevalence and stability of body image dissatisfaction and eating disturbance and whether they vary by racial group or SES. Secondly, the study investigated whether Body Mass Index (BMI) and body image dissatisfaction predict later eating disturbance. Lastly, the study examined whether social competence difficulties, feelings of loneliness, and victimization by peers predict later eating disturbance after controlling for BMI and body image dissatisfaction. Results indicate that 11% of the sample scored in the Anorexic range at age 9 and 7% at age 10. Body image dissatisfaction was endorsed by 35% of the sample at age 9 and 38% at age 10. Further, the frequencies of numerous maladaptive eating behaviors are reported. Children had higher mean eating disturbance scores at age 9 than at age 10. Subjects from the Minority group had higher eating disturbance scores at both ages than the Caucasian group. There was no difference between the SES groups on eating disturbance or body image dissatisfaction. Finally, BMI, racial group, body

image dissatisfaction, social competence, and victimization by peers were found to be significant predictors of eating disturbance. Implications of the findings and directions for future research are offered.

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DEDICATION

Gary, Mom, Dad, Bobby, Missy, Megan, Sandi, Grandma, and Heather thank you so

much for your love, support, and encouragement over the years.

"One of the greatest gifts that life can give to anyone is the very special love that families share…as years go by, it is good to know that there will always be certain people in our lives who care. For there are countless things that only families have in common and memories that no one else can make…and these precious ties that bind a family together are the bonds that time and distance cannot break. How fortunate we are when we have relatives to love us, it makes the world a happy place to be…few gifts in life will last as long or touch the heart as deeply as the very special gift of family."

-Craig S. Tunks

CHAPTER I

INTRODUCTION

The recognition and treatment of eating disorders has concerned the clinical community for one and a half centuries. In fact, the syndrome of Anorexia Nervosa was first described and named by Sir William Gull and Jean Lesegue in the 1870s (Madden, 2004). Although earlier descriptions of the disorder are noted within the literature, Gull and Lesegue were among the first physicians to provide a clear description of Anorexia Nervosa that recognized the role of psychological factors in the illness, which are included in the current definition (Madden, 2004). Anorexia Nervosa (relentless pursuit of thinness) and Bulimia Nervosa (binge-eating or eating a large amount of food in a small time period followed by purging or vomiting, overuse of laxatives, etc.) are the only eating disorders officially recognized by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000). A third provisional eating disorder diagnosis under consideration is Binge-Eating Disorder (binge-eating without purging), which is discussed within Appendix B of the Manual and is part of the Eating Disorders Not Otherwise Specified (EDNOS) category.

Since the 1950s, epidemiological studies have shown a steady increase in the number of children and adolescents with eating disorders (American Academy of Pediatrics, 2003). Researchers have discovered that even prepubertal females exhibit full syndrome eating disorders. Furthermore, critical antecedents to the development of later eating disorders may be formed prior to adolescence during early developmental years (Bryant-Waugh & Lask, 1995; Robins & Putnam, 1999; Rosen, 2003).

Inappropriateness of Current Diagnostic Criteria

Importantly, diagnostic criteria such as those used in past versions and the current version of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (American Psychiatric Association, 2000) are often inappropriate for young girls. Many children with eating disorders are overlooked because they do not meet the full diagnostic criteria threshold used to diagnose eating disorders in adolescents and adults (Doyle & Bryant-Waugh, 2000). For example, amenorrhea (absence of at least three consecutive menstrual cycles) is a criterion that does not apply to preadolescent children. Also, the *DSM-IV-TR* (American Psychiatric Association, 2000) requires a total loss of 15% body weight as a criterion for Anorexia Nervosa. Since children have smaller percentages of total body weight than older individuals they become emaciated much more quickly. As such, children may become quite ill prior to meeting the diagnostic threshold of 15% total body weight loss. At the other end of the spectrum are children who are overweight and concurrently demonstrating maladaptive eating patterns. Preliminary studies suggest that childhood obesity may be a risk factor for body image dissatisfaction and eating disturbance (Burrows & Cooper, 2002).

As such, not all children whether they are overweight or underweight, with serious symptoms of eating disorders will meet the diagnostic criteria for an eating disorder. As a result, the eating disturbance is likely to progress and with time become more difficult to treat. Unfortunately, eating disturbance is often associated with adolescence and many children may be overlooked and may not receive treatment. Thus, the current study will explore symptoms of eating disturbance rather than relying on

DSM-IV-TR (American Psychiatric Association, 2000) criteria for eating disorders that children are much less likely to meet.

<center>Prevalence of Eating Disorders</center>

The most current estimates show that Anorexia Nervosa occurs in approximately 0.2-0.5% of the population (Wilson, Becker, & Heffernan, 2003) and is characterized by the relentless pursuit of thinness. The second type of recognized eating disorder, Bulimia Nervosa, occurs when an individual frequently engages in binging (eating a large amount of food in a short period of time) and purging (inappropriate compensatory behaviors) episodes. Bulimia Nervosa is currently estimated to occur in about 1-2% of the population (Wilson et al., 2003). Although the applicability of a third eating disorder diagnosis Binge-Eating Disorder is under investigation, the DSM-IV-TR provides provisional criteria for the disorder. Binge-Eating Disorder is characterized by recurrent episodes of binge-eating behavior and occurs in approximately 1.5-2% of the population (Wilson et al., 2003). Binge-eating involves the consumption of a large amount of food in a small amount of time during which the individual feels a lack of control over eating (American Psychiatric Association; 2000). The disorder is particularly prevalent among those who are obese (Wilson et al., 2003). Very few study samples have examined the prevalence of eating disturbance in young children. Thus, it is important for future research studies to examine the prevalence of eating disturbance in young children.

<center>Incidence of Eating Disorders</center>

In general, the incidence of eating disorders has risen (Bryant-Waugh & Lask, 1995; Hoek, 1995; Lucas, Beard, O'Fallon, & Kurland, 1991; Rathner & Messner, 1993). For example, the incidence of Anorexia Nervosa increased from 5 per 100,000 of the

total population per year in the 1970s to 8.1 per 100,000 of the total population per year in the 1980s (Hoek, 1995). The incidence of Anorexia Nervosa is highest in females between the ages of 15-19 (Joergensen, 1992; Lucas, Beard, O'Fallon, & Kurland, 1991). In regard to Bulimia Nervosa, the incidence is likely underestimated. In the past, medical records did not indicate which type of eating disorder the patients were diagnosed with. Hence, it was difficult for researchers to obtain estimates of the incidence of Bulimia Nervosa. Additionally, patients with Bulimia Nervosa tend to hide binge/purge episodes. To date, the incidence and prevalence of Anorexia Nervosa and Bulimia Nervosa in children remains largely unknown because young girls tend not to be included in the samples.

<div align="center">Childhood Eating Disturbance</div>

A first common assumption is that puberty is a necessary precipitating factor for the development of body image dissatisfaction and eating disturbance. However, current research shows the onset of puberty is not a necessary precondition for body image dissatisfaction and eating disturbance (Sands, Tricker, Sherman, Armatas, & Maschette, 1997). Specifically, Gardner, Sorter, and Friedman (1997) demonstrate that body image disturbance, a validated precursor for eating disorders, begins to manifest prior to puberty onset. Full syndrome eating disorders occur in childhood, where Anorexia Nervosa is the most common in young children (Bryant-Waugh & Lask, 1995). In contrast, full criteria for Bulimia Nervosa are rarely met prior to age 14 (Bryant-Waugh & Lask, 1995; Thelen, 1992). Eating disorders that occur between the ages of 7-13 are termed childhood-onset eating disorders (Bryant-Waugh & Lask, 1995). As mentioned previously, many children with serious symptoms of eating disorders do not meet the diagnostic criteria. As a result,

it is important for studies to closely examine maladaptive eating symptoms in children rather than relying on diagnostic criteria. Eating disorders that occur in childhood tend to be marked by severe symptoms and have a rather poor treatment prognosis. Only approximately 2/3 of children in treatment for eating disorders make a complete recovery with the remaining children experiencing more persistent difficulties (e.g. amenorrhea, infertility, osteoporosis) (Bryant-Waugh & Lask, 1995). Indeed, research has shown that early onset problems with eating and weight may continue into adulthood (Johnson, Cohen, Kasen, & Brook, 2002). Further, critical antecedents to the development of eating disorders in adolescence or adulthood may be established during these formative years.

<center>Minority Groups and Socio-economic Status (SES)</center>

Historically, eating disorders were believed to occur predominantly in Caucasian female adolescents from mid-upper socioeconomic backgrounds. As a result, many research studies exclusively examined subjects who met these demographic criteria while neglecting to include more diverse subject pools in their studies. The literature examining body image dissatisfaction and eating disturbance in minority groups and individuals from various socioeconomic status (SES) groups is in the initial stages where there are few studies with inconsistent conclusions. Preliminary research suggests that eating disorders occur in individuals from diverse racial and socioeconomic groups (Robinson et al., 1996; Story, French, Resnick, & Blum, 1995; Walcott, Pratt, & Patel, 2003). For example, numerous studies have found that the highest rates of body image dissatisfaction and maladaptive eating behaviors are evidenced in Hispanic and Native American females, with Caucasian and Asian females falling in the middle grouping and

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African American females demonstrating the lowest rates (Croll, Neumark-Sztainer, Story, & Ireland, 2002; Robinson et al., 1996; Story et al., 1995).

When examining SES in eating disordered females in grades 7-12, Story et al. (1995) found individuals classified into a low SES group were less likely to diet or view themselves as overweight, but were more likely to report intentional vomiting and use of diuretics to control weight compared to the middle SES group. Further, the high SES group was less likely to report binge-eating and vomiting and reported more body image satisfaction than the middle SES group. Lastly, the high SES group was more likely to diet and view themselves as overweight than the low SES group. Even though the high SES group reported more body image dissatisfaction than the low SES group, they were less likely to use maladaptive weight control behaviors (e.g. binge-eating and vomiting), thus, supporting the notion that body image dissatisfaction and maladaptive eating behaviors occur differentially across SES groups, while weight loss techniques may vary. What is lacking in the literature is an understanding of the etiology of eating disturbance in young girls from diverse racial and socio-economic backgrounds. The current literature base will benefit substantially from longitudinal research that examines risk factors for eating disturbance in diverse subject pools. As such, the current study will examine the prevalence of body image dissatisfaction and eating disturbance in young girls from various racial groups and socioeconomic classes.

<div align="center">Etiology</div>

It is now widely accepted that eating disorders are not the result of a single causal factor. Eating disorders result from multiple predisposing, precipitating, and perpetuating factors that interact over the course of the individual's life (Grissett & Norvell, 1992;

Lask, 2000; Thelen et al., 1992; Troop & Bifulco, 2002). Two factors in the psychosocial domain, dieting and body image dissatisfaction have consistently shown to be risk factors for eating disorders (Hill, 1993; Patton, Johnson-Sabine, Wood, Mann, & Wakeling, 1990). Dieting is not limited in occurrence to adolescence; it is also highly prevalent among elementary and middle school girls (Hill, 1993; Maloney, McGuire, Daniels, & Specker, 1989; Shisslak et al., 1998). Additionally, in the biological domain, research has shown that childhood obesity is a risk factor for body image dissatisfaction and eating disturbance. For example, preadolescent obese girls have shown more dietary restriction, weight, shape, and eating concerns, higher depression scores and lower ratings of athletic competence, physical appearance, and global self-worth when compared to normal weight peers (Burrows & Cooper, 2002). The current study will look at the role of childhood obesity and body image dissatisfaction in the development of eating disturbance.

Importance of Social Relationships in Eating Disturbance

Difficulties with social relationships is a risk factor for a variety of mental health problems, including body image dissatisfaction and eating disorders (Rook, 1984). As children get older and enter school, interactions with parents lessen and interactions with peers become more salient. Because socialization is a primary concern/developmental task for children, understanding the contributions of protective factors and risk factors in this area is important. Thus, the current research investigation will focus mainly on protective factors and risk factors for eating disturbance from the social domain, including: social competence, loneliness in peer relationships, and victimization by peers. Unfortunately, individuals with eating disorders who demonstrate problems in the social

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domain have shown poorer treatment prognoses than those without social relationship

difficulties (Gillberg et al., 1994). Next, a summary of the research on these three

psychosocial factors (e.g. social competence, loneliness, and victimization by peers) will

be presented.

<center>Social Competence</center>

Social competence is defined by Schneider (1993) as the ability to implement

developmentally appropriate social behaviors that enhance one's interpersonal

relationships without causing harm to anyone. Social competence studies show that

individuals with eating disorders demonstrate a variety of difficulties in their social

relationships, including: lower confidence in their social skills and less self-reliance in a

variety of social situations compared to those without eating disorders (Gillberg et al.,

1994; Grissett & Norvell, 1992; Herzog, Keller, Lavori, & Ott, 1987; Holt & Espelage,

2002; McFall, Eason, Edmondson, & Treat, 1999; Wagner, Halmi, & Maguire, 1987).

One explanation for the effects of social competence on disruptive eating behaviors (e.g.

binging, purging, and dietary restraint) is that eating behaviors may provide short-term

relief to those who are ineffective at coping in their social relationships (McFall et al.,

1999). Even though individuals with eating disorders have increased difficulty

negotiating many social situations compared to those without eating disorders,

individuals with Bulimia Nervosa evidenced the worst difficulties. Specifically,

individuals with Bulimia Nervosa show less social competence and more social

relationship difficulties than those with Anorexia Nervosa (Grissett & Norvell, 1992;

Herzog et al., 1987). How social competence relates to eating disturbance in children is

not well documented.

Loneliness

Loneliness is a psychosocial risk factor that will be examined for eating disturbance in the current study. According to Rook (1984) loneliness is:

> "An enduring condition of emotional distress that arises when a person feels estranged from, misunderstood, or rejected by others and/or lacks appropriate social partners for desired activities, particularly activities that provide a sense of social integration and opportunities for emotional intimacy." (p. 1391)

A majority of individuals experience transient periods of loneliness, but for some people the loneliness is more severe and persistent, interfering with their daily functioning (Rook, 1984). Retrospective reports taken from women in their twenties show that women with eating disorders report significantly more feelings of loneliness, shyness, and inferiority in adolescence than those without eating disorders (Troop & Bifulco, 2002). Unfortunately, little research has examined the relationship between experiencing feelings of loneliness and eating disturbance in children.

Victimization By Peers

When examining the third risk factor, victimization by peers, research has found that negative comments issued by peers are frequently taken very literally by those to whom the comments are directed (Paxton, 1996). Vernberg, Jacobs, and Hershberger (1999) define peer victimization as:

> "Actions taken by one or more youths (perpetrator) with the intention of inflicting physical or psychological injury or pain on another youth (victim), is believed to have detrimental effects on the physical or psychological adaptation of victims, perpetrators, and bystanders." (p. 386)

The current study will examine whether the subset of children in the current study who are victimized by peers or those who have experienced physical or psychological injury or pain are at an increased risk for eating disturbance. Many individuals with eating disorders report that they are able to recall a specific negative comment or teasing about their body that acted as a precipitating factor contributing to their eating disorder. Studies show that teasing in childhood is significantly predictive of lower self-esteem and a poorer body image in early adulthood (Gleason, Alexander, & Somers, 2000). Other studies show African American and Caucasian adult females who reported being teased by peers during childhood had a higher occurrence of Binge-Eating Disorder than healthy comparison women (Striegel-Moore, Dohm, Pike, Wilfley, & Fairburn, 2002). Childhood obesity is a risk factor for being subjected to teasing and developing body image dissatisfaction (Burrows & Cooper, 2002; Paxton, 1996). Interestingly, in some research, childhood obesity did not have a direct effect on body image dissatisfaction; its influence was mediated by teasing (Lunner et al., 2000; Thompson, Coovert, Richards, Johnson, & Cattarin, 1995). Therefore, the correlation between childhood obesity and body image dissatisfaction was reduced when the variance attributed to teasing was accounted for. The current study will examine childhood eating disturbance with a strong consideration of the psychosocial influences of social competence, loneliness, and victimization by peers.

<center>Summary of the Limitations of Past Research</center>

In summary, an overall examination of past and current eating disorder research shows that few studies have focused on risk factors for childhood-onset eating disorders. Even more notably, a small amount of studies have longitudinally examined maladaptive

eating symptomology in children. Because peer relationships become increasingly important during middle childhood, it is imperative that current studies examine social risk factors for eating disorders in young children. Studies that have examined social risk factors in childhood have often relied on retrospective reports obtained from adult samples. Moreover, few studies have examined the prevalence of eating disorders in diverse racial and SES groups outside of Caucasian and middle-upper SES. Further, a limitation of the current etiological research is its reliance on clinical samples. This reliance presents a dilemma, because patients who are seeking treatment may not be representative of the population at large (Wilson et al., 2003).

Summary of the Current Study

The current research study will examine the prospective reports of children's social relationships pertaining to eating disturbance. The longitudinal study will utilize a large-scale community sample of girls who will be assessed at age 9 and again at age 10. By examining a younger sample than typically focused on in the literature, this study will seek to identify antecedents to the development of eating disturbance. The study will also examine a more racially and economically diverse sample than typically assessed in the eating disorder literature. Further, the study will attempt to reduce recall bias as a potential source of error by obtaining prospective reports for all measures. In an attempt to increase the validity of the study, some of the variables will be examined based on measures from multiple informants (e.g. child, teacher, parents). Importantly, the study will address problems associated with the validity of current eating disorder criteria in children by examining scores of symptom severity rather than relying diagnostic criteria that may be inappropriate. The current eating disorder literature frequently uses the terms

eating disorder and eating disturbance. The current study will use the term eating

disturbance because it will be examining the severity of symptoms rather than making

DSM-IV-TR (American Psychiatric Association, 2000) diagnoses.

<center>Implications of the Current Study</center>

There would be several important diagnostic and treatment implications if body

image dissatisfaction and eating disturbance are discovered in individuals of younger age

and diverse racial and SES groups. For example, those who do not meet the Caucasian,

female adolescent, middle-upper SES stereotype may be overlooked during assessments

by clinicians. Moreover, many individuals with eating disorders enter treatment as a

result of a concerned family member, friend, or significant other. If the maladaptive

eating behaviors of young children from different races and SES groups are not

recognized by those who care for them, they may not be encouraged to enter treatment

for their eating problems. Further, critical risk factors for eating disorders may be

overlooked or attributed to something other than eating disorders in these individuals.

The earlier we identify maladaptive eating behaviors, the less time the disturbance has to

progress, which will result in a better treatment prognosis.

<center>Research Questions and Hypotheses</center>

The research questions and hypotheses for the current study are as follows:

Research Question # 1

What is the prevalence and stability of body image dissatisfaction and eating

disturbance at ages 9 and 10? Do they vary by racial group or SES?

Hypothesis

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For the first research hypothesis, body image dissatisfaction and eating disturbance occur in female children as young as age 9 and will increase by age 10. Due to the inconsistency of findings and lack of research on children of various racial groups and eating disturbance, it is somewhat difficult to develop empirically driven hypotheses in this area. Based on the current literature, the researcher would expect that girls from Minority racial groups would have a lower prevalence of body image dissatisfaction and eating disturbance when compared to Caucasian girls. Lastly, the researcher anticipates that body image dissatisfaction and eating disturbance will occur at similar rates across SES levels.

Research Question # 2

Does Body Mass Index (BMI) and body image dissatisfaction predict later eating disturbance?

Hypothesis

For the second research question, the researcher proposes that high BMI and body image dissatisfaction at age 9 will be significant independent predictors of eating disturbance at age 10.

Research Question # 3

Do social competence difficulties, feelings of loneliness, and victimization by peers predict later eating disturbance after controlling for BMI and body image dissatisfaction?

Hypothesis

In terms of the third research question, it is hypothesized that social competence difficulties, feelings of loneliness, and being a victim of peer teasing will contribute

unique variance to the prediction of eating disturbance after controlling for BMI and

body image dissatisfaction.

CHAPTER II

LITERATURE REVIEW

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text

Revision (DSM-IV-TR; American Psychiatric Association, 2000) officially recognizes

two types of eating disorders: Anorexia Nervosa and Bulimia Nervosa. Within this

diagnostic classification system, Anorexia Nervosa is characterized by the persistent

refusal to maintain a normal body weight for one's age and height, an intense fear of

gaining weight or becoming overweight even if the individual is underweight, a

disturbance in the experience of one's body weight/shape, equation of body weight/shape

with self-evaluation, denial of the seriousness of a low body weight, and in

postmenarcheal females, amenorrhea. The DSM-IV-TR (American Psychiatric

Association, 2000) further divides this diagnosis into two subtypes: Restricting Type and

Binge-Eating/Purging Type. The Restricting Type is given if an individual does not

regularly engage in binge-eating or purging behaviors. Consequentially, the Binge-

Eating/Purging Type is given if the individual regularly engages in such behaviors.

The DSM-IV-TR (American Psychiatric Association, 2000) criteria for Bulimia

Nervosa is met when an individual demonstrates recurrent episodes of binge-eating

involving a large amount of food consumed in a small period of time and senses a lack of

control over the binge-eating episode. Additionally, the individual must engage in

compensatory behavior (e.g. self-induced vomiting, overuse of laxatives, diuretics,

enemas, medications, fasting, and/or excessive exercise). The binge-eating and

compensatory behaviors must occur at least twice a week for three months. Additionally,

the disturbance must not occur exclusively during episodes of Anorexia Nervosa. Similar

to Anorexia Nervosa, self-evaluation is strongly tied to one's body weight/shape and Bulimia Nervosa is also given two subtypes: Purging Type and Nonpurging Type. Purging Type is given when the individual regularly engages in self-induced vomiting or the misuse of laxatives, diuretics, or enemas. In contrast, Nonpurging Type is indicated when the individual uses another medium (e.g. fasting or excessive exercise) to compensate for eating behavior. Lastly, the DSM-IV-TR (American Psychiatric Association, 2000) provides an Eating Disorder Not Otherwise Specified (EDNOS) category for instances where one's pathological eating behaviors are evident but do not meet the threshold for either an Anorexia Nervosa or Bulimia Nervosa diagnosis.

Binge-Eating Disorder is a provisional diagnosis considered for inclusion in the DSM that requires further research. Binge-Eating Disorder is described within the EDNOS diagnostic category with preliminary criteria for use in future investigations (Wilson, Becker, & Heffernan, 2003). Specifically, the criteria characterizes binge-eating as an episode involving the consumption of a large amount of food in a small amount of time during which the individual feels a lack of control over eating. Further, the binge-eating episode must be associated with at least three of the following: eating more rapidly than normal, eating until feeling uncomfortably full, eating large amounts of food when not feeling physically hungry, eating alone because of being embarrassed by how much one is eating, and feeling disgusted with oneself, depressed, or very guilty after overeating. The criteria state that binge-eating should occur approximately two times a week for six months, where the individual experiences marked distress in response to binge-eating episodes. Lastly, the criteria state that binge-eating should not be associated with the regular use of compensatory behaviors or occur exclusively during the course of

Anorexia Nervosa or Bulimia Nervosa. Binge-Eating Disorder occurs primarily in obese individuals; with approximately 3.0% of obese individuals meeting criteria for the disorder compared to 1.5-2.0% of the general population (Wilson et al., 2003). The prevalence of Binge-Eating Disorder is much higher in obese patients seeking treatment (Wilson et al., 2003).

Validity of Diagnostic Criteria for Eating Disorders in Children

Evidence suggests that children who are suffering with some of the symptoms of eating disorders may be overlooked because they do not meet diagnostic threshold that are used for criteria in older individuals (Doyle & Bryant-Waugh, 2000). For example, the validity of the diagnostic criteria for Anorexia Nervosa in children has been questioned. Specifically, children have a lower percentage of total body fat than adolescents; as such they may not fulfill the DSM-IV-TR (American Psychiatric Association, 2000) criteria of 15% total weight loss. Children can lose a smaller percentage of body weight than adults and become quite emaciated. This is due to faster rates of weight loss in children than in older individuals. Similarly, young children have shown to reduce fluid intake along with food intake. Young children are not as cognitively advanced as adolescents and do not completely understand the concept of calories and body fat. As a result, many children believe liquids such as water can cause them to gain weight and thus they restrict fluid intake (Irwin, 1984). Unfortunately, due to lower percentages of total body fat and increased restriction of food and fluid, children deteriorate much more quickly than their older counterparts (Irwin, 1984). Lastly, the DSM-III-R (American Psychiatric Association, 1987) required the absence of at least three consecutive menstrual cycles as a criterion for Anorexia Nervosa (Bryant-Waugh &

Lask, 1995). Clearly, this criterion was not applicable to prepubertal females. Within the literature, puberty is often cited as a precipitating factor to the development of an eating disorder. However, current research with preadolescent samples shows that views of body image and eating are developed prior to the onset of puberty (Sands, Tricker, Sherman, Armatas, & Maschette 1997; Thelen et al., 1992; Gardner, Sorter, & Friedman 1997).

There has been limited theoretical work conducted to examine the childhood factors that may relate or contribute to the development of eating disorders (Thelen et al., 1992). Therefore, the validity of the current eating disorder diagnostic criteria may not be appropriate for young children. There may be a number of children who do not meet the full diagnostic criteria of an eating disorder, yet may exhibit several serious symptoms of an eating disorder. Thus, there is a need for current research to explore symptom severity of eating disturbance in children rather than relying solely on diagnostic criteria.

Distinguishing Variant Childhood Eating Difficulties from True Eating Disorders

Within the literature, a number of variant childhood disorders of eating are discussed (e.g. swallowing dysfunction, vomiting, and food aversion, selectivity, and avoidance). Children with these disorders often present with overlapping symptoms of eating disorders, which can make differential diagnosis difficult. However, children with other types of eating difficulties can be reliably distinguished from those with actual eating disorders. For example, children with variant disorders of eating do not feel driven to lose weight, do not exhibit body dissatisfaction, or fear becoming fat. In contrast, children with eating disorders may be more likely to deny the existence of an eating problem, derive satisfaction via dietary constraint, and have obtained a belief that their

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self worth and body size are directly related (Bryant-Waugh & Lask, 1995; Robins & Putnam, 1999). These differences illustrate that there are many characteristics or behaviors that clearly distinguish true childhood eating disorders from variant eating difficulties.

Childhood Prevalence of Eating Disorders

Since the 1950s, epidemiological studies have shown a steady increase in the number of children and adolescents with eating disorders (American Academy of Pediatrics, 2003). When examining the prevalence of eating disorders, researchers are seeking to determine the total number of cases within a specific population at a certain time point. Prevalence is commonly expressed as the rate of eating disorders per 100,000 population or as a percentage. Current evidence suggests the prevalence of eating disorders has risen; however, the reason for this increase is not yet determined (Wilson et al., 2003). Some researchers suggest that the increase in cases of eating disorders may be due to improved identification of the disorders (Wilson et al., 2003).

The eating disorder research reports average prevalence rates of approximately 0.2-0.5% for Anorexia Nervosa, 1.0-2.0% for Bulimia Nervosa, and 1.5-2.0% for Binge-Eating Disorder (Wilson et al., 2003). However, there has been some disparity in these findings. For example, Gillberg, Rastam, & Gillberg (1994) conducted a six year longitudinal study of a population cohort and found Anorexia Nervosa to be more common, with more than 1% of females under the age of 18 meeting diagnostic criteria. Of the three eating disorders studied, Anorexia Nervosa is the most common eating disorder in children (Bryant-Waugh & Lask, 1995). Despite the numerous studies conducted on the incidence and prevalence of Anorexia Nervosa in adolescents, there is

little information regarding young children (Thelen, Lawrence, & Powell, 1992). A study by Joergensen (1992) found the prevalence of Anorexia Nervosa to be 0.7% in 10-14 year-old children between the years of 1977-1986 in Fyn County Denmark. Although sufficient research has not been conducted, it is hypothesized that the prevalence of Bulimia Nervosa in prepubertal girls is low compared to adolescent and adult rates (Bryant-Waugh & Lask, 1995; Thelen et al., 1992). That is, full syndrome Bulimia Nervosa is rarely seen prior to age fourteen in clinical samples (Bryant-Waugh & Lask, 1995; Thelen, 1992). In the Denmark study, the prevalence of Bulimia Nervosa was reported to be 0.4% in 10-14 year-olds over that time span. Individuals who are diagnosed with eating disorders are overwhelmingly female, while approximately 5-10% of eating disorder patients from clinical samples are male (Hoek, 1995). In samples of children, the proportion of boys with eating disorders is higher than one would expect based on adolescent and adult rates (Bryant-Waugh & Lask, 1995; Doyle & Bryant-Waugh, 2000).

<div align="center">Childhood Incidence of Eating Disorders</div>

Despite some controversy in measurement procedures, researchers have documented an increase in the incidence of eating disorders (Bryant-Waugh & Lask, 1995; Hoek, 1995; Lucas et al., 1991; Rathner & Messner, 1993). Incidence refers to the number of new cases per year per 100,000 population. Because it is difficult to assess a large number of individuals (e.g. 100,000) over the course of several years, most incidence studies rely on reports of cases from health care systems rather than the general population (Hoek, 1995). One criticism of studies that rely solely on clinical samples is that it will result in an underestimation of the incidence of eating disorders. That is, many

individuals with eating disorders are unlikely to seek medical attention and reliance on

clinical samples may result in an underestimate of the incidence of eating disorders

(Doyle & Bryant-Waugh, 2000; Hoek, 1995; Rathner & Messner, 1993).

A study conducted by Lucas et al. (1991) examined the incidence rates of

Anorexia Nervosa over a period of 50 years (1935-1984) in Rochester, Minnesota. The

researchers examined 13,559 medical records for cases of Anorexia Nervosa and looked

for instances where the disorder may have been overlooked. Further, they used the

Diagnostic and Statistical Manual of Mental Disorders, Third Revision, Revised (DSM-

III-R; American Psychiatric Association, 1987) for the diagnostic criteria and reported

incidence rates for nine age groups, three of which are reported below. After reexamining

the medical records, the researchers identified numerous individuals who were not

previously diagnosed with Anorexia Nervosa, but met the criteria for the disorder.

Additionally, there were some individuals with past diagnoses who were excluded from

the study because they did not meet the current criteria. When examining the results for

females only, they indicated there were no reported cases of Anorexia Nervosa in female

children between the ages of 0-9. For the 10-14 year-old group there were 25.7 new cases

of Anorexia Nervosa per 100,000 of the population per year. The 15-19 year-old group

had the highest incidence with 69.4 new cases of Anorexia Nervosa per 100,000 of the

population per year. Results of this study show a rise in the incidence of Anorexia

Nervosa for girls between the ages of 15 and 24. As mentioned, there are discrepancies in

the reported incidence of eating disorders between studies. For example, a study by

Joergensen (1992), using the same DSM-III-R diagnostic criteria, found an incidence rate

of 9.2 new cases of Anorexia Nervosa per 100,000 population for the 10-14 year-old

group and a rate of 11.9 new cases per 100,000 population for the 15-19 year-old group. No incidence rates were reported for a 0-9 year-old group. Out of all the age ranges the study assessed (10 years to 25+ years of age), the 15-19 year-old group had the highest incidence of Anorexia Nervosa. In sum, these studies illustrate that the incidence of Anorexia Nervosa is the highest for girls between the ages of 15-24. Although the Lucas et al. (1991) study did not find any cases of Anorexia Nervosa in girls between the ages of 0-9, the Joergensen (1992) study did not examine this age group. As a result, the incidence of Anorexia Nervosa in young girls remains unanswered because no firm conclusions can be drawn from a sole study.

In the past, the incidence of Bulimia Nervosa could only be assessed via primary care practice; most hospitals were using versions of the International Classification of Diseases (ICD; World Health Organization) system that did not provide a separate code for this disorder (Hoek, 1995). As a result of the difficulty in obtaining accurate records for analysis coupled with the tendency of females with Bulimia Nervosa to hide binge and/or purge episodes, the incidence is likely underestimated. In reexamining the old cases using the DSM-III-R, Joergensen (1992) reports 3.3 new cases of Bulimia Nervosa per 100,000 population for the 10-14 year-old group and 3.0 new cases of Bulimia Nervosa per 100,000 population for the 15-19 year-old group between the years of 1977-1986. In addition to discrepancies for prevalence and incidence data, there are inconsistent reports regarding the etiology of eating disorders. Despite the research that has been conducted, there is presently little consistency in findings and the prevalence and incidence of Anorexia Nervosa and Bulimia Nervosa in children remains to be answered.

Etiology of Eating Disorders

Research has consistently indicated that eating disorders are not the result of a single causal factor. Focusing on only one possible contributory factor is insufficient for examining the etiology of eating disorders. Further, evidence illustrates that eating disorders are multi-determined and result from a number of factors that interact over the course of the individual's life (Grissett & Norvell, 1992; Lask, 2000; Thelen et al., 1992; Troop & Bifulco, 2002). Factors that contribute to the etiology of an eating disorder are frequently discussed in terms of the following categories: biological, personality, psychological, familial, and socio-cultural factors. Social risk factors will be the focus of the current study. In addition to categorizing risk factors, researchers also indicate if they are predisposing, precipitating, or perpetuating (Lask, 2000). Predisposing factors are those that are prerequisite for the development of an eating disorder. Thus, they must occur prior to the development of an eating disorder. Precipitating factors are those that trigger the onset of an eating disorder. These are usually acute events (e.g. being teased about one's weight). Finally, perpetuating factors work to maintain an eating disorder once it has manifested.

Culture and Eating Disorders

Eating disorders predominantly occur in industrialized or westernized countries. Some researchers have shown that identification with western values may be associated with higher rates of eating disorders (Doyle & Bryant-Waugh, 2000). Other researchers have narrowed the definition to include adaptation and internalization rather than the sole awareness of the cultural thin ideal as increasing the risk for eating disorders and body image concerns, particularly for women with higher body mass (Low et al., 2003).

Additionally, past research has shown that eating disorders are most prevalent in urban areas (Walcott et al., 2003); however, current research suggests the risk for eating disorders in rural areas may be higher than previously thought (Walcott et al., 2003).

Particular subgroups (e.g., ballet dancers, models, jockeys, and gymnasts) have been shown to be at an increased risk for the development of eating disorders, suggesting a socio-cultural component (Hoek, 1995). Within these groups, individuals experience intense pressure to maintain a slim physique and/or maintain a low body weight. As a result, these individuals are likely to turn to dieting, which has been identified as a risk factor for eating disorders (Hill, 1993; Shisslak et al., 1998). Also, non-professional/non-competitive male and female athletes are at a higher risk for body image dissatisfaction and eating disorders (Ravaldi et al., 2003).

Prevalence of Eating Disorders in Racial Groups

Traditionally, eating disorders have been thought to occur predominantly in Caucasian females who internalize the thin ideal body shape that is often associated with Western culture. A lot less is known about the eating behaviors of Minority groups and/or individuals from lower SES groups. Studies that focus on the examination of disturbed eating behaviors and disorders in a variety of Minority groups are only now emerging. We know that eating disorders, maladaptive eating behaviors, and body image dissatisfaction occur in various racial groups, but we do not yet know whether or how they vary across racial groups (Arriaza & Mann, 2001). Studies that examine various racial groups often show inconsistencies. Thus, the following literature review will highlight similarities and differences between studies.

A majority of studies have shown that African American females are less concerned about their body size and shape, less likely to view themselves as overweight and diet, and less likely to be diagnosed with an eating disorder when compared to other racial groups (Arriaza & Mann, 2001; Crago, Shisslak, & Estes, 1995; Story et al., 1995). Greater weight tolerance, less body dissatisfaction, less reliance on dieting and vomiting, higher self-esteem, and a culture more accepting of larger body types are factors that have been hypothesized to account for the low prevalence of maladaptive eating behaviors in African Americans (Crago et al., 1995; Gordon, Perez, & Joiner, 2002). Unfortunately, findings from prevalence studies on eating disorders, maladaptive eating behaviors, and body image dissatisfaction are sometimes inconsistent across studies of racial groups. Arriaza & Mann (2001) suggest that the differences in findings may be due to: different measures used between studies, level of acculturation of the sample, genetics, SES, and/or Body Mass Index (BMI). Additionally, little research has focused on examining the degree of body image dissatisfaction and eating disturbance in young African American and Caucasian females. Thus, research on body image dissatisfaction and eating disorders across racial groups still needs to be conducted in order to clarify inconsistent findings and to compare findings to younger samples of females.

Croll et al. (2002) examined the prevalence of disordered eating behaviors in individuals from various racial groups. The study consisted of 40,640 female adolescents from Caucasian, Asian, African American, Hispanic, and Native American racial groups. Ninth and twelfth grade students were administered the 1998 Minnesota Student Survey, a self-report measure that contains questions about disordered eating behaviors and various psychosocial characteristics. Results indicated that overall disordered eating

behaviors were the most prevalent among Hispanic and Native American adolescents. Caucasian females had the third highest prevalence and Asian adolescents had the fourth highest prevalence. Overall, African American adolescents were the least likely to report any disordered eating behaviors.

Story et al. (1995) administered a health behavior survey that assessed the body weight, dieting, eating, and weight control behaviors of 36,320 male and female students in grades 7-12. The sample assessed individuals from Caucasian, African American, Hispanic, Native American, and Asian American racial groups. A measure of SES was derived from parental education level and parental employment status. The results for females showed that the prevalence of dieting was the highest among Hispanic individuals and lowest among African American individuals. Vomiting was the lowest in Caucasians and highest in Hispanic and Native Americans. About two times as many Hispanics reported using laxatives or diuretics to lose weight when compared to other racial groups. Binge-eating was reported most often by Asian Americans and least often by African Americans. African American and Asian American females were the least likely to view themselves as overweight. Overall, African American females were the most satisfied with their weight.

Collectively, the majority of the eating disorder research shows that African American females are more satisfied with their bodies and are less likely to exhibit disruptive eating behaviors when compared to Caucasian females. However, further study is needed in order to determine whether such a pattern holds for younger females. Interestingly, some research has demonstrated that racial stereotypes may interfere with the detection of eating disorders in minority groups. For example, Gordon et al. (2002)

examined whether Caucasian, Hispanic, and African American undergraduate students would be less likely to recognize maladaptive eating symptoms in an African American or Hispanic female compared to a Caucasian female. Subjects were given a diary with a brief demographic profile, which indicated the ethnicity of a fictional female. The diary contained daily information regarding the female's school activities and eating patterns. The content of the diary remained identical, while the demographic profile changed so that subjects were made to believe the girl was of a certain race. After reading the diary, subjects were asked to answer a questionnaire asking whether they believed the female had any important problems. Next, they were asked to complete an eating disorder survey in the manner they thought the fictional female would. Results showed that the subjects own race was not related to whether they detected eating symptoms in the female, although, the fictional female's race did influence the detection of eating symptoms. When the girl was Caucasian, 93% of the subjects recognized the symptoms. In contrast, when she was portrayed as African American or Hispanic, only 79% recognized the maladaptive eating patterns. When examining the results of the eating disorder survey, subjects assigned the fictional female relatively high scores regardless of her race. Thus, when asked whether the fiction character had any important problems, subjects discounted the specific eating symptoms they attended to. Thus, it appears that racial stereotypes may interfere with the detection of eating disorders and seem to remain stable across racial groups. Lastly, the authors explain that the study is relevant even though the subjects are not clinicians because many individuals come to the attention of clinicians via family or friends.

Prevalence of Eating Disorders in SES Groups

In terms of Socioeconomic Status (SES) and eating disorders, some researchers have concluded that the existing research fails to support the notion that eating disorders occur primarily in middle-upper SES individuals (Walcott et al., 2003). Past literature frequently has failed to include individuals from lower SES groups in their subject pools. In the past, it was assumed that eating disorders occur primarily among individuals of middle-upper SES. Interestingly, research has now shown that socioeconomical differences in the prevalence of eating disorders disappear in countries with better health care quality, improved eating disorder detection, and more available services (Doyle & Bryant-Waugh, 2000; Hoek, 1995). Thus, it is possible that the prevalence of eating disorders in individuals from lower SES may be underrepresented.

Some research has shown that unhealthy weight control behaviors are not restricted to middle-upper SES groups. For example, Story et al. (1995) found that while females from lower SES groups were less likely to report frequent dieting and to view themselves as overweight, they were more likely to report intentional vomiting and use of diuretics to lose weight compared to middle SES females. Further, Story et al. (1995) found that females from the high SES groups were less likely to report binge-eating or vomiting and more likely to report being proud of their body compared to middle SES females. High SES females were more likely to diet and view themselves as overweight when compared to low SES females. However, high SES females were less likely to engage in maladaptive weight control behaviors such as, binge-eating and vomiting. Thus, even though individuals from high SES groups are more likely to diet and see themselves as overweight than individuals from low SES groups, individuals from high

SES groups are more likely to engage in healthy weight control behaviors than low SES groups.

The implication that can be drawn from the research in this area is that eating disorders do occur in individuals from various racial groups and levels of SES. Unfortunately, issues related to eating behaviors and body image in minorities may not be considered by clinicians due to longstanding stereotypes (Walcott et al., 2003). As such, health professionals need to be aware of the high prevalence of body image dissatisfaction and disruptive eating behaviors among minority youth. Currently, Anorexia Nervosa is predominantly diagnosed in Caucasian females; however, this may change as minority participants are added to the samples in new research and as minority groups increasingly adopt and internalize Western ideals (Walcott et al., 2003). Moreover, it is important to establish whether this relationship is found in younger female samples.

Childhood-Onset Eating Disorders

In addition to demographic considerations in the eating disorder literature, the risk factors for eating disorders also need to be examined for growing children. Eating disorders are frequently manifested and diagnosed in adolescence; however, evidence suggests that eating disorders do occur in childhood and critical antecedents to the manifestation of eating disorders may also be established during these formative years (Bryant-Waugh & Lask, 1995). Childhood-onset eating disorders are defined by onset prior to age 14. Specifically, this term is reserved for individuals between the ages of 7-13 (Bryant-Waugh & Lask, 1995). Difficulties faced in childhood may contribute to a greater risk for problems with eating and weight and the development of eating disorders.

Importantly, these studies have also shown that early onset eating and weight problems may persist into adulthood (Johnson et al., 2002). Childhood-onset Anorexia Nervosa is very serious and has a relatively poor prognosis, with only about 2/3 making a complete recovery (Bryant-Waugh & Lask, 1995). Despite these findings, there has been little research conducted on eating disorders in young children (Robins & Putnam, 1999; Thelen et al., 1992).

Risk Factors for Eating Disorders in Children

The empirical literature has suggested several risk factors associated with the development of eating disorders in children including: premorbid feeding difficulties, being a victim of peer teasing, psychological problems (e.g. depression, anxiety, and obsessive-compulsive traits), and familial factors (e.g. mother overly concerned about her own weight, strong emphasis placed on outward appearances, & anxious, overprotective, over-involved parents; Thelen et al., 1992). Other risk factors that are relevant to the current study and will be discussed in more detail include the following: Ineffective coping strategies, dieting, body image dissatisfaction, childhood obesity, and pubertal maturation. Additionally, there are several risk factors for eating disturbance within the social domain, which include: social competence difficulties, loneliness, and victimization by peers. All of the aforementioned risk factors are discussed below.

Ineffective Coping Strategies

A risk factor that has been studied in young adult females is the use of ineffective coping strategies. Research consistently shows that women with eating disorders utilize less effective coping strategies than women without eating disorders (Troop, Holbrey, & Treasure, 1998; Koff & Sangani, 1997). Women with eating disorders tend to use

emotion-focused or avoidance coping rather than problem-focused coping. Coping responses that are emotion-focused or avoidance coping seek to regulate emotional responses to stressors or avoid dealing with the stressors, while problem-focused coping strategies seek to manage stressors via active behavioral or cognitive strategies (Koff & Sangani, 1997). Koff & Sangani (1997) propose that negative body image may act as a specific stressor and when an individual uses ineffective coping strategies it may put her at risk for the development of an eating disorder. Throughout the mental health literature, the utilization of problem-focused coping has been associated with better psychological functioning than the use of emotion-focused coping (Koff & Sangani, 1997).

<div align="center">Dieting</div>

Dieting has also been identified as a specific risk factor for the development of an eating disorder. Hill (1993) suggests early body shape dissatisfaction and dieting behaviors over an extended period of time may increase a girl's susceptibility to other precipitating factors during adolescence (e.g. onset of puberty). Interestingly, dieting is not limited in occurrence to adolescence; it has also proven to be highly prevalent among elementary and middle school girls (Hill, 1993; Maloney et al., 1989; Shisslak et al., 1998).

The high prevalence of dieting and eating disorders in preadolescent girls is demonstrated by the following studies. For example, Maloney, McGuire, & Daniels (1988) examined the scores from the Children's Eating Attitude Test (ChEAT) of 318 male and female children from two, middle to upper socioeconomic level public elementary schools in Cincinnati. Results indicated that approximately 7% of children in grades three through six (8-13 years of age) scored in the Anorexia Nervosa range (>20

points) on the ChEAT. Further, the girls in the study scored higher on the ChEAT than the boys for every age after grade three, suggesting more significant problems with eating and weight in girls. Shisslak et al. (1998) examined the relationship between weight control behaviors and potential risk factors for childhood eating in a sample of elementary and middle school girls. Results indicated that 50% of elementary school girls and 66% of middle school girls reportedly attempted to lose weight in the past year. The frequency and severity of the weight control behaviors in the elementary school girls were associated with factors such as: higher body mass index (BMI), lower self-confidence, higher sensitivity to peer's weight-related pressures, and an interaction between having divorced/separated parents.

Maloney, McGuire, Daniels, & Specker (1989) utilizing a demographic and dieting questionnaire found that 45% of the children reported a desire to be thinner. When examining the girls separately, that percentage increased to 55%. Further, 37% of the children reported that they have made attempts to lose weight. When the authors examined the results of the demographic and dieting questionnaire and the ChEAT they found that about 40% of the children indicated using exercise as a means of controlling their weight, 13% of children restricted their caloric intake, 10% binged, and 1% reported vomiting to control weight. Results also indicated that as age increases, a desire to lose weight and attempts to control weight also increased. Lastly, positive responses to several items (e.g. have you tried to lose weight, do you feel fat, or believe your friends want you to be thinner?) were found to be highly predictive of elevated ChEAT scores. This research suggests that disturbed eating attitudes and behaviors may begin earlier than adolescence. Further, the high percentage of children scoring in the Anorexia Nervosa

range on the ChEAT suggests a need for more research into the development of eating disorders in young children.

Body Image Dissatisfaction

Distortions in body image play a role in numerous clinical disorders including Anorexia Nervosa and Bulimia Nervosa (Shisslak et al., 1998). Research focusing on examining the developmental perceptual changes in body image has shown discrepant findings for various ages. For example, some studies show that adolescents overestimate their body sizes more than young adults; however, other studies have found contrary results (Gardner, Sorter, & Friedman, 1997). Evidence suggests that as children get older, their self-perceptions become more precise and they increasingly recognize cultural ideals of physical attractiveness (Gardner et al., 1997).

There are some studies, examining body image characteristics in children. Gardner, Sorter, & Friedman (1997) examined the body image characteristics of male and female children from community and private schools at ages 6, 9, and 12 (N = 216). They found that children were accurate in estimating their body sizes at all ages sampled, with older children being slightly more accurate than younger children. Children changed from having a larger body ideal at age six to a smaller body ideal at ages 9 and 12. As the children became older, their idealized body size became thinner and the discrepancy between their perceived and ideal size increased. Also, childhood teasing and body esteem were related to the children's ideal sizes and body image dissatisfaction. For example, children who had a history of teasing expressed more concerns about their body sizes and wanted smaller ideal body sizes. Further, children with lower body esteem expressed ideal body sizes that were much smaller than children with higher body

esteem. Unfortunately, there has been little research that has examined childhood factors related to body image dissatisfaction and dieting (Thelen et al., 1992).

A notable exception is a longitudinal study by Davison, Markey, & Birch (2003). Their study examined the development of girls' body image dissatisfaction and concerns about their weight at ages 5, 7, & 9. This is one of the only studies to longitudinally assess girls' body image dissatisfaction, weight concerns, and maladaptive eating attitudes during middle childhood. The original sample consisted of 197 5-year-old girls out of whom 192 were reassessed at age 7 and 182 were reassessed at age 9 (92% of the original sample). Participants were all from central Pennsylvania and were Caucasian. The study found that associations between the girls' weight concerns, body image dissatisfaction, and weight status increased with age. At the age of 5, the girls who reported more weight concerns also had higher body image dissatisfaction. At age 7, the girls who had higher weight concerns reported more body image dissatisfaction. Further, the girls who had higher body image dissatisfaction and weight concerns also had higher BMI percentile values. Next, the researchers used the girls' body image dissatisfaction and weight concerns at ages 5 and 7 to predict dieting, restrained eating, and maladaptive eating attitudes at age 9. Results revealed that early weight concerns and body image dissatisfaction at ages 5 and 7 were associated with more dietary restraint and greater maladaptive eating attitudes at age 9. At the age of 9, 14% of the sample reported dieting. The girls that reported dieting had more maladaptive eating attitudes than those who did not report dieting. Overall, this study suggests that weight concerns, body image dissatisfaction, and maladaptive eating attitudes are present prior to adolescence. More longitudinal studies that examine developmental pathways are crucial to our

understanding of the etiology of eating disorders. What remains unknown is whether similar conclusions would be drawn when using a more racially diverse sample.

Childhood Obesity

Obesity, often indicated by a high Body Mass Index (BMI), is a risk factor for body image dissatisfaction and eating disorders in preadolescent girls. According to the Center for Disease Control (CDC; 2003) The Body Mass Index for Children and Teens (BMI-for-age) measurement compares well with measures of body fat taken in laboratory settings. The CDC provides gender and age specific charts that can be used for children and adolescents between the ages of 2-20. An individual is said to be underweight if their BMI-for-age is less than the 5th percentile, healthy weight if their BMI-for-age falls between the 5th and less than the 85th percentile, at risk for being overweight if their BMI-for-age is between the 85th percentile to less than the 95th percentile, and overweight if their BMI-for-age is greater than or equal to the 95th percentile. Burrows & Cooper (2002) examined weight, shape, eating and dietary restraint, self-esteem, and depression in 11-12 year-old overweight girls as compared to girls of the same age that were of normal weight. In this study, girls were classified into the index group (overweight girls) if they had a Body Mass Index (BMI) of 23 or above, which corresponds to a weight-for-height ratio equal to or greater than 120% for their age. The control group classification (normal weight girls) was based on a BMI of 16-19, which corresponds to a weight-for-height ratio of about 90-110% for their age. The index group reported eating significantly less snacks than the control group, suggesting that they might be trying to restrain their eating. The index group also evidenced significantly higher scores than controls on weight, shape, and eating concerns, as well as use of dietary restraint. Moreover, the

index group reported significantly lower ratings of athletic competence, physical appearance, and global self-worth. Further, they reported significantly higher scores on a measure of depression. The results of this study support the premise that overweight preadolescent girls may have a higher risk of developing body image dissatisfaction and subsequently an eating disorder than normal weight peers.

<div align="center">Pubertal Maturation</div>

While the onset of puberty is not a necessary precondition for the development of an eating disorder, the onset of majority of cases of eating disorders occur around the time of puberty, especially with anorexia nervosa (Walsh & Cameron, 2005). There are several theories surrounding why puberty is a risk factor for the development of an eating disorder. For example, some hypothesize that there may be an increased vulnerability to the cultural ideals of thinness during puberty (Walsh & Cameron, 2005). Others suggest that the bodily changes (e.g. increases in fat stores) contribute to body image dissatisfaction and eating disorders (Walsh & Cameron, 2005). For example, Graber, Brooks-Gunn, Paikoff, & Warren (1994) initially examined 116 predominantly Caucasian girls in grades 7-9 at a Private school. The girls were then reassessed two other times: when in grades 9-11 and when they were between the ages of 21-23. Girls were asked to report their age of menarche and completed the EAT-26, a measure of eating disturbance. Results found that as young adults, the early maturing girls were more likely to be "chronically" (EAT-26 scores ≥ 20 at all three assessment periods) at risk for eating disturbance. Importantly, the authors state that this finding seems to be due to the higher body fat in the early maturers rather than simply puberty. Still others ponder whether biological changes (e.g. hormonal changes) may trigger the onset of an eating disorder

(Walsh & Cameron, 2005). In contrast, Smolak, Levine, & Striegel-Moore (1996) state that research that has examined hormonal changes associated with puberty have shown small effects and mediation by other factors.

In a review of the findings of studies examining the role of puberty, Smolak et al. (1996) discuss that when Caucasian girls begin pubertal maturation, they become increasingly dissatisfied with their body shape and weight. Further, they confer that these girls are more likely to diet and worry about their weight when compared to same age prepubertal girls. With regard to the timing of puberty, Atti and Brooks-Gunn (1989) examined 193 Caucasian girls in grades 7-10. Further, the study reevaluated the girls two years later. Participants' pubertal status was classified as either early, late, or on-time and was based on their time of menarche and their breast development and pubic hair growth on the Tanner scales. Lastly, the girls reported their own perceptions of their pubertal timing. Results found that pubertal timing was not related to scores on the EAT-26. Interestingly, the authors found that the combined effects of actual and perceived pubertal timing and body fat were related to EAT-26 scores at both at both time periods.

With an understanding of the inappropriateness of the current eating disorder diagnostic criteria for children, the current study will examine the influence of social factors in the development of eating disturbance. More specifically, the study will investigate whether having social competence acts as a protective factor and whether feeling lonely with peer relationships in the school setting, and being a victim of peer teasing are risk factors for the development of eating disturbance in young females. The following four sections will review literature pertaining to the aforementioned potential social risk factors.

Social Risk Factors for Body Image Dissatisfaction and Eating Disturbance

Results from several longitudinal studies purport that deficient social relations play a role in the etiology of mental health problems (Rook, 1984). Within the eating disorder literature, social factors have shown to influence the eating behaviors and body image of adolescent girls. One important social factor that has negatively influenced eating behaviors is peer relationships. For example, peer pressure has shown to be a strong predictor of eating behavior and body esteem in adolescent girls (Liebermann, Gauvin, Bukowski, & White, 2001). Further, externalized self-perceptions or girls who view themselves through the eyes of their peers, self-reported teasing, and attributions about the importance of weight and shape for popularity and dating are predictors for body esteem and eating behavior (Liebermann, Gauvin, Bukowski, & White, 2001). Other studies have shown that body image dissatisfaction, dietary restraint, and presence of extreme weight loss behaviors are more common within than between female friendship groups (Paxton, 1996).

A study by Dunkley, Wertheim, & Paxton (2001) illustrates the importance of peer relationships on girls' conception of their ideal body shape. This study examined multiple socio-cultural influences on adolescent girls' body image dissatisfaction and dietary restraint. The sample consisted of 577, 10th grade girls between the ages of 13-17 (mean age = 15.5) from 5 secondary schools in a suburb of Australia. The study found that 44.8% of girls reported that their friends influence their conceptualization of a "good body" and behaviors that seek to achieve the ideal body (e.g. dieting, exercising, or vomiting). Many girls reported that parents, media, and peers strongly influence their idea of how their body should appear and how they should lose weight. The influence of

all three (parents, media, and peers) of these factors was more predictive of body image dissatisfaction and eating problems than any single factor alone. Lastly, when the girls' actual size was controlled, peers added the most perceived pressure to be thin.

It remains unclear which specific types of relational difficulties impact body image dissatisfaction and eating disorders. Additionally, most of the current research focuses on adolescent females and does not focus on younger female samples. As a result, the role of peer relationships difficulties in eating disorders in younger samples is much less known. Although there are several questions that remain to be answered, there is support for the influence of peer relationships on adolescent girls' developing body image and eating behaviors (Dunkley, Wertheim, & Paxton, 2001; Liebermann, Gauvin, Bukowski, & White, 2001; Paxton, 1996; Rook, 1984).

Social Competence Difficulties

Research has demonstrated that individuals with eating disorders are much more prone to display difficulties in a variety of social atmospheres than those without eating disorders (Holt & Espelage 2002; McFall, Eason, Edmondson, & Treat 1999; Grissett & Norvell 1992; Herzog, Keller, Lavori, & Ott, 1987; Gillberg et al., 1994). Specifically, individuals with eating disorders report lower levels of confidence in their social skills and degree of self-reliance across a variety of different social domains (Wagner, Halmi, & Maguire, 1987). Areas of development that are critical to developing and maintaining a positive sense of self are the most affected by social difficulties (Herzog et al. 1987). Further, individuals with eating disorders who demonstrate difficulties in their social relationships have shown poorer treatment outcomes (Gillberg et al., 1994). For example, a study by Gillberg et al. (1994) longitudinally examined all individuals with Anorexia

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Nervosa born in 1970 from Goteborg, Sweden. Fifty-one subjects met DSM-III-R criteria for Anorexia Nervosa. For all cases, the onset of Anorexia Nervosa occurred prior to age 18. The average age at the first examination was 16.1. All patients in the Anorexia Nervosa group were matched by sex, age, and school to 51 comparison subjects. The average age of the comparison group subjects at the time of the first examination was 16.0. All subjects were reassessed a little over four years later. There was no attrition for either group. The Morgan-Russell scales (Morgan & Russell, 1975) were used to assess Anorexia Nervosa outcome. The Morgan-Russell scales consist of one general scale in which the subjects rate their current condition (worse, static, improved, or recovered) and five subscales that examine food intake, menstrual pattern in previous 6 months, mental state as observed at interview, psychosexual state, and social and family relationships. A psychiatrist scored this measure during clinical interviews with subjects. Results showed that significantly more subjects in the Anorexia Nervosa group than in the Comparison group had difficulties making personal contacts and were solitary or extremely solitary outside of their immediate families. Additionally, many of the non-recovered cases had either poor or very poor outcomes in their social relationships when compared to subjects with better outcomes. While this study provides evidence for the importance of examining social relationships in adolescents and adults with eating disturbance, the study did not examine individuals under the age of fifteen. Therefore, we do not presently know how children's social relationship difficulties will longitudinally relate to eating disturbance.

The current study will broadly assess children's social competence. The following definition of social competence provided by Schneider (1993) will be adopted for the

current study's investigation of the effects of social competence difficulties on eating disturbance:

> "The ability to implement developmentally-appropriate social behaviors that enhance one's interpersonal relationships without causing harm to anyone." (p. 19)

This definition is the most appropriate for the current study because it requires that the individual have the ability to display the behavior and is limited to behaviors that involve social interactions with others. Further, the term developmentally appropriate is used to emphasize that behaviors that are deemed socially competent at one age may not be socially competent at another age. The definition also implies that social competence is to some degree determined by outcome or the approval of peers, family, or other significant individuals. Lastly, the definition excludes social behaviors that might build interpersonal relationships with some individuals at the expense of others. For example, this definition would not deem peer teasing as a socially competent behavior even if it enhanced an individual's relationships with specific individuals.

McFall et al. (1999) propose that disruptive eating behaviors (e.g. restricting, binging, and purging) may provide temporary relief to individuals who are ineffective at dealing with interpersonal problems experienced in their daily lives. Thus, these authors suggest that individuals with eating disorders may be implementing poor coping behaviors in an attempt to deal with interpersonal difficulties (McFall et al., 1999). Individuals with poor social competence are likely to exhibit greater difficulty in coping with interpersonal difficulties and as a result may turn to maladaptive coping strategies.

In order to examine this model, McFall et al. (1999) investigated whether college women with eating disordered behaviors would demonstrate more interpersonal problem-solving deficits when compared to women without eating disordered behaviors. The study examined two samples of female undergraduate students that included a subclinical eating disordered group and a non-eating disordered control group. The subclinical eating disordered group consisted of 45 female undergraduate students with a mean age of 18.6 years. This group comprised of 34 women who scored above 40 on the Eating Attitudes Test (EAT; Garner & Garfinkel, 1979) and were classified as demonstrating eating disordered behaviors. A score of 40 is ten points higher than the original cutoff score recommended by Garner & Garfinkel (1979) and was used in order to reduce false positives. The subclincial eating disordered group also included 9 individuals who demonstrated anorexic and bulimic behaviors with lower EAT scores and 2 women participating in an on-campus eating disorder therapy group. The non-eating disordered control group consisted of 20 female undergraduate students with a mean age of 18.2 years. The control group women scored 10 or below on the EAT and had been randomly selected from a larger pool of potential subjects.

The study examined several areas of interpersonal functioning including: family interactions, social relationships, academics, and situations involving eating and weight. These areas were assessed by the Anorexia and Bulimia Problem Inventory (ABPI; McFall et al. 1999) which consisted of 50 audiotaped vignettes that allotted 20 seconds for the subject to verbally respond. Researchers blind to the subjects' group membership rated each participant's response on a four-point scale (1 = incompetent, 2 = somewhat incompetent, 3 = somewhat competent, and 4 = competent). Scoring of the ABPI yields

scores on three indices: a total score, a social competence score, and a social incompetence score. Results of the analyses indicate that the subclinical eating disordered group significantly differed from the non-eating disordered control group on all three of the indices. More specifically, the non-eating disordered control group had a higher social competence score and a lower social incompetence score when compared to the subclinical eating disorder group. Overall, the non-eating disordered control group's responses to the vignettes were rated as more competent than the subclinical eating disordered group's responses. Additionally, the study classified subjects in the subclinical eating disordered group into one of 10 subtypes (primary anorexic, secondary anorexic, primary bulimic-vomiter, secondary bulimic-vomiter, bulimic-laxative user, bulimic-vomiter/laxative user, binge-starver, compulsive overeater, questionable, and non-eating disordered control). Overall, subjects from the primary eating disorder categories performed much more poorly on the social competence measure than individuals who were classified into the secondary eating disorder category. Although individuals with eating disorders performed less competently overall, the women classified with Bulimia Nervosa performed more poorly than the women with Anorexia Nervosa. This research suggests that individuals with eating disorders demonstrate lower social competence than those without eating disorders. Furthermore, individuals classified as Bulimic demonstrated significantly lower social competence than individuals classified as Anorexic. The need exists for future studies to explore whether similar patterns would be found in young children with and without maladaptive eating behaviors.

Holt & Espelage (2002) using a revised version of the ABPI (ABPI-R) on a similar sample of female undergraduate students were able to replicate these findings.

Thus, there is support to conclude that the subclinical eating disordered group compared to the non-eating disordered control group had greater difficulty generating verbal responses to a variety of different social situations. In other words, individuals with eating difficulties exhibited lower social competence than the control group across a variety of social situations.

The finding that women with eating disorders, especially Bulimia Nervosa have difficulty negotiating a variety of social situations has frequently been demonstrated in the literature (Grissett & Norvell 1992; Herzog et al. 1987). For example, a study by Grissett & Norvell (1992) examined the perceived social support, social competence, quality of relationships, and psychopathology of 21 undergraduate females (mean age = 20.3) with Bulimia Nervosa. The women with Bulimia Nervosa were matched by height and weight with control subjects. Compared to the non-eating disordered control subjects, the women with Bulimia Nervosa reported less perceived social support and more negative social interactions with both friends and family. Further, the women with Bulimia Nervosa reported feeling less competent in social interactions. These interactions included difficulty functioning in social contexts, forming close friendships, and seeking out opportunities to interact with others. Interestingly, these self observations were validated when outside observers who were blind to the subjects' group membership also rated the women with Bulimia Nervosa as being less socially effective overall than the control subjects. It is important to clarify that individuals with Bulimia Nervosa are not underweight, so there was no obvious indicator of group membership. Lastly, the study discovered that women with Bulimia Nervosa presented with higher levels of overall

psychopathology than control subjects. Even after the effects of psychopathology were controlled for statistically, these women still exhibited more negative social interactions.

Taken together, these studies illustrate that women with eating disorders show a great degree of psychosocial impairment. Further, the social impairment of women with Bulimia Nervosa compared to those with Anorexia Nervosa appears to be the most significant. However, there are still questions that remain unanswered. For example, does psychosocial impairment act as a predisposing, precipitating, and/or perpetuating factor for eating disturbance? In order to answer this question, research must follow the social atmosphere of children with and without eating disturbance overtime. An additional question that has not been addressed is whether we would find evidence of psychosocial impairment in a younger sample, particularly in children with eating disturbance.

Loneliness

Most individuals experience feelings of loneliness periodically over the course of their lives, however, for some individuals the loneliness is persistent and severe enough to significantly interfere with their daily functioning (Rook, 1984). Traditionally, loneliness has been viewed as a symptom involved in a variety of psychological disorders such as, depression, anxiety, alcohol abuse, and suicidal ideation (McWhirter, 1990). Recently, however, loneliness has been viewed as a unique problem. The delay in recognizing loneliness, as a unique clinical problem is likely attributed to its correlation with numerous other variables (McWhirter, 1990; Jackson & Cochran, 1991).

Some studies have attempted to investigate these correlations. For example, Jackson & Cochran (1991) used statistical techniques to remove covariance among psychiatric scales and examine the relationship between loneliness and psychiatric

symptoms in a sample of college students. This study found that all 9 subscales of the

Symptom Check List (SCL-90; Derogatis, 1977), which included Somatization,

Obsessive-Compulsiveness, Interpersonal Sensitivity (low self-esteem), Depression,

General Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism were

significantly and positively associated with current levels of loneliness. However, when

the confounding effects of overall symptomology were removed, only low self-esteem

and depression showed a positive correlation with levels of self-reported loneliness.

McWhirter (1990) defines loneliness as a distressing experience often

accompanied by feelings of sadness, anxiety, and inferiority. Further, he explains that

loneliness is not simply being alone, it can occur in the presence or absence of social

relationships. Lastly, he explains that loneliness can either be a transient or persistent

condition. The following definition provided by Rook (1984) will be utilized in the

current study's investigation of loneliness on body image dissatisfaction and eating

disturbance:

> "Loneliness is defined as an enduring condition of emotional distress that arises
>
> when a person feels estranged from, misunderstood, or rejected by others and/or
>
> lacks appropriate social partners for desired activities, particularly activities that
>
> provide a sense of social integration and opportunities for emotional intimacy."
>
> (p. 1391)

Loneliness can be measured as either a one-dimensional or multidimensional

factor. One-dimensional measurement of loneliness assumes the phenomena is global and

is experienced in all aspects of one's life, while multidimensional measurement assumes

that loneliness may not occur in all aspects of a person's life (McWhirter, 1990). The

current study assumes that loneliness is a multidimensional factor and targets children's peer relationships in the school setting. More specifically, the current study will focus on examining childrens' experience of loneliness in peer relationships within the school setting.

Studies that examine loneliness in children often rely on sociometric measures and teacher reports (Asher, Hymel, & Renshaw, 1984). Sociometric measures typically involve measures in which peers nominate their classmates. For example, some measures ask children to nominate those that are the least liked in their classroom or those they would like to play with the most. While, such measures have shown to be both reliable and valid, they do not examine the children's perspectives about their own degree of loneliness, which is necessary when determining if a child would benefit from intervention (Asher et al., 1984). For example, not all unpopular children report loneliness in their peer relationships and some popular children do report experiencing significant loneliness in regard to their peer relationships (Asher et al., 1984). Therefore, it is important to utilize self-report measures that allow children to report the degree of loneliness that they are truly experiencing.

Consistently, studies have shown that children experience feelings of loneliness and social dissatisfaction and that these feelings can be reliably measured. For example, Asher et al. (1984) examined loneliness and social dissatisfaction in 506 children (243 females, 263 males) from twenty classrooms in two schools in a midwestern city of the U.S. All children were in the third through sixth grade. Children were administered the Loneliness and Social Dissatisfaction Questionnaire (Asher et al., 1984) which consists of 16 primary items focusing on feelings of loneliness, social adequacy versus

inadequacy, and subjective knowledge of peer status. Responses to the items where given on a five point Likert scale, ranging from always true to not at all true. Results indicate that over 10% of children reported considerable feelings of loneliness and social dissatisfaction on almost all of the 16 primary items. For example, 5.8% of the children answered the statement "I'm lonely" as being always true and 5.6% of children said that the statement was true most of the time. This study also compared the sociometric status of the children. Results indicated children who were rated the least accepted had significantly higher levels of loneliness and social dissatisfaction than their more accepted peers. Further, loneliness scores increased as the number of friends a child had decreased. As discussed previously, this study found that a few popular children reported experiencing feelings of loneliness and social dissatisfaction while a few unpopular children did not report such experiences. This finding supports McWhirter's (1990) explanation that loneliness is not simply being alone, that it can occur in the presence or absence of social relationships.

Other researchers have examined whether or not younger children can understand the concept of loneliness. For instance, a study by Cassidy and Asher (1992) examined whether loneliness could be reliably assessed in a sample of 46 children in kindergarten through first grade. Children were individually assessed via a series of questions regarding their current understanding of what loneliness is, what causes it, and how it is alleviated. Children's responses to the questions were transcribed and coded in order to determine whether the children demonstrated an appropriate understanding of loneliness. Of the 46 children, 43 or 93% demonstrated an understanding of the concept of loneliness. Therefore, it appears that children as young as five-years-old demonstrate an

adequate understanding of loneliness. Similar to the Asher et al. (1984) finding with children in third through sixth grade, over 10% of the younger children (kindergarten through first grade) in this study reported feelings of loneliness and dissatisfaction with their social relationships on majority of the items of the Loneliness and Social Dissatisfaction Questionnaire. Thus, feelings of loneliness and social dissatisfaction are experienced in young children.

Researchers have examined whether experiencing loneliness in regard to one's social relationships makes an individual more vulnerable to developing psychopathology and more specifically, an eating disorder. For example, Troop and Bifulco (2002) examined retrospective reports focusing on feelings of loneliness, shyness, and inferiority related to experiences in childhood relationships. Subjects included 20 women in their twenties with no history of an eating disorder and 43 women who had a current or past episode of an eating disorder (15 restricting, 16 binge/purge, and 12 bulimic) according to *ICD-10* (1992) criteria. Results indicated that women with eating disorders reported significantly more feelings of loneliness, shyness, and inferiority in adolescence but not childhood. However, the authors discuss that feelings of loneliness, shyness, and inferiority in childhood may be more difficult to recall than in adolescence. Thus, it is important for future research to obtain prospective reports of children's feelings of loneliness in order to reduce the possible confound of recall difficulties. It is important to note that there has been little research conducted that examines the role of loneliness on eating disorders in young children.

Peer teasing/victimization has also been associated with elevated levels of loneliness. Storch, Brassard, and Masia-Warner (2003) found that adolescents between

the ages of 13-16 (mean age = 14yrs.) who were both overtly and relationally victimized experienced elevated levels of loneliness. Further, adolescents who were victimized in multiple forms (e.g. overtly and relationally) experienced more loneliness than those who reported only one form of victimization. Lastly, those who were relationally victimized report comparable levels of maladjustment as those who were both overtly and relationally victimized, suggesting that relational victimization may be more significantly related to loneliness levels. What remains to be explored is whether the relationship between peer teasing and elevated feelings of loneliness will hold in a sample of young children and how it relates to eating disorders.

Based on the totality of evidence in the literature, the current researcher proposes that children who are continually feeling lonely and dissatisfied with their social relationships may feel a sense of failure and believe that they would have more friends if they looked better physically. For these children, self-worth and happiness become equated with achieving physical perfection. Further, these children are likely to have low self-esteem and experience a sense of loss of control in regard to their social relationships. As such, they feel the need to gain control via dieting. If their dieting is successful and they begin to lose weight they gain a sense of achievement, which reinforces continued and possibly more restrictive dieting. For some children this cycle continues and may develop into Anorexia Nervosa. Children who are unsuccessful at dieting continue to feel like a failure and may binge and engage in compensatory behaviors in order to "undo" the unwanted consequences of binge episodes (e.g. gaining weight). In this manner, experiencing loneliness and social dissatisfaction in relation to

one's peer group acts a precipitating factor for body image dissatisfaction and eating disturbance.

<div align="center">Victimization by Peers</div>

Being victimized by peers has been associated with a variety of mental health problems. For example, some research has shown that victimization by peers correlates with eating disorders, depression, anxiety, and psychosomatic symptoms (Kaltiala-Heino, Rimpela, Rantanen, & Rimpela, 2000). Other studies have demonstrated that victimization by peers may be a significant predictor of later weight control behaviors, eating disorders, and body image dissatisfaction (Striegel-Moore, Dohm, Pike, Wilfley, & Fairburn, 2002; Gleason, Alexander, & Somers, 2000; Thompson, Coovert, Richards, Johnson, & Cattarin, 1995). Vernberg, Jacobs, & Hershberger (1999) define peer victimization as:

> "Actions taken by one or more youths (perpetrator) with the intention of inflicting physical or psychological injury or pain on another youth (victim), is believed to have detrimental effects on the physical or psychological adaptation of victims, perpetrators, and bystanders." (p. 386)

The current study will focus on children who are exposed to victimization by peers (e.g. those who have experienced physical or psychological injury or pain that has been issued by a peer). Instead of using the phrase victimization by peers, many research studies interchangeably use the term teasing. Teasing is directed at both normal weight and overweight girls, although studies suggest obesity may be a significant risk factor for being subjected to teasing (Burrows & Cooper, 2002; Paxton, 1996). Research has shown that negative comments issued by peers are frequently taken quite literally by those to

whom they are directed (Paxton, 1996). A study by Striegel-Moore et al. (2002) found

significantly more African American and Caucasian adult women with Binge-Eating

Disorder than healthy comparison women reported having been teased by peers during

childhood. Further, having been teased by peers was significantly associated with general

risk for the development of binge-eating disorder in both racial groups.

A retrospective study by Gleason et al. (2000) examined how predictive three

types of childhood teasing were on low self-esteem and poor body image in adulthood.

Specifically, the study examined teasing of competency, weight, and appearance on later

self-esteem and body image in female and male undergraduate students (mean age = 20).

The results of this study indicated that teasing in childhood was significantly predictive

of lower self-esteem and a poorer body image. However, certain types of teasing were

related to self-esteem and body image and others were not. In women, teasing about

appearance and competence were significant predictors of self-esteem. Teasing about

weight significantly predicted their body image and body image was negatively

correlated with all three types of teasing. This study found a positive correlation between

overall body image and self-esteem in the female subjects.

Neumark-Sztainer et al. (2002) examined the prevalence of perceived weight-

teasing by peers and family members and the degree to which the teasing bothered

adolescents. The study also investigated whether there were any racial differences in

weight-teasing among the overweight youth. Lastly, the study examined associations

between weight-teasing and eating disturbance in overweight adolescents. The subjects in

the study consisted of 4,746 adolescents from 31 middle schools and high schools in the

St Paul/Minneapolis sections of Minnesota. The mean age for the subjects was 14.9 (SD

= 1.7). Subjects were from the following racial groups: Caucasian (48.5%), African-American (19.0%), Asian-American (19.2%), Hispanic (5.8%), Native American (3.5%), and Mixed/Other (3.9%).

Weight status was assessed by height and weight measurements that were used to calculate subjects' BMI. Based on their BMI, subjects were classified into the following categories: underweight (< 15th percentile), average weight (15th to < 85th percentile), moderately overweight (85th to < 95th percentile), and very overweight (≥ 95th percentile). In order to assess the frequency of weight-teasing, subjects were asked to report how often they were teased about their weight. Subjects could respond on a 5 point Likert-type scale ranging from never to at least once a week. Further, subjects were asked whether they were teased by peers and/or family members on a dichotomous (yes/no) scale. Next, subjects were asked how much the weight-teasing bothered them. Response choices included: none, a little bit, and very much. Lastly, subjects were questioned about whether they had tried anything to lose weight or to prevent gaining weight in the past year.

Results showed that a high percentage of very overweight girls reported that they were teased by their peers (63.2%) or family members (47.2%). Importantly, underweight girls also reported being teased by peers (48.4%). Overall, girls who were very overweight, moderately overweight, and underweight were more likely to be teased by peers about their weight than their average weight peers. Subjects who were classified as very overweight reported being teased about their weight the most frequently of all weight categories. Next, very overweight and moderately overweight girls who were teased greater than or equal to a few times a year, who were teased by peers, and who

were teased by family members were examined across race. Results indicated that there were no statistically significant differences in weight-teasing across racial groups for the overweight girls. The study discovered that the very overweight girls were the most bothered by the weight-teasing issued by peers and family members. There were also a high percentage of underweight girls who reported being bothered by weight-teasing issued by their family members. Lastly, overweight girls who were teased about their weight were more likely to engage in maladaptive eating behaviors than overweight girls who did not report experiencing weight-teasing. Overall, this study suggests that being overweight or underweight may be risk factors for weight-teasing, likewise, weight-teasing may be a risk factor for eating disturbance in overweight girls. Interestingly, this study did not find any significant differences between weight-teasing in overweight girls across racial groups.

Thompson et al. (1995) examined the role of teasing, weight, and maturational status as possible precursors to the development of body image dissatisfaction, eating problems, and overall psychological functioning (depression, anxiety, and self-esteem). The sample consisted of 210 adolescent females between the ages of 10-15. All subjects were students from a large, rural school system in west central Florida. Approximately 95% of the sample was Caucasian. According to the researcher's proposed model, maturational status, level of obesity, and perceived weight are intercorrelated and each variable directly influences two mediating variables: teasing history and body image. Teasing history has a direct effect on body image and eating disturbance and body image has a direct influence on eating disturbance. Also, eating disturbance and global psychological functioning reciprocally influenced one another. Consistent with their

model, results of the study found teasing history had a direct effect on body image dissatisfaction and eating disturbance, body image dissatisfaction led to the development of eating disturbance, and eating disturbance and general psychological functioning mutually influenced one another.

In a prospective follow-up study by the same researchers three years later, a subset of subjects (41%) or 87 subjects out of the original 210 were retained for this study. Ages ranged from 13-18 (mean age = 15.31). Approximately 94% of the sample was Caucasian, 3% were Hispanic, and 3% were classified as other. The same conceptual model in Study 1 was used in this study. Researchers sought to examine the influence of level of obesity on teasing and body image. Additionally, teasing and body image were predicted to influence eating disturbance and general psychological functioning. Results indicate that a higher level of obesity is associated with increased teasing and increased weight and appearance dissatisfaction. Further, teasing significantly influenced later weight and appearance dissatisfaction. One's weight dissatisfaction significantly influenced their appearance dissatisfaction and eating disturbance. Lastly, appearance dissatisfaction significantly influenced eating disturbance and all three measures of psychological functioning.

Overall, the results of these two studies support the role of teasing in the development of body image dissatisfaction and suggest overweight status may be a risk factor for becoming a victim of teasing. In the retrospective study, overweight status did not have a direct effect on body image; its influence was mediated by teasing. However, in the prospective study, both teasing and obesity predicted later levels of weight and

appearance dissatisfaction. Lastly, eating disturbance and psychological functioning were found to reciprocally influence one another.

A replication study by Lunner et al. (2000) examined whether the findings of Thompson et al. (1995) would hold for a Swedish sample of 263 female adolescents (mean age = 14.3) from grade 8 and an Australian sample of 159 females (mean age = 12.82) from grade 7 and 210 females (mean age = 13.71) from grade 8. Specifically, the researchers wanted to examine whether BMI and teasing predict body image dissatisfaction and drive for thinness; whether the relationship between BMI and body image dissatisfaction is mediated by teasing; and whether overall levels of body image dissatisfaction, teasing, and eating disturbance differ between the Swedish and Australian samples. Results of this cross-cultural investigation indicate that teasing was strongly associated with body image dissatisfaction and that body image dissatisfaction in turn was closely associated with eating disturbance. Similar to past research, teasing was found to mediate the relationship between high BMI and body image dissatisfaction in all three samples. However, prior research found full mediation, while this study only found partial mediation. Lastly, the two Australian samples were found to report significantly more teasing than the Swedish sample. Overall, the results provide cross-cultural support for the role of teasing as a potential risk factor for the development of body image dissatisfaction and eating disturbance and the Thompson et al. (1995) research findings. What remains unknown is whether one would find similar results with a younger, larger, and more racially diverse population sample. Further, the authors report residuals in certain variables indicating that the models failed to include other variables that may be

important in the etiology of these factors. As such, there is a need to assess a broader

array of variables.

CHAPTER III

METHODOLOGY

The methodology section of this dissertation will commence with a discussion of the Pittsburgh Girls Study (PGS), as the data for this study was obtained via the PGS. Next, an explanation of the sample and procedure for the PGS and the current study will be provided. It is important to note, that the current study will longitudinally examine girls at ages 9 and 10. Following this explanation, a detailed discussion of the measures selected for the current study will be given. These measures include: The Children's Eating Attitude Test (ChEAT; Maloney et al., 1988), The Body Image Measure (BIM; Collins, 1991), The Social Skills Rating Scale (SSRS; Gresham & Elliott, 1990), The Loneliness and Social Dissatisfaction Questionnaire (LSDQ; Asher & Wheeler, 1985), Peer Victimization Scale (PVS; Vernberg, Jacobs, & Hershberger, 1999), and The Bully-Victim Questionnaire (BVQ; Shields & Cicchetti, 2001). Additional information regarding the participants' height, weight, body mass index, present development (pubertal standing), and socio-economic status will also be utilized in the current study.

After discussing each measure, this chapter will continue with a data analysis section. This section will begin by discussing how missing data will be handled. Next, the data analysis section will explain how the current study will handle reports from multiple informants. Then, there will be a report of how the constructs will be defined followed by a discussion of how reliability will be evaluated. Subsequently, there will be a report of the demographic variables and descriptive statistics that will be obtained in the current study. To finish, the statistical tests that were selected for each of the three research questions will be described.

The Pittsburgh Girls Study

As mentioned previously, The Pittsburgh Girls Study (PGS; Loeber et al., 2002) provided the data utilized in the current study. The PGS is a community wide longitudinal study, which focuses on the development of conduct disorder and delinquency as well as co-occurring disorders (e.g. depression, somatization, and substance use). Additionally, the study examines service delivery and the degree of help sought by parents and teachers for the girls' problem behaviors. The PGS investigates a variety of risk and protective factors and how they affect the girls' behavior over the course of their development. The PGS maintains data that are collected from multiple informants including: the child, primary caregiver, teacher, and interviewer. The National Institute of Mental Health, National Institute on Drug Abuse, and the Office of Juvenile Justice and Delinquency Prevention provide funding for the PGS (Loeber et al., 2002).

Participants

The PGS consists of 2,451 five to eight-year-old girls who were recruited from a community sample of 103,238 Pittsburgh, Pennsylvania households. As such, the PGS is a population sample rather than a clinical sample. Between the years of 1998-99, an enumeration procedure was conducted on all households in the 23 lowest income neighborhoods and 50% of the remaining 66 neighborhoods in Pittsburgh (The central business district of Pittsburgh was not targeted as a result of few residential dwellings). Public databases were used to identify every home address (e.g. 911 and post office databases). Recruiters visited every address and asked whether there were any girls between the ages of five and eight-years-old at each address (disadvantaged neighborhoods were oversampled). The enumeration process resulted in 3,118 potential

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subjects who were within the specified age range. Exclusion criteria were met by 15 of these families (e.g. child had a serious developmental delay or hearing impairment with no sign-language ability, mother was unable to speak English). Additionally, 110 families were deemed ineligible for reasons such as, interviewee was not the primary caregiver or the family had relocated. Further, one child had passed away after the enumeration procedure was conducted. Lastly, 117 families were lost between the enumeration process and the first phase of the follow-up because their whereabouts became unknown despite extensive search efforts. Of the remaining 2,875 potential participants, 2,451 agreed to participate in the first phase of the longitudinal study. As such, this yielded a recruitment rate of 85.3%.

The 2000 US Census was used to compare the proportion of girls in the PGS sample to girls residing in each of the neighborhoods in Pittsburgh. In the PGS sample, 40.9% (n = 1003) of girls were from the 23 lowest income neighborhoods and 59.1% (n = 1448) were from the higher income neighborhoods. This compares with census proportions of 27.6% and 72.4% respectively. Thus, the census data indicates that the lower income neighborhoods were oversampled. The oversampling in the PGS sample compared to the census data by a ratio of 182:1.

Demographic characteristics of the PGS participants are described below. Four age cohorts were recruited and at the time of the first interview, 588 of the girls were age five, 630 were age six, 611 were age seven, and 622 were eight-years-old. The current study will examine the seven-year-old cohort only (N=611). At the time data was obtained for the current study, the PGS had gathered data on cohort 7 ranging from ages 7-11. The current study will examine measures that were longitudinally obtained from the

participants at age 9 and 10. Psychosocial risk factors are important to examine during this developmental period because peer interactions increase in frequency and importance. Further, this cohort was selected because of logistical reasons. In the current study, the measures that the researcher was interested in using to answer the research questions were only administered at certain ages. For example, the Children's Eating Attitude Test (ChEAT; Maloney et al., 1988) was not administered by the PGS until age 9. After taking these developmental and logistical factors into consideration, the seven-year-old cohort was deemed the most appropriate for use in the current study.

Based on primary caregiver reports, a little over half of the sample consists of African American girls (51.9%), 42.1% are Caucasian, 5.1% of the sample described the child as being of mixed or other race, .8% are Asian, and .2% are Hispanic/Latino. Because the number of participants in the Mixed or Other Race, Asian, and Hispanic/Latino categories were so small, these three groups and the African American group were combined into a single Minority group. Thus, the current study will examine two different racial groups: Caucasian and Minority. Socioeconomic status (SES) was based on whether the primary caregiver relies on public assistance (e.g. Women, Infants, and Children (WIC), food stamps, and welfare). Subjects were classified into one of two groups: no public assistance received or received public assistance. In the current study, 28.6% of the sample received public assistance.

<center>Procedure</center>

The procedure for the PGS is as follows: data for the study were collected via multiple informants: the primary caregivers, the teachers, the interviewer, and the child. For all participants, written consent was obtained from the parent and the child provided

<center>61</center>

verbal assent. Trained female interviewers using a laptop computer interviewed parents

and children separately. The parents also completed pen-and-paper questionnaires. Each

pair of interviews lasted approximately 2-3 hours. Prior to being permitted to go out into

the field, interviewers were required to complete 24 hours of in-class instruction, perform

a mock interview session with a Supervisor, and complete a field observation interview.

Further, the performance of each interviewer is evaluated after 28 days of fieldwork in

order to identify and correct any problems. Importantly, interviewers continue to be

evaluated on an ongoing basis.

The data utilized in the current study was provided by the PGS. Moreover, the

researcher of the current study was not directly involved in the collection of the data.

Measures selected for the current study comprise only a subset of the total measures

actually obtained by the PGS. The measures implemented in the current study were

selected because of their ability to answer the specific research questions that were posed

by the researcher. As discussed previously, only data from cohort 7 (N=611) will be used

in the current study. Next, a summary of the measures utilized in the current research

study will be provided. Furthermore, Table 2 provides an overview of the variables,

measures, age when the measures were administered to the child, and the informants (e.g.

child, parent, and teacher) each measure was administered to in the study.

<div align="center">Measures</div>

Pubertal Status

Pubertal Status will be assessed via the Pubertal Development Scale (PDS;

Peterson, Crockett, Richards, & Boxer, 1988). This is a non-intrusive self-report measure

where both the child and the child's parent are asked to rate the girl's development in the

following areas: growth in height, skin changes (especially pimples), growth of body hair (underarm and pubic), and growth of breasts. Ratings were based on a Likert-scale ranging from 1 = has not yet started to 4 = growth/changes seem completed. The last question inquires as to whether the subject has started menstruating. Informants could reply either with a Yes (coded as a 4) or a No (coded as a 1). Total scores will be computed for both informants at age 10.

Research demonstrates that the PDS appears to be a reliable and valid noninvasive assessment of pubertal status (Peterson, Crockett, Richards, & Boxer, 1988; Peterson, Tobin-Richards, & Boxer, 1983; Robertson et al., 1992). More specifically, Peterson, Crockett, Richards, & Boxer, (1988) found the following: the PDS shows patterns consistent with more objective measures of pubertal status, pubertal regression or the decrease in scores overtime was rare, adolescent self-reports were consistent with reports obtained by an interviewer, and the PDS shows predictable associations with objectively measured height changes. Further, in their young adolescent sample, the authors report alpha coefficients ranging from .76-.83 in girls interviewed twice annually over a period of three years (grades 6-8). Consistent with this finding, a study by Robertson et al. (1992) reports alpha coefficients of .81 and .77 in two separate samples of seventh grade girls. Further, Brooks-Gunn, Warren, Rosso, & Gargiulo (1987) found alpha coefficients of .67 for fifth grade girls, .54 for sixth grade girls, and .66 for seventh grade girls. Lastly, a study by Brooks-Gunn, Warren, Rosso, & Gargiulo (1987) assessed the convergent validity of the PDS by comparing it with ratings on the Tanner schematics (Tanner, 1962), which consists of pictures depicting various stages of breast and pubic hair

development. Results indicate significant correlations between the PDS total score and combined Tanner rating (.67), between breast growth (.61), and hair growth (.62).

Eating Disturbance

In adults and adolescents, abnormal eating behaviors are typically measured via self-report inventories such as the Eating Attitudes Test (EAT; Garner & Garfinkle, 1979). However, such self-report measures have proven to be incomprehensible to young children (Maloney, McGuire, & Daniels, 1988). As such, a children's version of the EAT, the Children's Eating Attitude Test (ChEAT; Maloney et al., 1988), developed for use with children between the ages of 8 through 13 was utilized in the current study. According to the authors of the ChEAT, consultation with three child development specialists and administration of the items to trial subjects determined that several of the original words from the EAT were too difficult for children in the third and fourth grades (Maloney et al., 1988). Thus, amendments to the children's version included replacing original words with more easily comprehensible synonyms such as "terrified" with "scared" and "preoccupied with" to "think a lot about" (Maloney et al., 1988).

The ChEAT does not formally diagnose eating disorders; however, it provides valuable information on dieting behaviors, food preoccupation, bulimia, and concerns about being overweight. Further, this measure was designed to determine the prevalence of eating disturbances in children and make comparisons to the adolescent and adult populations. For example, a score greater than or equal to 20 is associated with Anorexia Nervosa and occurs at the 74th percentile (Maloney et al., 1989; Smolak & Levine, 1994). Each of the items on the ChEAT is measured on a Likert-type scale ranging from 1 (always) to 6 (never). Total scores on the ChEAT range from 0 to 78. The response

deemed to be most indicative of eating disturbance receives a score of 3 (always), the next symptomatic a score of 2 (very often), and third a score of 1 (often). The remaining three choices each receive a score of 0 (sometimes, rarely, and never).

The EAT-26 consists of three factors: Dieting, Bulimia and Food Preoccupation, and Oral Control. The first factor, Dieting, examines the avoidance of fattening foods and preoccupation with being thinner (Garner, Olmsted, Bohr, & Garfinkel, 1982). This factor is significantly related to body image; however, it is unrelated to Bulimia Nervosa (Garner et al., 1982). The second factor, Bulimia and Food Preoccupation contains items that reflect thoughts about food and Bulimia Nervosa (Garner et al., 1982). Like Factor I, Dieting, it is related to body image. In contrast, Factor II, Bulimia and Food Preoccupation, is also strongly related to Bulimia Nervosa and having a heavier body weight (Garner et al., 1982). The third factor, Oral Control, examines self control related to eating and the perceived pressure from others to gain weight (Garner et al., 1982). This factor is related to having a lower body weight and the absence of Bulimia Nervosa (Garner et al., 1982).

Similarly to the EAT-26, the ChEAT is a 26-item self-report inventory that assesses a wide range of attitudes and behaviors associated with Anorexia and Bulimia Nervosa. Smolak & Levine (1994) conducted a factor analysis on the original 26-item ChEAT and found that factor structure is very similar to the EAT-26. Moreover, all three of the EAT-26 factors (Dieting, Bulimia and Food Preoccupation, and Oral Control) were reflected in the ChEAT-26. In addition to the three factors found in the EAT-26, the ChEAT-26 had an additional factor that the authors labeled as Restricting and Purging.

Maloney, McGuire, & Daniels (1988) examined the test-retest reliability and the internal reliability of the ChEAT on a sample of third through sixth grade boys and girls. The test-retest reliability was investigated for a subset of the original sample (N=68). The test-retest reliability correlation was consistent across all grades with a coefficient of .81 with individual grade alphas ranging from .75-.88. An internal reliability analysis was run to determine the degree to which each question on the ChEAT was correlated with the survey as a whole. Upon completion of this analysis, the researchers discovered that item number 19 ("I can show self-control around food") was negatively correlated with the rest of the survey. Therefore, this item was discarded from the data analysis and a 25-item version was used. Cronbach's alphas were conducted on the sample as a whole and on each grade level. The results indicated that the ChEAT was reliable for the total sample with a Cronbach's alpha of .76. Further, the internal reliability coefficients ranging from .68-.80 were reliable across all grade levels.

Smolak and Levine (1994) also examined the internal reliability of both the original 26-item ChEAT and the 25-item ChEAT (with item 19 deleted) on a sample of sixth through eighth grade girls (N=308). For the 26-item ChEAT they found a Cronbach's alpha of .87 with individual grade alphas ranging from .78-.90. Interestingly, the authors did not find item 19 to be negatively correlated with the total. Although, it was one of three questions with a correlation lower than .30 (e.g. items 13, 19, & 25). Results indicated that the 25-item version of the ChEAT had an alpha value of .88 with alphas ranging from .78-.91 for sixth, seventh, and eight graders. Smolak and Levine (1993) suggest that a 23-item ChEAT (eliminating items 13, 19, & 25) may prove psychometrically stronger. For example, of the three items only item 13 loaded on any of

the factors. As mentioned above, these three items all had correlations lower than .30.

When examining a 23-item version of the ChEAT (items 13, 19, & 25 deleted),

Cronbach's alpha was .89 (see Table 1).

Table 1

Cronbach's alpha values for the 26, 25, & 23-item versions of the ChEAT

Study	26-item	25-item	23-item
Maloney et al. (1989)		.76	
Smolak and Levine (1994)	.87	.88	.89

The concurrent validity of the ChEAT was assessed by examining the correlation

of ChEAT scores with a measure of self-reported weight management behavior and a

perceptual measure of body dissatisfaction. Results indicated that the correlations

between all three versions of the ChEAT and these measures were statistically significant

but only of moderate size (Smolak & Levine, 1994). However, the authors suggest that

dieting and body dissatisfaction are common even in females who do not have eating

disturbances and this finding should not undermine the validity of the ChEAT.

Similarly, a study by Sancho, Asorey, Arija, and Josepa (2005) found that some

of the ChEAT items also had significant, but moderate correlations with items from the

Body Areas Satisfaction Scale (BASS; Cash, 1997) in a sample of Spanish adolescents

ranging in age from 9.4 to 13.5. The BASS measures dissatisfaction with various parts of

the body on a likert scale ranging from 1 (very unsatisfied) to 5 (very satisfied). Sancho,

et al. (2005) agreed with the interpretation by Smolak and Levine (1994) that body image

dissatisfaction is common among women with and without an eating disorder, but added that their study used an instrument that measures body dissatisfaction rather than measuring eating disorders. Further, Sancho et al. (2005) discovered that the significant correlations obtained between the ChEAT and the BASS involved ChEAT items related to accepting or not accepting one's body shape. Therefore, the moderate correlations may also be due to comparisons between measure examining slightly different constructs (e.g. eating disturbance versus body dissatisfaction).

In order to further assess the validity of the ChEAT, Tanofsky-Kraff et al. (2003) compared it to the children's version of the Eating Disorder Examination (EDE; Fairburn & Cooper, 1993). The EDE version for children (ChEDE; Bryant-Waugh, Cooper, Taylor, & Lask, 1996) is a reliable and valid semistructured interview that evaluates eating disorder-related psychopathology in children ages 8-14 (Tranofsky-Kraff et al. (2003). Participants in the study included eighty-eight children (10 ± 1.8 years) who were enrolled in ongoing metabolic studies at the National Institutes of Health Warren Grant Magnuson Clinical Center in Bethesda, MD. Results showed that the ChEDE and ChEAT global scores were significantly related. Moreover, the ChEDE subscales were positively correlated with several individual questions from the ChEAT. Overall, the authors concluded that the ChEAT self-report measure is closely aligned with the constructs assessed by the ChEDE interview.

As seen in the previous studies, the ChEAT demonstrates sound reliability and validity. As such, the ChEAT appears to be a quality measure for the detection of disturbed eating attitudes and behaviors in young girls. As an important reminder, the measure is better thought of as a screening and researching instrument rather than a

diagnostic tool. Lastly, some caution must be taken when using the ChEAT with individuals from diverse racial groups and levels of SES as the measure was tested predominantly on Caucasian, middle-upper SES children (Babbit et al., 1995). The PGS has utilized the 26-item version of the ChEAT for their study. In contrast, the current study will select the most appropriate version of the ChEAT based on the results of a reliability analysis that will be conducted by the researcher.

Body Image Dissatisfaction

The Body Image Measure (BIM) developed by Collins (1991) was used to measure the degree of body dissatisfaction of the participants. The BIM is a pictorial instrument consisting of seven pictures of a female child. In the first figure the child is the thinnest and in each subsequent figure the child's body size increases, with figure seven being of the heaviest child. Thus, the pictures represent body weight ranging from very thin to obese. The child figures are based on a similar measure of adult figure drawings developed by Stunkard, Sorenson, & Schulsinger (1983).

During data collection, the PGS interviewer selected the version of the BIM (Caucasian, African American, or Asian) that she felt the child would best identify with. First, the child was asked to "Point to the picture that looks most like you." Next, the child was asked to "Point to the picture that you think looks the best." As a result of this measure, the PGS interviewer obtains a measure of the child's perception of her real and ideal body sizes. The discrepancy between their "ideal" and their "real" size is an index of body image dissatisfaction (Ideal Self – Real Self). As such, a negative number is indicative of an individual who has body image dissatisfaction because she desires to be thinner. A positive number is indicative of dissatisfaction because one believes she is too

thin and desires to be larger. The current study will focus on girls who desire to be thinner.

In terms of reliability, Collins (1991) evaluated the test-retest reliability of the BIM on a group of 159 first, second, and third-grade children three days after the BIM was first administered. Results indicate that the test-retest reliability coefficient is .71 for the Real Self assessment and .59 for the Ideal assessment.

Comparing the pictorial figures that the children selected with their actual weight and Body Mass Index (BMI) assessed criterion-related validity. The correlation between one's Real Self selection and one's actual weight was .36 (Collins, 1991). Further, the correlation between one's Real Self selection and one's BMI was .37 (Collins, 1991). In order to further assess validity, children were asked whether they think they are fat, skinny, or in-between. When comparing the children's verbal responses with their pictorial figure selections, results indicate that majority of children who see themselves as skinny selected figures that were on the thinner end of the scale. Further, children who described themselves as in-between selected figures that were in the middle of the scale and those who described themselves as overweight chose figures at the heavier end of the scale. Next, children were asked whether they would like to lose weight, gain weight, or stay the same. Among the subjects that said they wanted to lose weight, 68% selected Ideal figures that were thinner than the Real Self figures. Further, among children who wanted to gain weight, 58% selected Ideal figures larger than their Real Self figures. Lastly, among children who indicated they wanted to stay the same, 58% selected the same figure for the Ideal and Real Self.

Social Competence

In order to assess the social competence of each participant, the Social Skills

Rating Scale (SSRS) developed by Gresham & Elliott (1990) was utilized. The SSRS is a

standardized, norm-referenced instrument that broadly assesses social skills. Moreover,

the SSRS evaluates the frequency of behaviors crucial to the development of social

competence (Gresham & Elliott, 1990). It can be used to assess the social skills of

children from preschool through secondary school. As such, the measure has three

versions that each correspond to a different developmental level; there is a preschool

version, an elementary version (grades K through 6), and a secondary version (grades 7-

12) of the SSRS. Additionally, the SSRS is a multirater assessment instrument, which

contains a teacher, student, and parent version.

Gresham & Elliott (1990) report that the national norms were developed from a

diverse sample of more than 4,000 children that included multiracial, handicapped, and

non-handicapped children. However, the SSRS standardization sample slightly

overrepresented Caucasians and African Americans and slightly underestimated

Hispanics (Benes, 1995). The standardization sample was obtained from 18 states in the

Northeast, North Central, South, and Western areas of the United States and is

representative of individuals from urban, rural, and suburban communities (Benes, 1995).

The PGS maintains data that has been collected from the teacher, student, and

parent. Because the current study is interested in children's social behaviors within the

school context, only ratings from the children and their teachers will be examined. The

SSRS examines three domains: social skills, problem behaviors, and academic

competence. For the purpose of the current study, we will only focus on the Social Skills

Scale as it provides the best measure out of the three domains of social competence.

There are three subscales that comprise the teacher version of the Social Skills

Scale: Cooperation, Assertion, and Self-Control. In addition to these three subscales the

children's version of the Social Skills Scale consists of an additional subscale, Empathy.

The following descriptions of the Social Skills subscales were obtained from the SSRS

Manual (Gresham & Elliott, 1990). The Cooperation subscale examines the degree to

which children help others, share, and follow directions/rules. The Assertion subscale is

defined as the ability to initiate behaviors (e.g. asking someone for information,

introducing oneself, and responding to the actions of others). The Empathy subscale

examines behaviors that show concern and respect for others' feelings and views. Lastly,

the Self Control scale examines behaviors that are likely to emerge during conflicts with

peers (e.g. how to respond appropriately to teasing, take turns, and compromise). The

student version consists of 34 questions and the teacher version has 30 questions.

On the SSRS, informants reply to each question by indicating how frequently

each behavior occurs. On the teacher and students versions, raters may select one of three

responses (Never, Sometimes, or Very Often). On the teacher version, the response

choices are recorded in the PGS database as follows: Never = 2, Sometimes = 1, and

Very Often = 0. On the student version, the responses are coded by the PGS as follows:

Never = 3, Sometimes = 2, and Very Often = 1. On both versions, the largest number

indicates the least social competence and the smallest value is indicative of the most

social competence.

Three methods were used to assess the reliability of the SSRS: test-retest, internal consistency, and interrater (Gresham & Elliott, 1990). Importantly, all of the following coefficients are based on ratings that were made on children with the elementary version of the SSRS as this will be the version examined in the current study. In order to assess the stability of ratings over time, Gresham & Elliott (1990) had groups of teachers and children rate the same students four weeks after the first administration of the SSRS. The teacher version of the Social Skills Scale had a test-retest correlation of .85 for the total scale, with individual subscales ranging from .75-.88. Further, the student version of the Social Skills Scale had a test-retest correlation of .68 for the total scale, with individual subscales ranging from .52-.66. Next, the SSRS Manual reports internal consistency reliability coefficients for female students using the elementary version. The teacher version of the Social Skills Scale had a Cronbach's alpha of .93 for the total scale. Additionally, Cronbach's alpha values ranged from .87-.91 for the three subscales. In terms of the student version, the Cronbach's alpha for the total scale was .80, with individual subscale alphas ranging from .47-.69. Lastly, the SSRS Manual discusses interrater reliability. Gresham & Elliot (1990) explain that they do not expect agreement between raters to be extremely high because each rater is contributing a different perception of the child being rated. Research shows that the teacher version is the most psychometrically sound of all three versions (Furlong, 1995). There may be several reasons for this finding. For example, teachers have the opportunity to compare the student's social skills to that of her peers. Also, it is presently unclear whether children accurately report their social skills on self-report measures (Merrell, 2001).

In terms of validity, the SSRS Manual examined three types: content validity, criterion-related validity, and construct validity. In order for a measure to demonstrate content validity, it must select items that are representative of all items that could possibly measure the construct (Gresham & Elliot, 1990). In order to assess the content validity of the SSRS, the authors completed an extensive review of the relevant empirical literature, had teachers, students, and parents complete importance ratings of the items, and evaluated the social validity of the items (Gresham & Elliot, 1990). Next, the researchers examined the criterion-related validity or the degree to which the SSRS correlates with other similar measures. According to the researchers, the SSRS correlates significantly with the Social Behavior Assessment (Stephens, 1978), the Harter Teacher Rating Scale (Harter, 1978), the Piers-Harris Children's Self Concept (Piers, 1984), and the Child Behavior Checklist (Achenbach & Edelbrock, 1983, 1986, 1987) (Gresham & Elliot, 1990). Lastly, numerous studies were conducted in order to evaluate the construct validity or the degree to which the SSRS measures what it purports to examine. The studies examined: developmental changes, sex differences, internal consistency, correlations with other tests, factor analyses, discriminant and convergent analyses, and comparisons of distinct groups (Gresham & Elliot, 1990). The results of the various studies indicate that the SSRS has sound construct validity.

Loneliness

As discussed previously, many studies that examine children's levels of loneliness in regard to their peer relationships rely on sociometric reports from peers and teacher reports. Unfortunately, these measures do not obtain information about the child's subjective experience of his or her own loneliness. We know from past empirical research

that popular children sometimes report significant levels of loneliness, while unpopular children do not report such feelings (Asher et al., 1984). Thus, it is important to gather information directly from the child concerning her actual experience of loneliness with her peer relationships. As such, the Loneliness and Social Dissatisfaction Questionnaire (LSDQ; Asher & Wheeler, 1985), a children's self-report measure of feelings of loneliness and social dissatisfaction with peer relations in the school context was utilized.

The LSDQ consist of 24 items, 16 of which are primary items focusing on children's feelings of loneliness, social adequacy versus inadequacy, subjective approximations of peer status and appraisals of whether important peer relationship characteristics are being met (Asher et al., 1984; Asher & Wheeler, 1985). The other eight items focus on children's hobbies/activities and were designed as fillers. In order to reduce the amount of time taken to administer the survey, the eight filler items were not used in the PGS. Because the LSDQ examines several different dimensions of loneliness and social dissatisfaction, the authors of the measure suggest using a three-item subscale if one desires to focus solely on loneliness (Asher & Wheeler, 1985; Parker & Asher, 1993). The three items directly assessing loneliness include: "Do you feel alone at school?"; "Do you feel left out of things at school?"; and "Are you lonely at school?" (Asher & Wheeler, 1985). In the PGS, girls responded to each of the 3 items in one of three ways: yes, no, or sometimes. Girls were instructed to respond with a yes if the question is always true or almost always true, respond with sometimes if the question is sometimes true, or respond with a no if it is never or almost never true.

With regard to reliability, Asher et al. (1984) found the 16-item scale to be internally consistent for a sample of third through sixth grade students (N = 506) with a

Cronbach's alpha of .90. Further, they found the scale to be internally reliable with a split-half correlation of .83, Spearman-Brown reliability coefficient of .91, and Guttman split-half reliability coefficient of .91 (Asher et al., 1984). In a younger sample consisting of kindergarten through first grade children (N = 352), Cassidy & Asher (1992) found the LSDQ to be internally reliable with a Cronbach's alpha of .79. Lastly, Asher & Wheeler (1985) revised the original items on the LSDQ so that they would each have a clear school focus. Additionally, they found a Cronbach's alpha of .90 for their sample of third through sixth grade children (N = 200). In regard to the 3-item pure scale of loneliness, Parker & Asher (1992) found a Cronbach's alpha of .77 in a sample of third through fifth grade children (N = 881).

Asher et al. (1984) conducted a factor analysis on all 24 questions on the LSDQ using a quartimax rotation. Results of the factor analysis indicated that all 16 of the loneliness and social dissatisfaction items loaded on one primary factor. Importantly, none of the hobby/activity filler items significantly loaded on this factor. Similar results were found for the revised version of the LSDQ that focuses on the school context (Asher & Wheeler, 1985). In a similar study with a younger sample, factor analysis of the LSDQ again resulted in one primary factor (Cassidy & Asher, 1992).

The validity of the LSDQ is further demonstrated by its negative correlation with both friendship ratings and play ratings obtained from same-sex peers (Asher et al., 1984). Further, Asher et al. (1984) found that the three children who received the lowest ratings on a sociometric measure reported more loneliness than the rest of their classmates. Additionally, they found that as the number of friends decreased, loneliness scores increased. More specifically, children that received zero, one, or two best-friend

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nominations reported significantly higher levels of loneliness/social dissatisfaction than children receiving a higher number of best-friend nominations (Asher et al., 1984). Cassidy & Asher (1992) found children's total loneliness scores to be significantly negatively correlated with scores of peer acceptance and positive nominations by peers and significantly positively correlated with negative nominations. Importantly, this pattern was also obtained for the 3-item loneliness subscale. The current study will utilize the 3-item pure scale measure of loneliness in order to solely focus on this variable.

Peer Victimization

In order to assess the degree to which peers victimize participants, the Peer Victimization Scale (PVS; Vernberg, Jacobs, & Hershberger, 1999) and the Bully-Victim Questionnaire (BVQ; Shields & Cicchetti, 2001) were administered by the PGS. Both measures broadly assess teasing history and do not specifically examine appearance or weight-related teasing. The PVS is a child self-report measure that covers the most common forms of aggression identified from previous research (Vernberg et al., 1999). For example, the measure examines verbal aggression (e.g. threats), physical aggression (e.g. hitting), and relational aggression (e.g. spreading rumors) (Vernberg et al., 1999). Peer ratings are frequently used to assess bully and victim status because they often report what occurs in settings that are less supervised (e.g. school playground, bus ride to and from school). Several of the PVS questions were reworded to make the measure developmentally appropriate for elementary school children (Vernberg et al., 1999). The PVS is comprised of two nine-item scales: Victimization of Self (VS) and Victimization of Others (VO). Because the current study is interested in peers who are being victimized rather than peers who are actively victimizing others, only the VS scale was used. The

nine questions on the VS scale ask the child to record how often a behavior is directed at the participant (e.g. "A kid said he or she was going to hurt me or beat me up" and "A kid told lies about me so other kids wouldn't like me"). For the PGS, children could respond to each item in one of five ways: never, once or twice, a few times, about once a week, or a few times a week. Responses were coded on a Likert-type scale with "never" receiving a score = 0 and "a few times a week" receiving a score = 4.

In terms of reliability, Vernberg et al. (1999) investigated the internal consistency of the total score for the VS scale and found a Cronbach's alpha of .85. Thus, the internal consistency of the VS scale is strong even though it examines several different forms of victimization (e.g. physical, verbal, relational) (Vernberg et al., 1999). Additionally, the authors report that the total score for the VS scale is a good index of overall experience of victimization. Prinstein et al. (2001) conducted a principal components factor analysis using a varimax rotation for the nine items on the VS scale of the PVS. The results yielded two factors: Overt Victimization (Cronbach's alpha = .79) and Relational Victimization (Cronbach's alpha = .76).

In order to further assess peer victimization, the Bully-Victim Questionnaire (BVQ; Shields & Cicchetti, 2001) was utilized in order to gain the teacher's perspective of their student's victim status. The BVQ is an 8-item questionnaire that a teacher fills out based on the bullying or victimization behaviors of the student. The BVQ consists of two subscales: Bullying Subscale and a Victim Subscale. The 5-item Bullying Subscale assesses systematic attempts to dominate a weaker peer via coercion, manipulation, and verbal and physical aggression (Olweus, 1991; as cited in Shields & Cicchetti, 2001). In

contrast, the 3-item Victim Subscale examines vulnerability to frequent and repeated

manipulation and exploitation (Shields & Cicchetti, 2001).

Because the current study is interested in children who are being victimized, only

the Victim Subscale was used, although the PGS maintains data from both subscales. The

three questions on the Victim Subscale are as follows: "Willingly and repeatedly engages

in interactions with peers who tend to exploit, manipulate, or distress this child"; "Tends

to be gullible or vulnerable; is easily exploited"; and "Longs for approval and acceptance

from other kids, even from those who may not treat this child well." Teachers can

respond to each question in one of four ways: never, sometimes, often, or always.

Responses were scored on a Likert-type scale with "never" receiving a score = 1 and

"always" receiving a score = 4. The Victim Subscale score is computed by averaging the

teacher's ratings across the three victimization items. Evaluation of the internal

consistency of the Victim Subscale resulted in a Cronbach's alpha of .76.

Table 2

Summary of Study Measures, Subscales, and Informants

Variable	Measure	Child's Age When Administered	Parent	Child	Teacher
Pubertal Status	Pubertal Development Scale (PDS)	9 and 10	X	X	
Eating Disturbance	Children's Eating Attitude Test (ChEAT)	10		X	
Body Image Disturbance	Body Image Measure (BIM)	9		X	
Social Competence	Social Skills Rating Scale (SSRS) Social Skills Subscale	9		X	X
Loneliness	Loneliness & Social Dissatisfaction Quest. (LSDQ) Loneliness Subscale	9		X	
Peer Victimization	Peer Victimization Scale (PVS) Victimization of Self Subscale (VS)	9		X	
	Bully-Victim Questionnaire (BVQ) Victim Subscale	9			X

Height and Weight

The interviewer obtained height measurements after having the child remove her shoes and stand with her back straight and shoulder blades and head against the wall. All measurements were rounded down to the nearest half-inch (e.g. 62 1/4 rounds to 62; 63 3/4 rounds to 63.5).

When taking weight measurements, shoes, sweaters and/or boots were deemed appropriate for the children to wear, however, they had to remove jackets, hats and/or gloves. Weight measurements were rounded to the nearest whole number for odd numbers, and down to the nearest whole number for even numbers (e.g. 102.5 = 102; 103.5 = 104).

Body Mass Index

BMI is a tool used to determine one's weight status. The Centers for Disease Control (CDC; 2003) has found that the Body Mass Index for Children and Teens (BMI-for-age) compares well with measures of body fat taken in laboratory settings. The CDC provides specific charts based on age and gender that are to be used for children and adolescents between the ages of 2-20. For example, if the average height in inches of the participants is 54.59 and the average weight in pounds is 81.00, this results in an average BMI of 19.1 for the girls in the study. Based on the CDC growth charts, a BMI of 19.1 for nine-year-old girls is almost at the 85th percentile, which is deemed healthy weight (please refer to Table 3 for cutoff criteria).

Table 3

Relationship of BMI to Weight Status

BMI-for age	Weight Status
Below 18.5 ($< 5^{th}$ percentile)	Underweight
18.5 - 24.9 (5th to $< 85^{th}$ percentile)	Healthy Weight
25.0 - 29.9 (85th to $< 95^{th}$ percentile)	At Risk of Overweight
30.0 and Above ($\geq 95^{th}$ percentile)	Overweight

Note. BMI = Body Mass Index

Data Analysis

Missing Data

One of the most common dilemmas for researchers centers around how to manage missing data prior to running statistical analyses. There are numerous methods available for dealing with missing data, which may leave researchers questioning which method is the best approach. For example, Listwise Deletion, Pairwise Deletion, and Imputation are commonly used methods for managing missing data (Carter, 2006). Considered one of the simplest methods for managing missing data, Listwise Deletion removes all subjects that have missing data on any of the study's variables (Carter, 2006). Unfortunately, this approach may substantially reduce the sample size available for statistical analyses (Carter, 2006). Another approach, Pairwise Deletion, removes cases only when they have missing data on the variables needed to run a particular analysis (Carter, 2006). As a result, different analyses utilize different cases and have varying sample sizes. Both Listwise Deletion and Pairwise Deletion assume data is missing completely at random (MCAR; Carter, 2006). According to Little and Rubin (1987), missing data is often

indicative of a pattern. Therefore, researchers cannot assume that data is missing completely at random. Further, they state that deletion may introduce bias into the study and the reduction in sample size may reduce statistical power. Further, parameter estimates can be quite biased (especially when data is MAR) and standard errors will be larger than they would be if all of the subjects had responded.

A third approach often implemented to manage missing data is Imputation, which involves replacing missing scores with estimated values (Carter, 2006). There are numerous types of imputation procedures such as: Mean Substitution, Multiple Regression, Approximate Bayesian Bootstrap (ABB), Multiple Imputation (MI), and Maximum Likelihood Estimation (MLE). Of these imputation methods, MLE is the most common method of imputation because it makes the fewest demands on the data in terms of statistical assumptions (Garson, 2006). Further, the MLE method assumes data is missing at random (MAR) rather than missing completely at random (MCAR). MAR occurs more frequently than MCAR and assumes that missing values are not randomly distributed across all observations but are randomly distributed within one or more subsamples (Garson, 2006). As described by Garson (2006), MLE makes estimates based on maximizing the probability (likelihood) that the observed covariances are drawn from a population assumed to be the same as that reflected in the coefficient estimates. In other words, MLE attempts to reproduce observed data by selecting the best available estimates. MLE also produces less biased parameter estimates and smaller standard errors than Listwise and Pairwise Deletion.

For the purpose of the current study, subjects with large amounts of missing data (e.g. subjects will be deleted if fewer than 75% of the items are completed on at least one

of the measures in the study) will be deleted. Next, the remaining missing data will be

managed by utilizing Maximum Likelihood Estimation (MLE) Imputation using an EM

algorithm. EQS, a Structural Equation Modeling multivariate software will be utilized to

perform the imputation procedure.

Multiple Informants

It is often considered desirable to have multiple informants reporting on a child's

emotions, behaviors, and cognitions. These informants frequently include, the child, the

child's parents, and the child's teacher. When reports from all three informants are

congruent, the researcher and/or clinician can be reassured of their findings.

Unfortunately, reports from multiple informants are often incongruent. As such, the

clinician and/or researcher are left to question which report of the child's characteristics

is the most accurate. There are many possible reasons why reports from multiple

informants are discrepant. For example, discrepancies may be due to actual

characteristics within the child, the context or setting in which the child is observed,

biases of the informants, and/or errors in measurement (Kraemer et al., 2003).

As illustrated in Table 2, two constructs in the current study (social competence

and victimization by peers) are estimated by measures derived from multiple informants.

The first construct, social competence, is derived from teacher and child data on the

SSRS. In the current study, both informants will be entered into analyses separately. If a

multicollinearity problem exists, the informant who contributes the most variance will

remain in the analysis and the other informant will be disregarded. The second construct,

victimization by peers, is obtained from two separate measures: PVS and BVQ. The child

and the child's teacher give responses to the measures, respectively. These two measures

will be entered as separate predictors as they are hypothesized to tap slightly different dimensions of the construct.

Reliability Analyses

Prior to analyzing the four research questions, internal consistency reliability analyses will be conducted on specified measures. More specifically, internal consistency reliability will be evaluated for the 26-item, 25-item, and 23-item versions of the ChEAT in order to determine which version is the most psychometrically sound. Based on the results of this analysis, the researcher will select the most psychometrically sound version of the ChEAT for the current study. Next, Cronbach's alphas will be obtained for both the teacher and student versions of the SSRS Social Skills Subscales. Then, internal consistency reliability will be evaluated for the measures of Pubertal Status, 3-item Loneliness Subscale of the LSDQ, the Victimization of Self Subscale of the PVS, and the Victim Subscale of the BVQ. Further, the current study will obtain Cronbach's alpha coefficients with confidence intervals around each alpha value for each racial group (Caucasian and Minority) for each measure in order to investigate whether the measures work equally well for each racial group.

Demographic Variables and Descriptive Statistics

Following the completion of the reliability analysis, descriptive statistics (frequencies and percentages) will be run on each of the following demographic variables: Race (e.g. Caucasian and Minority), SES (reliance on public assistance), and Pubertal Status (combination of developmental scores and whether menarche has been reached). Further, descriptive statistics including: means and standard deviations will be

obtained for each of the measures listed in Table 2. Next, the specific statistical tests selected for each research question will be discussed.

Statistical Tests Selected for Research Questions

How each construct will be defined depends largely on the skewness of the distributions. If the ChEAT, SSRS, LSDQ, PVS, and BVQ distributions are not skewed they will remain continuous variables with the exception of the BIM, which will be dichotomized for the second and third research questions in order to focus solely on those who have body image dissatisfaction because they desire to be thinner. Next, means and standard deviations will be reported for each measure. However, if the distribution is slightly skewed, the data will be transformed. Lastly if the data is highly skewed, continuous scores will be dichotomized at the 75th percentile for the SSRS, LSDQ, PVS, & BVQ. More specifically, scores equal to or greater than the 75th percentile will be considered deviant. For the ChEAT, deviance will be determined by scores greater than or equal to 20, which are associated with Anorexia Nervosa and occur at the 74th percentile (Maloney et al., 1989; Smolak & Levine, 1994). If the variables must be dichotomized the following procedures will be implemented. With regard to body image dissatisfaction, girls that have an Ideal Self on the BIM that is smaller than their Real Self will be compared to those whose Ideal Self is equal to or greater than their Real Self. Height and weight will be used to calculate each participant's BMI using charts issued by the CDC. Next, a discussion of the statistical tests that will be used to answer each research question will be presented.

The first research question seeks to examine the prevalence and of body image dissatisfaction and eating disturbance at ages 9 and 10, determine if they increase with

age, and whether they vary by racial group and/or SES. In order to determine the

prevalence of body image dissatisfaction, the percentages of subjects selecting Ideal

figures thinner and the same as or heavier than Real figures on the BIM will be reported

for individuals at age 9 and then again at age 10. As discussed previously, a score greater

than or equal to 20 on the ChEAT is associated with Anorexia Nervosa (Maloney et al.,

1989; Smolak & Levine, 1994). As such, the frequency and percentage of girls scoring

greater than or equal to 20 on the ChEAT at ages 9 and 10 will be reported. Additionally,

the percentages of girls who want to be thinner, admit binging, admit caloric restriction,

admit vomiting, and admit exercising to lose weight will be reported.

In order to determine if body image dissatisfaction and eating disturbance

increase with age and whether they vary by racial group and/or SES a two between and

one within Repeated Measures Multivariate Analysis of Variance (MANOVA) will be

used for the statistical analysis. A MANOVA was selected instead of conducting multiple

ANOVAs because it controls for overall Type I error, uses information about correlations

among the dependent variables within the calculation of the test statistic, and considers

group differences on the variables as a set (Stevens, 2002). Age will be entered as a

within subject variable and race and SES will be entered as between subject variables.

Scores on the ChEAT and BIM at ages 9 and 10 will be used as the dependent variables.

The following statements are assumptions of a MANOVA and will be evaluated

in the current study: observations are independent, observations on the dependent

variables follow a multivariate normal distribution for each group, the population

covariance matrices for the dependent variables are equal, and the relationships among all

pairs of the dependent variables for each cell in the data matrix must be linear (Mertler

and Vannatta, 2002; Stevens, 2002). First, when evaluating independence, the researcher must determine whether the subjects are responding independently of one another. Next, normality will be assessed by obtaining scatterplots from SPSS and examining whether they are approximately elliptical in shape (Stevens, 2002). Additionally, normality will be determined by examining univariate normality. Next, the Box test will be used to examine the assumption of homogeneity of the covariance matrices (Stevens, 2002). In order to assess the last assumption, the researcher will inspect the bivariate scatterplots and determine if they are elliptical in shape (Mertler & Vannatta, 2002).

Next, the current study will explore whether pubertal status is related to eating disturbance. As discussed previously, pubertal status will be assessed via the Pubertal Development Scale (PDS; Peterson, Crockett, Richards, & Boxer, 1988). Next, t-tests will be conducted to determine whether there is a significant difference between those who have started menstruating and those who have not begun menstruating on eating disturbance. Then, Cronbach's alpha values will be calculated to determine whether the child's report or the parent's report is more reliable. The total score from the most reliable informant will be entered in a regression analysis to determine whether pubertal status is predictive of eating disturbance. If a significant association is found, pubertal status will be controlled for in questions two and three.

After determining whether pubertal status needs to be statistically controlled for, the researcher will examine whether there is a significant difference between the racial groups on the BMI. Again, a t-test will be conducted to determine whether a significant difference is present. If a difference is found, race will also be controlled for in questions two and three.

The second research question seeks to examine whether body image dissatisfaction and body mass index predict later eating disturbance. Multiple Regression has been selected as the statistical procedure that may be the most appropriate for this research question. Scores on the BIM at age 9 and subjects' BMI will be used to predict scores on the ChEAT at age 10. Thus, scores on the BIM and the BMI will serve as the predictors and scores on the ChEAT will serve as the criterion. If pubertal status and race need to be controlled for, they will be block entered first.

Prior to running the analysis, the researcher will evaluate the Multiple Regression Model by examining the extent of multicollinearity, estimating the cross validity or predictive power of the model, evaluating the assumptions of the model, and checking for outliers and influential data points. Multicollinearity occurs when there are moderate to high correlations among predictors (Stevens, 2002). Multicollinearity causes problems for the researcher by limiting the coefficient of multiple correlation (R), confounding the effects of the predictors, and causing prediction equations to be unstable (Stevens, 2002). Two methods discussed by Stevens (2002) will be used to assess the extent of multicollinearity in the current study. First, the researcher will scrutinize the intercorrelation matrix in order to determine the degree of the relationship between predictors. Second, the researcher will examine the variance inflation factors (VIF) for each of the predictors. The VIF predicts whether there is a strong linear association between the factor and the remaining predictors. Generally, it is believed that if any VIF exceeds 10, there is reason for some concern (Myers, 1990).

Next, the cross validation or predictive power of the equation will be evaluated. In the current study, the researcher will evaluate cross validation by discovering how well

the equation generalizes to the population of interest. This will be achieved by using the Wherry formula, which computes an adjusted R^2. The adjusted R^2 estimates how much of the variance on *y* would be accounted for if the prediction equation were derived from the population from which the sample was selected (Stevens, 2002).

After that, the researcher will evaluate three assumptions associated with multiple regression: errors in the regression should follow a normal distribution, have constant variance or homoscedasticity, and be independent (Stevens, 2002). The normality assumption will be checked by examining a histogram of the standardized residuals and the normal probability plot of standardized residuals (Stevens, 2002). In order to assess constant variance, the researcher will examine a scatterplot of the standardized residuals versus the predicted values. If this assumption is met, the standardized residuals should scatter randomly around a horizontal line (Stevens, 2002). If any pattern or clustering of the residuals occurs, it suggests a violation of constant variance (Stevens, 2002). Lastly, the researcher will examine independence by determining whether or not the subjects responded independently of one another.

The last step in the evaluation of the Multiple Regression Model is to check for the presence of outliers and influential data points. First, the researcher will look for outliers on *y* by examining the standardized residuals. A case is considered an outlier when the predicted score substantially differs from the actual value. As a rule of thumb, any standardized residual that is greater than 3 in absolute value should raise concern (Stevens, 2002). Second, the researcher will examine whether there are any outliers on a set of predictors by investigating the Mahalanobis Distance values. A case is considered different from the rest of the sample on the set of predictors if the Mahalanobis Distance

value is greater than 12. Third, the researcher will determine whether there are any influential data points by examining Cook's Distance, Difference in Fitted Values (DFFITS), and Difference in Betas (DFBETAS). A data point is considered influential if when deleted it produces a sizeable change in at least one regression coefficient (Stevens, 2002). A Cook's Distance value that is greater than 1 is considered to be large and serve as a "red flag" when evaluating influential data points (Stevens, 2002). Additionally, DFFITS and DFBETAS greater than 2 also serve as indicators of possible influential data points. Based on the results of the evaluation of the Multiple Regression Model, the researcher will determine whether this analysis is appropriate for the current study.

Lastly, the third research question examines whether social competence difficulties, feelings of loneliness, and being a victim of peer teasing predict later eating disturbance after controlling for BMI and body image dissatisfaction. For this analysis, Multiple Regression will again be utilized if evaluation proves it to be suitable for use in the current study. First BMI and BIM, the covariates, will be entered into the regression equation (Pubertal Status and Race may also be entered at this time). Next, teacher and student scores on the Social Skills Subscale of the SSRS, Loneliness Subscale of the LSDQ, Victimization of Self Subscale of the PVS, and the Victim Subscale of the BVQ at age 9 will be block entered as predictors. Additionally, scores on the ChEAT obtained at age 10 will serve as the criterion variable. The same procedures that will be implemented in order to evaluate the Multiple Regression Model in the second question will also be used to evaluate the appropriateness of the analysis for the third research question.

CHAPTER IV

RESULTS

The fourth chapter will begin with a discussion of the data management

procedures employed in the current study. These procedures involve the deletion of

subjects with large amounts of missing data (subjects were deleted if fewer than 75% of

the items were completed on at least one of the measures in the study) and a description

of the linear transformations that were performed on the measures.

Next, the results of the reliability analyses will be reported. For each measure,

internal consistency (using Cronbach's alpha) will be described for both racial groups at

ages 9 and 10. When examining the ChEAT, Cronbach's alpha coefficients will be

compared for each ChEAT version (26, 25, and 23 item versions). The following

notations will be used throughout this chapter to refer to the ChEAT at age 9 (ChEAT 9)

and ChEAT at age 10 (ChEAT 10). Additionally, the version (e.g. 26, 25, and 23 item

version) of the ChEAT utilized will be reported after the age. The most reliable version

will be utilized in the current study. Further, confidence intervals around each alpha value

for each racial group (Caucasian and Minority) will be provided in order to investigate

whether the measures work equally well for each racial group.

Thereafter, descriptive statistics including: means and standard deviations will be

reported for each measure at both ages. Further, bivariate correlations between the

measures will also be described. Next, results of the preliminary analyses will be

provided in order to determine whether or not pubertal status, race, BMI, and body image

dissatisfaction need to be controlled for in research questions 2 and 3. Lastly, each

research question and hypothesis will be presented, followed by the results of the tests of assumptions and data analyses.

<div align="center">Data Management</div>

Missing Data

For the current study, subjects were deleted if fewer than 75% of the items were completed on at least one of the measures in the study. After the deletion of the subjects with a large amount of missing data, the sample size was reduced from N = 611 to N = 581. Thus, the sample size was reduced by approximately 5%. As discussed previously, the remaining database was managed by utilizing Maximum Likelihood Estimation (MLE) Imputation using an EM algorithm for smaller amounts of missing data. In the present study, the following measures had missing data that was imputed: Pubertal Status (child and parent at ages 9 and 10), Body Image Measure (ages 9 and 10), Children's Eating Attitude Test (ages 9 and 10), Social Skills Rating Scale (child and teacher at age 9), Peer Victimization Scale (child at age 9), and Bully-Victim Questionnaire (teacher version at age 9). In contrast, the Loneliness and Social Dissatisfaction Questionnaire was not imputed. The percentages of missing data that were imputed for each measure are as follows: Pubertal Status Child age 9 (19.4%) and age 10 (4.5%), Pubertal Status Parent age 9 (0.3%) and age 10 (3.1%), Body Image Measure age 9 (0.9%) and age 10 (2.6%), Children's Eating Attitude Test age 9 (11%) and age 10 (4.3%), Social Skills Rating Scale Child age 9 (11.2%), Social Skills Rating Scale Teacher age 9 (26%), Peer Victimization Scale (2.1%), and Bully-Victim Questionnaire (12.7%).

Linear Transformations

Normality was assessed statistically by examining values of skewness (the symmetry of a distribution) and kurtosis (the peakedness of a distribution) for each of the study's measures. When skewness and kurtosis values are zero, the distribution is said to be normal (Tabachnick & Fidell, 1996). The examination of normality revealed that the Cheat 9 23 Item, ChEAT 10 23 Item, SSRS Child, SSRS Teacher, LSDQ, PVS, and BVQ were positively skewed. As such, the majority of the cases piled up to the left side and the tail on the right was long. In contrast, the BIM 9 Deviation and BIM 10 Deviation scores were not skewed. This is likely due to the fact that they were already transformed when they were converted to a deviation score. With regards to kurtosis, the ChEAT 9 23 Item, ChEAT 10 23 Item, BIM 9 Deviation, BIM 10 Deviation, LSDQ, PVS, and BVQ were peaked. On the other hand, the child and teacher versions of the SSRS did not show kurtosis. As described in chapter 3, linear transformations were used as a remedy for the failures of normality. A variety of transformations were attempted and the ones that produced the skewness and kurtosis values closest to zero were used in the current study. As explained by Tabachnick & Fidell (1996), square root transformations are typically undertaken when the distribution varies moderately from normal. When the distribution varies substantially from normal, a log transformation is tried. Lastly, when the distribution differs severely from normal an inverse transformation is attempted. An inverse transformation involves making very small numbers very large and very large numbers very small (Osborne, 2002). The inverse of a number (χ) is computed by taking $1/\chi$ (Osborne, 2002). Table 4 lists the transformations that were selected for each measure. It is important to note, that the only measures that were not transformed were

the BIM Deviation 9 and BIM Deviation 10. Because this research study is primarily interested in girls who have body image dissatisfaction because they want to be thinner, the BIM Deviation 9 and BIM Deviation 10 were dichotomized for research questions 2 and 3. More specifically, a binary variable was created where girls who have deviation scores less than zero (desire to be thinner) received a score of 1 and girls with deviation scores greater than or equal to 0 (desire to stay the same or be larger) received a score of 0.

Table 4

Linear Transformations Selected for Study Measures

Measure	Linear Transformation
Children's Eating Attitude Test (ChEAT 9 23 Item)	Square Root
Children's Eating Attitude Test (ChEAT 10 23 Item)	Log
Body Image Measure (BIM Deviation 9)	No Transformation
Body Image Measure (BIM Deviation 10)	No Transformation
Social Skills Rating Scale (SSRS Child)	Square Root
Social Skills Rating Scale (SSRS Teacher)	Square Root
Loneliness & Social Dissatisfaction Quest. (LSDQ)	Inverse
Peer Victimization Scale (PVS)	Square Root

Table 4 (*continued*).

Measure	Linear Transformation
Bully Victim Questionnaire (BVQ)	Inverse

Reliability Analyses

In order to assess the reliability of each of the measures utilized in the present study, Cronbach's alpha values were computed. Table 5 summarizes the alpha values for each measure and compares the alpha values to ones obtained in other research studies. The alpha values ranged from a low of .51 to a high of .94. The following measures had alpha values below .70: PDS (child ages 9 & 10), and PDS (Parent, child age 9). In previous studies, the reliability of the PDS was assessed in older individuals. Moreover, Peterson, Crockett, Richards, & Boxer, (1988) found alpha coefficients in a young adolescent sample, ranging from .76-.83 in girls interviewed twice annually over a period of three years (grades 6-8). Additionally, Robertson et al. (1992) reports alpha coefficients of .81 and .77 in two separate samples of seventh grade girls. Lastly, Brooks-Gunn, Warren, Rosso, & Gargiulo (1987) found alpha coefficients of .67 for fifth grade girls, .54 for sixth grade girls, and .66 for seventh grade girls. Finally, obtained alpha values in the current study for the ChEAT are compared to previous studies in Table 6.

Table 5

Cronbach's Alpha Values for Study Measures with Comparisons to Previous Studies

Measure	α in Current Study	α in Previous Studies
ChEAT 26[a]	.77	---
ChEAT 26[b]	.80	---
ChEAT 25[a]	.79	---
ChEAT 25[b]	.82	---
ChEAT 23[a]	.79	---
PDS (Child)[a]	.51	---
PDS (Child)[b]	.58	---
PDS (Parent)[a]	.64	---
PDS (Parent)[b]	.72	---
SSRS (Child)[a]	.88	.80 (Gresham & Elliot, 1990)
SSRS (Teacher)[a]	.94	.93 (Gresham & Elliot, 1990)
LSDQ[a]	.78	.77 (Parker & Asher, 1992)
PVS[a]	.87	.85 (Vernberg et al., 1999)
BVQ[a]	.77	.76 (Shields & Cicchetti, 2001)

Note. For the current study, $N = 581$. [a] = Measure administered at age 9 and

[b] = Measure administered at age 10.

  Comparisons with the current empirical literature reveal that the alpha values

obtained in the current study are commensurate with those reported by other researchers.

More specifically, the internal reliability of the Children's Eating Attitude Test (ChEAT)

compares well with reports taken from the literature (see Table 6). The results of the reliability analysis indicate that the ChEAT 23-item has the highest reliability at both ages 9 and 10. Further, this measure has the fewest number of items and as such is the most parsimonious. As a result, the ChEAT 23-item was selected for use in the current study's analyses.

Table 6

Cronbach's alpha values for the Children's Eating Attitude Test

Study	Subjects	26-Item	25-Item	23-Item
Maloney et al. (1988)	3rd - 6th grade boys & girls		.76	
Smolak & Levine (1994)	6th - 8th grade girls	.87	.88	.89
Current Study	Girls at age 9 (4th grade)	.77	.79	.79
	Girls at age 10 (5th grade)	.80	.82	.84

Because the Body Image Measure (BIM) only has two items, reliability was measured by examining the test-retest reliability instead of obtaining internal reliability coefficients. When investigating the test-retest reliability, the current study obtained estimates of .74 for the Real Self and .44 for the Ideal Self. These estimates compare well with those reported by Collins (1991) who found a value of .71 for the Real Self and .59 for the Ideal Self in a sample of 1st through 3rd grade children with an intervening period of three days.

When examining the reliability of the PDS, higher Cronbach's alpha values were obtained for the parent versions. Further, the measure is more reliable at age 10 than at age 9. An examination of the SSRS revealed that the teacher questionnaire had a slightly

higher reliability than the child questionnaire. In the present study, the teacher

questionnaire yielded at Cronbach's alpha value of .94, while the student version had a

value of .88. These results are consistent with a study by Gresham & Elliott (1990), who

reported Cronbach's alpha values of .93 for the teacher version and .80 for the child

version in a sample of elementary school children. When exploring the reliability of the

LSDQ (3-item scale), the present study yielded a Cronbach's alpha value of .78 for the

girls at age 9. When comparing these results to the extant literature, this value compares

well with the results of Parker & Asher's (1992) study, which found a Cronbach's alpha

value of .77 in a sample of third through fifth grade children. Next, the PVS

(Victimization of Self Subscale) proved to be reliable in the current study with a

Cronbach's alpha value of .87. This coefficient is commensurate with the value obtained

from Vernberg et al. (1999) in a sample of 7th through 9th graders ($\alpha = .85$). Lastly, the

BVQ had a Cronbach's alpha value of .77 in the current study. Again, results from the

current reliability analysis are similar to results found by Shields & Cicchetti (2001), who

obtained a Cronbach's alpha value of .76 in a sample of children between the ages of 8

and 12.

     Table 7 summarizes the results of the reliability analyses for the ChEAT versions

and Table 8 provides results of the reliability analyses for the remaining measures. Each

racial group has been analyzed separately and 95% confidence intervals are reported for

each Cronbach's alpha value. Results indicate that the confidence intervals overlap. As

such, the measures show comparable internal consistency for the Caucasian and Minority

groups.

Table 7

Cronbach's Alpha Values and Confidence Intervals for ChEAT Versions

Measure	Caucasian		Minority	
	α	95% CI	α	95% CI
ChEAT 23[a]	.78	.72 - .83	.78	.73 - .84
ChEAT 23[b]	.84	.79 - .87	.83	.79 - .87

Note. Caucasian group (n = 244) and Minority group (n = 337).

[a] = Measure administered at age 9 and [b] = Measure administered at age 10.

Table 8

Cronbach's Alpha Values and Confidence Intervals Measures by Group

Measure	Caucasian		Minority	
	α	95% CI	α	95% CI
PDS (Child)[a]	.55	.35 - .68	.51	.30 - .66
PDS (Child)[b]	.62	.45 - .73	.54	.34 - .68
PDS (Parent)[a]	.59	.41 - .71	.64	.49 - .75
PDS (Parent)[b]	.69	.55 - .78	.70	.57 - .79
SSRS (Child)[a]	.87	.83 - .90	.88	.85 - .91
SSRS (Teacher)[a]	.93	.91 - .95	.94	.92 - .95

Table 8 (*continued*).

Measure	Caucasian		Minority	
	α	95% CI	α	95% CI
LSDQ[a]	.84	.78 - .89	.73	.61 - .81
PVS[a]	.87	.82 - .91	.87	.81 - .91
BVQ[a]	.80	.71 - .86	.76	.65 - .83

Note. Caucasian group (n = 244) and Minority group (n = 337).

[a] = Measure administered at age 9 and [b] = Measure administered at age 10.

Descriptive Statistics

As stated previously, the racial distribution of the sample consisted of the

following: African American (51.9%), Caucasian (42.1%), Mixed or Other Race (5.1%),

Asian (.8%), and Hispanic/Latino (.2%). Because the number of participants in the Mixed

or Other Race, Asian, and Hispanic/Latino categories were so small, these three groups

and the African American group were combined into a single Minority group. Thus, the

current study examined two different racial groups: Caucasian and Minority. The new

racial distribution of the sample is reported in Table 9. Following Table 9, the distribution

for the Body Image Measure (BIM) at ages 9 and 10 is summarized. Next, means and

standard deviations are provided for each of the study's measures (see Table 11). Lastly,

Table 12 lists the intercorrelations between the study's measures after they have been

transformed. Because of the large sample size in this study (N = 581), several low or

weak correlations between measures were statistically significant. Frequently, moderate

correlations were found between the same measures that were administered at age 9 and

again at age 10. More specifically, 9 moderate correlations were found between the

following measures: ChEAT 23 at ages 9 and 10 (r = .425), BIM at ages 9 and 10 (r = .416), PDS (Child) at ages 9 and 10 (r = .396), PDS (Child) age 9 and PDS (Parent) age 9 (r = .413), PDS (Child) age 9 and PDS (Parent) age 10 (r = .345), PDS (Child) age 10 and PDS (Parent) age 9 (r = .508), PDS (Child) age 10 and PDS (Parent) age 10 (r = .585), SSRS (Teacher) age 9 and BVQ age 9 (r = -.484), and LSDQ age 9 and PVS age 9 (r = -.381). Finally, there was a high correlation between PDS (Parent) ages 9 and 10 (r = .723).

Table 9

Racial Distribution of Study Sample

Racial Group	n	Percentage
Caucasian	244	42%
Minority	337	58%
Total	581	100%

Table 10

Distribution for BIM at ages 9 and 10

Measure	Response	n	Percentage
BIM 9			
	Desire to stay the same or be larger	379	65.2
	Desire to be thinner	202	34.8
BIM 10			
	Desire to stay the same or be larger	361	62.1
	Desire to be thinner	220	37.9

Table 11

Scale Means and Standard Deviations for Study Measures

Measure	Mean	Standard Deviation
ChEAT 23[a]	5.90	7.37
ChEAT 23[b]	4.51	7.10
BIM[a]	-.24	1.06
BIM[b]	-.31	.98
PDS (Child)[a]	8.36	2.19
PDS (Child)[b]	9.35	2.56
PDS (Parent)[a]	8.49	2.30
PDS (Parent)[b]	10.02	2.88
SSRS (Child)[a]	15.83	9.11
SSRS (Teacher)[a]	16.73	10.44
LSDQ[a]	1.01	1.55
PVS[a]	5.99	6.37
BVQ[a]	4.45	1.68

Note. $N = 581$. [a] = Measure administered at age 9 and

[b] = Measure administered at age 10

Table 12

Intercorrelations Between Study Measures (with transformations)

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13
1. ChEAT 23[a]	---	.425**	-.110	-.160**	.127**	.093*	.072	.044	.181**	.248**	-.215**	.299**	-.141**
2. ChEAT 23[b]		---	-.095*	-.171**	.128**	.101*	.058	.057	.184**	.173**	-.203**	.228**	-.136**
3. BIM[a]			---	.416**	-.106*	-.080	-.149**	-.096*	-.036	-.033	.078	-.037	.076
4. BIM[b]				---	-.125**	-.122**	-.159**	-.126**	-.040	-.021	.117**	-.050	.068
5. PDS (Child)[a]					---	.396**	.413**	.345**	.073	.090*	-.070	.121**	-.050
6. PDS (Child)[b]						---	.508**	.585**	.005	.085*	-.001	.050	.002
7. PDS (Parent)[a]							---	.723**	.014	.089*	.055	-.014	-.057
8. PDS (Parent)[b]								---	.000	.125**	.086*	-.028	-.063
9. SSRS (Child)[a]									---	.336**	-.248**	.279**	-.260**
10. SSRS (Teacher)[a]										---	-.164**	.203**	-.484**
11. LSDQ[a]											---	-.381**	.216**
12. PVS[a]												---	-.160**
13. BVQ[a]													---

Table 12 (*continued*).

Preliminary Analyses

Based on the present empirical literature, pubertal status and race were

hypothesized to be possible confounds in the current study. As discussed previously, the

onset of puberty is often believed to be a precipitating factor for the development of an

eating disorder. Additionally, the study investigated whether body mass index (BMI) and

body image dissatisfaction (BIM) differ significantly between racial groups. In summary,

the present study deemed that it was necessary to determine whether pubertal status and

race (differences on BMI and BIM between the racial groups) should be statistically

controlled for in research questions 2 and 3.

The first variable to be examined was pubertal status. As discussed previously, the

PDS examined the girls' growth in height, growth of body hair, skin changes (especially

pimples), growth of breasts, and whether or not the girls have begun menstruating. The

girls and their parents rated each of the five questions separately. As reported above, the

reliability of the parent version of the PDS was the most reliable. Therefore, it will be

used for the analyses. First, a t-test was conducted in order to determine whether those

who have started menstruating significantly differ from those who have not started

menstruating on eating disturbance. The t-test shows that the group who started

menstruating had a mean eating disturbance score of .51 (SD = .48) and the group who

has not started menstruating yet had a mean eating disturbance score of .48 (SD = .46).

The difference was not significant $t(579) = -.448$, $p = .655$, two-tailed. In the present

study, only 1.4% of the sample began menstruation by age 9 and 9.3% of the girls by age

10 (via parent report). Importantly, due to the small number of girls who started

menstruation, this variable may not be a useful indicator at this young age.

Next, a regression analysis using the enter method was conducted in order to

determine whether pubertal status predicts eating disturbance.   For this question, the five

PDS questions were added and the sum of the scale was entered as the predictor variable.

Regression results indicate that pubertal status was not a significant predictor of eating

disturbance, $R^2 = .003$, $R^2_{adj} = .002$, $F(1,579) = 1.890$, $p = .170$. This model accounted for

only 0.3% of the variance in eating disturbance. As illustrated by the results of the t-test

and regression analysis, pubertal status did not significantly contribute to eating

disturbance. As such, pubertal status was not controlled for in research questions 2 and 3.

Subsequently, a t-test was conducted in order to determine whether the body mass

index (BMI) of the racial groups differed significantly. The mean BMI was 19.26 (SD =

4.84) for the Minority group and 18.27 (SD = 3.88) for the Caucasian group. Levene's

test for equality of variances was significant. Therefore, equal variances were not

assumed. The difference was significant $t(555) = -2.702$, $p < .05$, two-tailed.

The next analysis investigated whether there was a significant difference between

the body image dissatisfaction (BIM) of the two racial groups. At age 9, the Caucasian

girls a mean BIM score of -.29 (SD = .85) and the Minority girls had a mean BIM score

of -.20 (SD = 1.19). Again, Levene's test for equality of variances was significant. As such, equal variances were not assumed. Results of the modified t-test indicate that the difference between the groups was not significant $t(579) = -.971$, $p = .332$, two-tailed. Similar results were found at age 10. More specifically, the Caucasian group had a mean BIM score of -.31 (SD = .87) and the Minority group had a mean BIM score of -.30 (SD = 1.05). Similarly to the previous analysis, Levene's test for equality of variances was significant and equal variances were not assumed. Results of the modified t-test indicated that the difference between the groups was not significant $t(568) = -.110$, $p = .912$, two-tailed.

In summary, the results of the preliminary analyses revealed that pubertal status is not a confound in the current study, which may be due to the low number of girls who have actually started menstruation. On the other hand, the effects of race need to be controlled for due to the significant difference between the BMI of the racial groups.

<p style="text-align:center">Research Questions/Hypotheses and Statistical Analyses</p>

Research Question # 1

What is the prevalence and stability of body image dissatisfaction and eating disturbance at ages 9 and 10? Do they vary by racial group or socio-economic status (SES)?

Hypothesis

For the first research hypothesis, it is proposed that body image dissatisfaction and eating disturbance occur in female children as young as age 9 and will increase by age 10. Due to the inconsistency of findings and lack of research on children of various racial groups and eating disturbance, it is somewhat difficult to develop empirically

driven hypotheses in this area. Based on the current literature, the researcher would expect that girls from Minority racial groups would have a lower prevalence of body image dissatisfaction and eating disturbance when compared to Caucasian girls. Lastly, the researcher anticipates that body image dissatisfaction and eating disturbance will occur at similar rates across SES levels.

Research Question #1 Results

In order to determine the prevalence of eating disturbance at ages 9 and 10, a cut score greater than or equal to 20 was used to classify children into a group named "Anorexic." As discussed previously, a score greater than or equal to 20 is associated with Anorexia Nervosa (Maloney et al., 1989; Smolak & Levine, 1994). Subjects with scores less than 20 were categorized into a group called "Normal." Based on a total sample size of 581 children, results indicate that approximately 11% of the sample scored in the Anorexic range at age 9 and about 7% of the sample scored in the Anorexic range at age 10 (see Figure 1). These results provide support for the hypothesis that eating disturbance occurs in girls as young as age 9. Further, the findings compare well with those obtained by Maloney (1988), who found approximately 7% of boys and girls ages 7-13 scored in the Anorexic range.

With regard to specific symptoms, the following maladaptive thoughts and behaviors were endorsed by the subjects as occurring either often, very often, or always. First, 22.5% of 9 year-olds and 18.2% of 10 year-olds reported that they think a lot about wanting to be thinner. Further, 9.5% of 9 year-olds and 5.2% of 10 year-olds endorsed that they have gone on eating binges when they feel that they might not be able to stop. Next, 21.2% of 9 year-olds and 17.4% of 10 year-olds reported that they are aware of the

energy (calorie) content in the food that they eat. In terms of vomiting behavior, 1.9% of the 9 year-olds and 1.4% of the 10 year-olds reported vomiting after they have eaten. Moreover, 3.1% of 9 year-olds and 2.9% of 10 year-olds reported having the urge to vomit after eating. Lastly, 16.9% of 9 year-olds and 19.1% of 10-year-olds admitted that they think about burning up energy (calories) when they exercise.
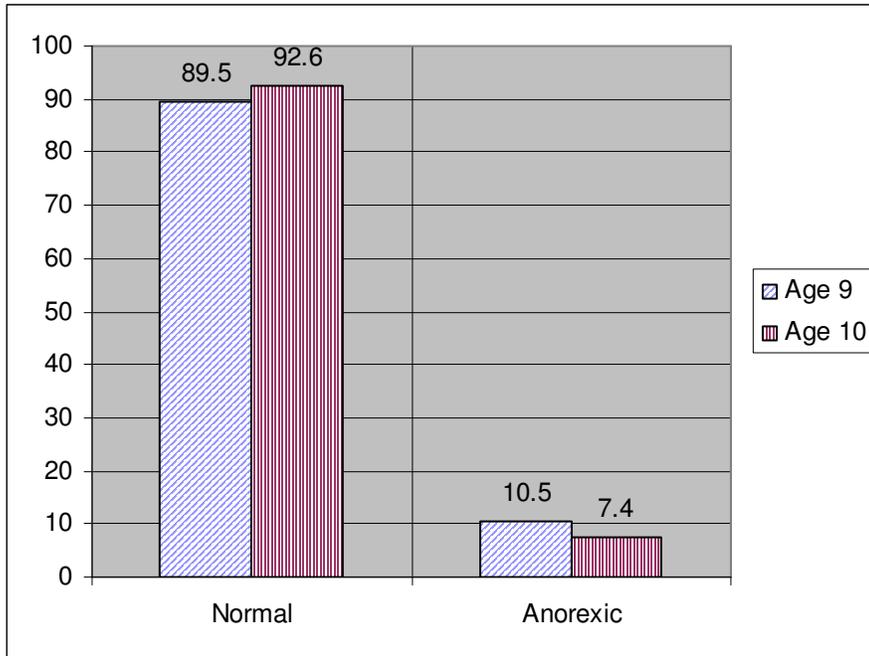

Figure 1. Prevalence of eating disturbance at ages 9 and 10.

Next, the prevalence of body image dissatisfaction was assessed at ages 9 and 10. At age 9, approximately 35% of the sample selected Ideal Figures that were smaller than their Real Figures. Thus, about 35% of the children desired to be thinner at age 9. At age 10, approximately 38% desired to be thinner (see Figure 2).
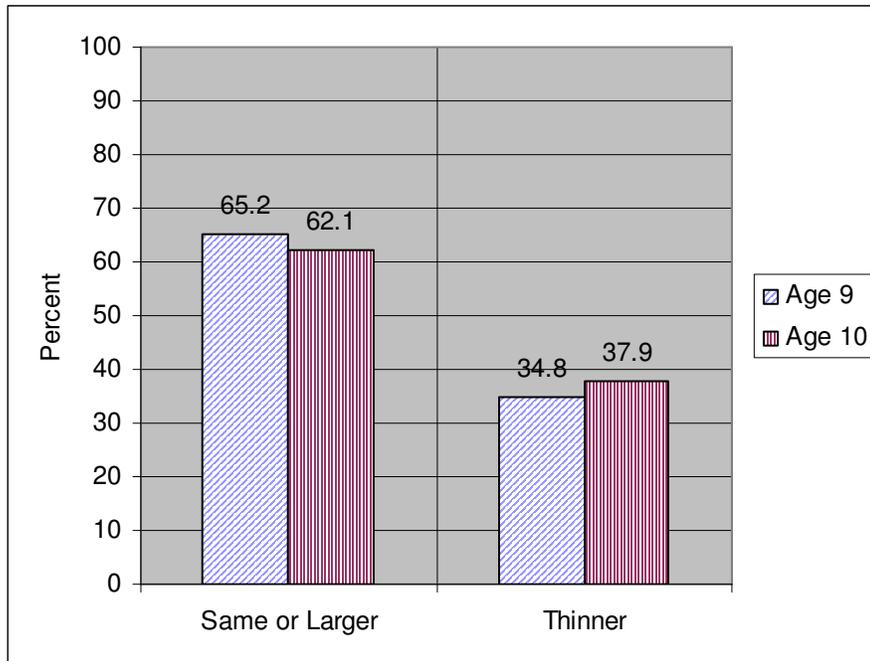
Figure 2. Prevalence of body image dissatisfaction at ages 9 and 10.

For the second part of research question 2, the researcher examined whether body image dissatisfaction varied by racial group (Caucasian or Minority) and/or SES (reliance on public assistance or no reliance on public assistance). In order to assess this question, a Repeated Measures MANOVA was utilized. In this analysis, there were three independent variables. More specifically, the independent variables consisted of two between group variables (Race and SES) and one within group variable (age). The dependent variables for this analysis were eating disturbance as measured by the ChEAT and body image dissatisfaction as measured by the BIM. Lastly, the Repeated Measures MANOVA also examined interactions between the variables.

Prior to running the analysis, several assumptions of the model needed to be evaluated. First, the researcher needed to evaluate whether the observations within each sample were independent of each other. The assumption of independence is largely an issue surrounding a study's design (Mertler & Vannatta, 2002). In the current study,

measures were individually administered to each of the participants and the participants did not have any interaction with one another. As such, the observations obtained in the current study were independent and this assumption was met. Next, the researcher evaluated whether the observations on the dependent variables follow a multivariate normal distribution for each group. Examining SPSS scatterplots and determining whether they were approximately elliptical in shape assessed normality. Additionally, normality was assessed by investigating univariate normality. Because the Children's Eating Attitude Test (ChEAT) administered at ages 9 and 10 was positively skewed, this measure was transformed for both ages. As reported above, the ChEAT 9 23 item was transformed with a Square Root transformation and the ChEAT 10 23 item was transformed with a Log transformation. Further, the BIM Deviation 9 and BIM Deviation 10 did not require any transformations. Lastly, Mertler and Vannatta (2002) report that MANOVA and ANOVA are robust to moderate violations of normality, when the violation is created by skewness and not by outliers.

Subsequently, the homogeneity of covariance matrices assumption or the assumption that the population covariance matrices for the dependent variables in each group are equal was evaluated. This was assessed by examining Box's test of Equality of Covariance Matrices and Levene's Test of Equality of Error Variances. Results indicate that Box's M test was significant; however, this is a conservative test that is said to reject the null hypothesis too often (Mertler & Vannatta, 2002). Levene's test indicated that the groups had equal variance on the ChEAT 9 23 item and unequal variance on the ChEAT 10 23 item, BIM Deviation 9, and BIM Deviation 10. Based on these results, Pillai's Trace will be interpreted when examining the multivariate results (Mertler & Vannatta,

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2002). Lastly, the relationships among all pairs of the dependent variables for each cell in the data matrix must be linear. As a result, bivariate scatterplots were examined to determine whether they were elliptical in shape. Transformations were used to improve the shape of the scatterplots.

Results of the Repeated Measures MANOVA revealed significant differences among the Race categories, Pillai's Trace = .050, $F(2,575) = 15.080$, $p < .001$, multivariate $\eta^2 = .050$ and Age categories, Pillai's Trace = .359, $F(2,575) = 160.828$, $p < .001$, multivariate $\eta^2 = .359$ on the dependent variables. There were no significant differences among the SES categories on the dependent variables, Pillai's Trace = .003, $F(2,575) = .955$, $p = .385$, multivariate $\eta^2 = .003$. The only significant interaction discovered was between Age and Race, Pillai's Trace = .028, $F(2,575) = 8.431$, $p < .001$, multivariate $\eta^2 = .028$. Despite having statistically significant differences, the Race categories and the interaction between Age and Race had very small effect sizes ($\eta^2 = .050$ and $\eta^2 = .028$ respectively).

When conducting multiple ANOVAs, the likelihood of a Type 1 error rate is increased. In order to address this potential problem, a Bonferroni-type adjustment was utilized. With this adjustment, a more stringent alpha level was used when evaluating the tests. In other words, the critical value for examining each dependent variable was determined by taking the desired alpha level and dividing it by the number of dependent variables (Mertler & Vannatta, 2002). In the present analysis an overall alpha value of .05 was selected and there are two dependent variables. As a result, each univariate test will be examined at $\alpha = .025$ ($.05/2 = .025$). Univariate ANOVA results reveal that the age category significantly differs for eating disturbance, ($F(1,576) = 321.134$, $p<.001$, partial

$\eta^2 = .358$), but not for body image dissatisfaction ($F(1,576) = 1.720$, $p= .190$, partial $\eta^2 = .003$). Further, the children had higher mean eating disturbance scores at age 9 than at age 10. With regard to the race category, the groups differ significantly on eating disturbance ($F(1,576) = 25.286$, $p<.001$, partial $\eta^2 = .042$), but not on body image dissatisfaction ($F(1,576) = 1.455$, $p= .228$, partial $\eta^2 = .003$). Lastly, there were no significant differences between the SES groups on either eating disturbance ($F(1,576) = 1.873$, $p=.172$, partial $\eta^2 = .003$) or body image dissatisfaction ($F(1,576) = .214$, $p=.644$, partial $\eta^2 = .000$).

When examining the interaction between age and race, there is a significant interaction with eating disturbance ($F(1,576) = 16.833$, $p < .001$, partial $\eta^2 = .028$), but not with body image dissatisfaction ($F(1,576) = .091$, $p = .763$, partial $\eta^2 = .000$). Please refer to Figure 3 for a visual representation of the significant interaction between age and race on eating disturbance. An examination of Figure 3 reveals that there is a greater difference between the eating disturbance of the racial groups at age 9 compared to age 10. Additionally, there was more eating disturbance at age 9 than at age 10.
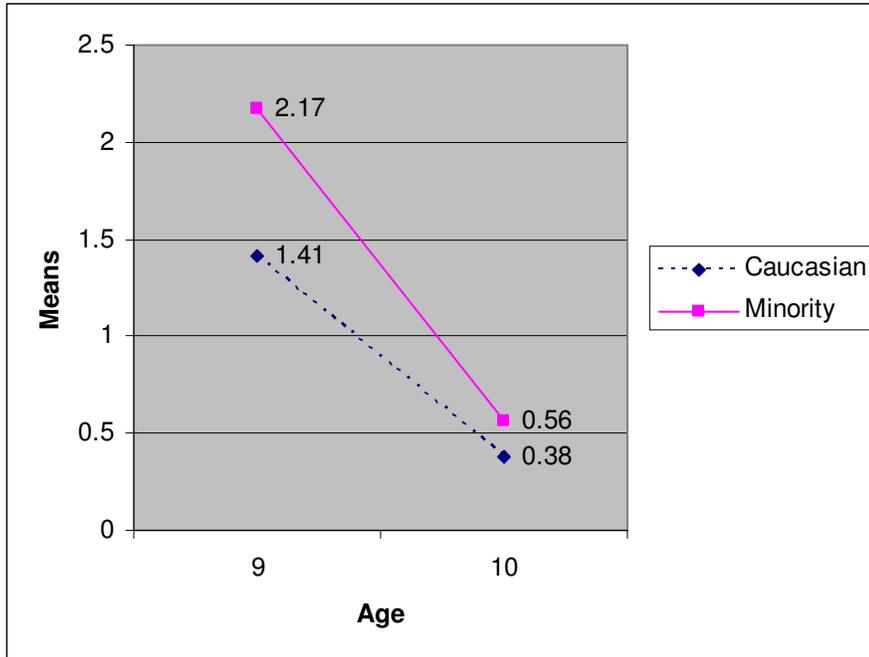
Figure 3. Significant interaction between age and race on eating disturbance.

Next, the interaction between age and SES was examined. No significant interaction was found between age and SES on either eating disturbance ($F(1,576) = .349$, $p = .555$, partial $\eta^2 = .001$) or body image dissatisfaction ($F(1,576) = .078$, $p = .779$, partial $\eta^2 = .000$). Likewise, no significant interactions were discovered between race and SES on eating disturbance ($F(1,576) = .377$, $p = .540$, partial $\eta^2 = .001$) or body image dissatisfaction ($F(1,576) = 1.579$, $p = .209$, partial $\eta^2 = .003$). Finally, the interaction between age, race, and SES was examined. Results reveal no significant interactions on either eating disturbance ($F(1,576) = .717$, $p = .397$, partial $\eta^2 = .001$) or body image dissatisfaction ($F(1,576) = .318$, $p = .573$, partial $\eta^2 = .001$). Table 13 presents the means and standard deviations for eating disturbance and body image dissatisfaction by the age, race, and SES categories.

Table 13

Means and Standard Deviations for Eating Disturbance and Body Image Dissatisfaction

by Age, Race, and SES Categories

	Eating Disturbance		Body Image Dissatisfaction	
	M	SD	M	SD
Age				
9	1.85	1.57	-.24	1.06
10	.48	.46	-.31	.98
Race				
Caucasian (Age 9)	1.42	1.41	-.29	.85
Minority (Age 9)	2.17	1.60	-.20	1.19
Caucasian (Age 10)	.38	.41	-.31	.87
Minority (Age 10)	.56	.48	-.30	1.05
SES				
No Assistance (Age 9)	1.73	1.55	-.25	1.03
Received Assistance (Age 9)	2.15	1.58	-.22	1.14
No Assistance (Age 10)	.45	.46	-.31	.92

Table 13 (*continued*).

	Eating Disturbance		Body Image Dissatisfaction	
	M	SD	M	SD
Received Assistance (Age 10)	.57	.46	-.30	1.11

Research Question # 2

Does Body Mass Index (BMI) and body image dissatisfaction (BIM) predict later

eating disturbance?

Hypothesis

For the second research question, the researcher proposes that BMI and body

image dissatisfaction at age 9 will be significant independent predictors of eating

disturbance at age 10.

Research Question #2 Results

Prior to running the analysis, the researcher evaluated the Multiple Regression

Model by examining the extent of multicollinearity, estimating the cross validity or

predictive power of the model, evaluating the assumptions of the model, and checking for

outliers and influential data points.

In order to assess the degree of multicollinearity, the researcher scrutinized the

intercorrelation matrix in order to determine the degree of the relationship between

predictors. Second, the researcher examined the variance inflation factors (VIF) for each

of the predictors. Results indicate that multicollinearity is not a problem. More

specifically, only a moderate correlation was found between the predictors (BMI and

body image dissatisfaction; $r = .525$). When examining the VIF for each of the predictors, all values were less than 10. Therefore, there was no reason for concern (Myers, 1990).

Next, the cross validation or predictive power of the equation was evaluated. The researcher evaluated cross validation by discovering how well the equation generalizes to the population of interest. This was achieved by using the Wherry formula, which computes an adjusted R^2. Obtained adjusted R^2 values are reported below in Table 13.

After that, the researcher evaluated the three assumptions associated with multiple regression: errors in the regression should follow a normal distribution, have constant variance or homoscedasticity, and be independent (Stevens, 2002). The normality assumption was checked by examining a histogram of the standardized residuals and the normal probability plot of standardized residuals (Stevens, 2002). As summarized in Table 4 several of the measures used in the current study were transformed due to violations of normality (positive skewness). For the second research question, the only measure that needed to be transformed was the ChEAT 10 23 Item, for which a log transformation was employed. In order to assess constant variance, the researcher examined a scatterplot of the standardized residuals versus the predicted values. If this assumption is met, the standardized residuals should scatter randomly around a horizontal line (Stevens, 2002). If any pattern or clustering of the residuals occurs, it suggests a violation of constant variance (Stevens, 2002). The examination of the scatterplot revealed that there was some patterning/clustering of residuals. This was an indication of heteroscedasticity or a lack of constant variance. As discussed by Mertler and Vannatta (2002), moderate violations of homoscedasticity weaken the regression analysis, but do not make the analysis invalid. Moreover, the central limit theorem states that with large

sample sizes the sampling distributions of means are normally distributed regardless of

the distributions of variables (Tabachnick & Fidell, 1996). Lastly, the researcher

examined independence and determined that the subjects responded independently of one

another. The last step in the evaluation of the Multiple Regression Model was to check

for outliers and influential data points. First, the researcher looked for outliers on y by

examining the standardized residuals. A case is considered an outlier when the predicted

score substantially differs from the actual value. As a rule of thumb, any standardized

residual that is greater than 3 in absolute value should raise concern (Stevens, 2002). For

the second research question, no standardized residuals were greater than 3 in absolute

value. Second, the researcher examined whether there were any outliers on a set of

predictors by investigating the Mahalanobis Distance values. A case is considered

different from the rest of the sample on the set of predictors if the Mahalanobis Distance

value is greater than or equal to12. For the second research question 25 cases had

Mahalanobis Distance values that were greater than or equal to 12. As a result, these 25

cases were deleted reducing the total sample size from 581 to 556 (approximately a 4%

reduction in sample size). Lastly, the researcher determined whether there were any

influential data points by examining Cook's Distance, Difference in Fitted Values

(DFFITS), and Difference in Betas (DFBETAS). A data point is considered influential if

when deleted it produces a sizeable change in at least one regression coefficient (Stevens,

2002). A Cook's Distance value that is greater than 1 is considered to be large and serve

as a "red flag" when evaluating influential data points (Stevens, 2002). For this analysis,

no Cook's Distance values were greater than 1. Additionally, DFFITS and DFBETAS

greater than 2 also serve as indicators of possible influential data points. For the present

analysis no DFFITS or DFBETAS were greater than 2.

As discussed previously, this research study is primarily interested in girls who

have body image dissatisfaction because they want to be thinner. As such, the BIM

Deviation 9 and BIM Deviation 10 were dichotomized for research questions 2 and 3.

More specifically, a binary variable was utilized where girls who had deviation scores

less than zero (desire to be thinner) received a score of 1 and girls with deviation scores

greater than or equal to 0 (desire to stay the same or be larger) received a score of 0.

The multiple regression analysis was conducted using the enter method to

determine which independent variables (body mass index (BMI) and body image

dissatisfaction (BIM)) were predictors of eating disturbance. As discussed previously,

preliminary analyses revealed that the effects of racial group needed to be statistically

controlled for in research questions 2 and 3. Consequently, racial group was block

entered first, followed by the entrance of body mass index and body image

dissatisfaction. Regression results indicate an overall model of three predictors (BMI,

racial group, and body image dissatisfaction) that significantly predict eating disturbance,

$R^2 = .085$, $R^2_{adj} = .080$, $F(1,552,) = 6.528$, $p < .05$. This model accounted for 8.5% of the

variance in eating disturbance. When removing the variance explained by race and BMI

(7.4%), the BIM accounted for an additional 1.1% of the variance, which was statistically

significant as indicated by the *F change* statistic. A summary of the regression model is

presented in Table 14. In addition, bivariate and partial correlation coefficients between

each predictor and the dependent variable are presented in Table 15. A review of the beta

weights indicates that racial group contributed the most to the regression model, followed

by body image dissatisfaction (BIM) and then body mass index (BMI). All three

predictors had low or weak positive correlations with eating disturbance.

Table 14

Model Summary for Research Question #2

Model	R	R^2	R^2_{adj}	ΔR^2	F_{chg}	p	df_1	df_2
1. Race & BMI	.272	.074	.071	.074	22.166	.000	2	553
2. Race, BMI, BIM	.292	.085	.080	.011	6.528	.011	1	552

Table 15

Coefficients for the Prediction of Eating Disturbance

	B	β	t	Bivariate r	Partial r
BMI	.014	.114	2.383*	.194	.101
Race	.183	.196	4.801**	.206	.200
BIM	.119	.122	2.555*	.183	.108

* $p < .05$ ** $p < .001$

Research Question # 3

Do social competence difficulties, feelings of loneliness, and victimization by

peers predict later eating disturbance after controlling for BMI and body image

dissatisfaction?

Hypothesis

In terms of the third research question, it is hypothesized that social competence

difficulties, feelings of loneliness, and being a victim of peer teasing will contribute

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unique variance to the prediction of eating disturbance after controlling for BMI and body image dissatisfaction.

Research Question #3 Results

Similarly to the second research question, the researcher evaluated the Multiple Regression Model for the third research question by examining the extent of multicollinearity, estimating the cross validity or predictive power of the model, evaluating the assumptions of the model, and checking for outliers and influential data points.

Again, the extent of multicollinearity was assessed by scrutinizing the intercorrelation matrix and examining the variance inflation factors (VIF) for each of the predictors. Results indicate that multicollinearity is not an issue. More specifically, low correlations were found between all of the predictors, with the exception of four moderate correlations. As discussed previously, there was a moderate correlation between BMI and body image dissatisfaction (r = .549). Other moderate correlations were observed between the following: SSRS (Child) and SSRS (Teacher) (r = .336), SSRS (Teacher) and BVQ (r = -.484), and LSDQ and PVS (r = -.381) (see Table 11). Further, when examining the VIF for each of the predictors, all values were less than 10.

Next, the cross validation or predictive power of the equation was evaluated. The researcher evaluated cross validation by discovering how well the equation generalizes to the population of interest. This was achieved by using the Wherry formula, which computes an adjusted R^2. Obtained adjusted R^2 values are reported below in Table 15.

Subsequently, the researcher evaluated the three assumptions associated with multiple regression: errors in the regression should follow a normal distribution, have

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constant variance or homoscedasticity, and be independent (Stevens, 2002). The

normality assumption was checked by examining a histogram of the standardized

residuals and the normal probability plot of standardized residuals (Stevens, 2002). As

summarized in Table 4 several of the measures used in the current study were

transformed due to violations of normality (positive skewness). For the third research

question, the following measures were transformed: ChEAT 10 23 Item, SSRS (Child),

SSRS (Teacher), PVS, and BVQ. For specific information on the types of

transformations employed, please refer back to Table 4. In order to assess constant

variance, the researcher examined a scatterplot of the standardized residuals versus the

predicted values. The examination of the scatterplot revealed that there was some

patterning/clustering of residuals. This was an indication of heteroscedasticity or a lack of

constant variance. As discussed above, moderate violations of homoscedasticity weaken

the regression analysis, but do not make the analysis invalid (Mertler & Vannatta 2002).

Moreover, the central limit theorem states that with large sample sizes the sampling

distributions of means are normally distributed regardless of the distributions of variables

(Tabachnick & Fidell, 1996). Lastly, the researcher examined independence and

determined that the subjects responded independently of one another. The last step in the

evaluation of the Multiple Regression Model was to check for outliers and influential

data points. First, the researcher looked for outliers on *y* by examining the standardized

residuals. For the third research question, no standardized residuals were greater than 3 in

absolute value. Second, the researcher examined whether there were any outliers on a set

of predictors by investigating the Mahalanobis Distance values. For the third research

question, 76 cases had Mahalanobis Distance values greater than or equal to 12. As a

result, these 76 cases were deleted reducing the total sample size from 581 to 505

(approximately a 13% reduction in sample size). Lastly, the researcher determined

whether there were any influential data points by examining Cook's Distance, Difference

in Fitted Values (DFFITS), and Difference in Betas (DFBETAS). For this analysis, no

Cook's Distance values were greater than 1 and no DFFITS or DFBETAS were greater

than 2.

      The multiple regression analysis was conducted using the enter method to

determine which independent variables (social competence difficulties (SSRS Child and

SSRS Teacher), feelings of loneliness (LSDQ), and victimization by peers (PVS and

BVQ)) were the predictors of eating disturbance. As discussed previously, preliminary

analyses revealed that the effects of racial group needed to be statistically controlled for

in research questions 2 and 3. Further, BMI and body image dissatisfaction were also

controlled for in research question 3. Accordingly, BMI, racial group, and body image

dissatisfaction were block entered first, followed by the enter of the SSRS (Child), SSRS

(Teacher), LSDQ, PVS, and BVQ. Regression results indicate an overall model of four

predictors (racial group, body image dissatisfaction (BIM), social competence (SSRS

Teacher), and peer victimization (PVS)) that significantly predict eating disturbance, $R^2 =$

.15, $R^2_{adj} = .136$, $F(5,496,) = 6.740$, $p < .001$. This model accounted for 15% of the

variance in eating disturbance. When removing the variance explained by BIM, Race,

and BMI (9.2%), the SSRS (Child), SSRS (Teacher), LSDQ, PVS, and BVQ accounted

for an additional 5.8% of the variance, which was statistically significant as indicated by

the *F change* statistic. A summary of the regression model is presented in Table 16. In

addition, bivariate and partial correlation coefficients between each predictor and the

dependent variable are presented in Table 17. A review of the beta weights indicates that racial group contributed the most to the regression model, followed by body image dissatisfaction (BIM), peer victimization (PVS), social skills (SSRS Teacher), body mass index (BMI), loneliness (LSDQ), social competence (SSRS Child), and peer victimization (BVQ) respectively. All predictors had low or weak positive correlations with eating disturbance.

Table 16

Model Summary for Research Question #3

Model	R	R^2	R^2_{adj}	ΔR^2	F_{chg}	p	df_1	df_2
1. BIM, Race, & BMI	.304	.092	.087	.092	16.945	.000	3	501
2. BIM, Race, BMI, SSRS (Child), SSRS (Teacher), LSDQ, PVS, & BVQ	.387	.150	.136	.058	6.740	.000	5	496

Table 17

Coefficients for the Prediction of Eating Disturbance

	B	β	t	Bivariate r	Partial r
BMI	.012	.095	1.895	.210	.085
Race	.126	.137	3.071**	.205	.137
BIM	.130	.134	2.684**	.207	.120
SSRS (Child)	.009	.022	.464	.184	.021
SSRS (Teacher)	.042	.117	2.240*	.226	.100
LSDQ	-.121	-.086	-1.835	-.191	-.082

Table 17 (*continued*).

	B	β	t		Bivariate r
PVS	.041	.119	2.517*	.222	.112
BVQ	-.031	-.005	-.104	-.132	-.005

* p < .05 ** p < .01

Because several of the predictors in research question # 3 were not significant, they may not be valuable predictors to include in the model. As such, the regression analysis was rerun using only the significant predictors (racial group, body image dissatisfaction (BIM), social competence (SSRS Teacher), and peer victimization (PVS)). Regression results indicate that all four of the predictors were again significant in predicting eating disturbance, $R^2 = .12$, $R^2_{adj} = .114$, $F(4,571,) = 19.493$, $p < .001$. This model accounted for 12% of the variance in eating disturbance. A summary of the rerun regression model is presented in Table 18. Moreover, bivariate and partial correlation coefficients between each predictor and the dependent variable are presented in Table 19. A review of the beta weights indicates that peer victimization (PVS) contributed the most to the regression model, followed by body image dissatisfaction (BIM), racial group, and social competence (SSRS Teacher) respectively. In the previous analysis, racial group contributed the most to the regression model, followed by body image dissatisfaction (BIM), peer victimization (PVS), social competence (SSRS Teacher) respectively. Lastly, in the rerun analysis, positive low correlations were found between the four predictors and eating disturbance.

Table 18

Model Summary for Research Question #3 (Non-Significant IVs Excluded)

Model	R	R^2	R^2_{adj}	ΔR^2	F_{chg}	p	df_1	df_2
1. Race, BIM, SSRS (Teacher), & PVS	.347	.120	.114	.120	19.493	.000	4	571

Table 19

Coefficients for Final Model (Non-Significant IVs Excluded)

	B	β	t	Bivariate r	Partial r
Race	.141	.150	3.688**	.195	.153
BIM	.153	.158	4.016**	.176	.166
SSRS (Teacher)	.035	.102	2.470*	.186	.103
PVS	.062	.186	4.628**	.235	.190

* $p < .05$ and ** $p < .01$

CHAPTER V

DISCUSSION

Anorexia Nervosa has the highest mortality rate of any mental illness (Sullivan, 1995). Since the 1950s, epidemiological studies have shown a steady increase in the number of children and adolescents with eating disorders (American Academy of Pediatrics, 2003). The National Eating Disorders Association reports that approximately 10 million females and 1 million males living in the United States of America meet diagnostic criteria for either Anorexia Nervosa or Bulimia Nervosa (National Eating Disorders Association, 2005). The current empirical research base reports average prevalence rates of approximately 0.2-0.5% for Anorexia Nervosa, 1.0-2.0% for Bulimia Nervosa, and 1.5-2.0% for Binge-Eating Disorder (Wilson et al., 2003). Because of the secrecy, guilt, and shame surrounding eating disorders, individuals often attempt to hide their disordered eating behaviors and attitudes from loved ones. As such, many cases are likely unreported and many individuals do not receive appropriate treatment. With regard to young children with maladaptive eating attitudes and behaviors, many will not meet the present diagnostic criteria established for older individuals. When these factors are taken into consideration, the prevalence rates of sub-clinical eating disorders in children are likely much higher. Because many young children fail to meet current diagnostic criteria, the current study examined scores of symptom severity rather than relying diagnostic criteria. Body image dissatisfaction is an additional factor that plays a role in the development of maladaptive eating behaviors and eating disorders (Shisslak et al., 1998). As children get older, their self-perceptions become more accurate and they become more aware of cultural ideals of thinness (Gardner et al., 1997). Because ideal

body sizes are increasingly thinner, children have exhibited greater body image dissatisfaction with age (Gardner et al., 1997; Davison, Markey, & Birch, 2003).

In the current study, the first research question investigated the prevalence and stability of body image dissatisfaction and eating disturbance at ages 9 and 10. It was hypothesized that body image dissatisfaction and eating disturbance would be observed in females as young as age 9 and would increase by age 10. Based on a total sample size of 581 children, results indicate that approximately 11% of the sample scored in the Anorexic range on the Children's Eating Attitude Test (ChEAT) at age 9 and about 7% of the sample scored in the Anorexic range at age 10. These findings compare well with those obtained by Maloney et al. (1989), who found approximately 7% of boys and girls ages 7-13 scored in the Anorexic range. When examining girls separately, Maloney et al. (1989) found 10.6% of fourth graders and 7.3% of fifth graders scored in the Anorexic range, which compares very well with the percentages of 11% (age 9) and 7% (age 10) obtained in the current study. Historically, it has been believed that disruptive eating behaviors increase with age; however, the current study found a reduction of eating disturbance over the course of one year. Further, the ChEAT had good internal consistency at both ages, with a Cronbach's alpha value of .79 at age 9 and .84 at age 10. Similarly to the current study, other studies utilizing the ChEAT have also found greater ChEAT scores among the younger age groups (Maloney et al., 1989; Rolland et al., 1997; Knez et al., 2006). There are several hypothesized reasons for this finding. For example, some researchers have questioned the validity of the ChEAT by suggesting that younger children may have had difficulty comprehending the simplified questions on the ChEAT (Maloney et al., 1989; Rolland et al., 1997). Additionally, Rolland et al. (1997) state that

while many items show face validity, some items may provoke socially desirable responses (e.g. "I cut my food into small pieces") or confuse children by reminding them of occasions when they were ill (e.g. "I vomit after I have eaten"). Despite questionable validity, the ChEAT has demonstrated good test-retest and internal reliability. Thus, young children are responding consistently on the ChEAT. Another hypothesis offered by Maloney et al. (1989) states that younger children may have more maladaptive eating behaviors than older children. As such, these authors emphasize the importance of additional longitudinal studies that investigate this possibility. A third hypothesis is that older children with disruptive eating behaviors indicative of an eating disorder may be more likely to try to conceal their symptoms than younger children (Knez et al., 2006).

The importance of examining maladaptive eating attitudes and behaviors in young children is evident when examining the frequency of symptoms that were reported in the current study. Many of the children reported frequently thinking about wanting to be thinner (22.5% of 9 year-olds and 18.2% of 10 year-olds). Similarly, 21.2% of 9 year-olds and 17.4% of 10 year-olds reported a frequent awareness of the calorie content in the foods that they eat. Also, 16.9% of 9 year-olds and 19.1% of 10-year-olds admitted that they think about burning up energy (calories) when they exercise either often, very often, or always. Binging behavior was endorsed frequently by (9.5% of 9 year-olds and 5.2% of 10 year-olds). Vomiting, as a method of purging, was reported as occurring frequently in 1.9% of the 9 year-olds and 1.4% of the 10 year-olds. In addition, 3.1% of 9 year-olds and 2.9% of 10 year-olds report frequently having the urge to vomit after eating. These findings are similar to other research that supports the presence of disordered eating attitudes and behaviors in young children. For example, Shisslak et al. (1998) found that

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50% of elementary school girls and 66% of middle school girls reportedly attempted to lose weight in the past year. Additionally, results of a demographic and dieting questionnaire administered by Maloney et al. (1989) found that 45% of the children reported a desire to be thinner. When examining the girls separately from boys, that percentage increased to 55%. Further, 37% of the children reported that they have made attempts to lose weight. While these percentages are higher than those obtained in the current study, this study examined a wider age range including children from grades 3-6, with approximately 79% of sixth grade girls reporting a desire to be thinner and 60% reporting that they have tried to lose weight. When Maloney et al. (1989) examined the results of the demographic and dieting questionnaire and the ChEAT they found that 40% of the children indicated using exercise as a means of controlling their weight, 13% of children restricted their caloric intake, 10% binged, and 1% reported vomiting to control weight.

Collectively, this research suggests that disturbed eating attitudes and behaviors begin earlier than adolescence. As younger children are included in study samples, researchers are discovering the presence of maladaptive eating behaviors at younger ages than historically thought. In westernized culture, obesity is considered unhealthy and unattractive. Young children are aware of and exposed to our culture's "thin ideal." With the current focus on decreasing childhood obesity, young children are increasingly told to avoid certain foods, exercise more often, and lose weight. As such, children are more likely to accept the "thin ideal" and engage in maladaptive eating behaviors in an effort to control their weight.

When examining body image dissatisfaction, about 35% of children at age 9 selected Ideal Figures that were smaller than their Real Figures on the BIM. Therefore, approximately 35% of nine-year-olds exhibited a desire to be thinner. At age 10, the percentage of children who wanted to be thinner increased to approximately 38%. This increase is likely due to an increased awareness of society's "thin ideal." Further, this finding supports previous research, which has demonstrated that children show greater body image dissatisfaction with age (Davison et al., 2003; Gardner et al., 1997).

The second part of the first research question investigated whether body image dissatisfaction and eating disturbance vary by racial group or socio-economic status (SES). Due to some inconsistent findings and limited research with children of various racial groups and eating disturbance, it was difficult to develop empirically driven hypotheses in this area. However, based on the findings available, it was hypothesized that girls from the Minority racial group (primarily African American females) would have a lower prevalence of body image dissatisfaction and eating disturbance when compared to Caucasian girls. It was also hypothesized that body image dissatisfaction and eating disturbance would occur at similar rates across SES levels. Lastly, the researcher anticipated that eating disturbance and body image dissatisfaction would increase with age.

When examining the racial groups in the current study, there was a significant difference between the groups with eating disturbance, but not with body image dissatisfaction. More specifically, the Minority group had higher eating disturbance scores on average at both 9 and 10 years of age than the Caucasian group. This suggests that the old adage that eating disturbance occurs primarily among Caucasian females is

not accurate. Studies that examine the maladaptive eating attitudes and behaviors in other racial groups are only now emerging. As more and more studies include Minority groups in their research, it appears that eating disturbance is not restricted to Caucasian females. Further, in the present study, the Minority group primarily consisted of African American girls, which are generally thought to be the most satisfied with their weight and exhibit less eating disorder symptoms. Current research shows that eating disorders, maladaptive eating behaviors, and body image dissatisfaction occur in various racial groups, but we do not yet know whether or how they vary across racial groups (Arriaza & Mann, 2001). Findings from the current study suggest similar rates of body image dissatisfaction between racial groups; however, the Minority group reported more eating disturbance when compared to the Caucasian group. The finding that the Minority group had a significantly higher BMI may be one factor that contributes to the greater eating disturbance observed in this group. Interestingly, when examining eating disturbance, the disparity between the scores of the Minority and Caucasian groups lessened with age.

When exploring the SES groups in the current study, there were no significant differences between the SES groups on either eating disturbance or body image dissatisfaction. Again, this finding shows that the old maxim that eating disturbance and body image dissatisfaction occur primarily in females from mid-upper SES is not correct. The existing research fails to support the notion that eating disorders occur primarily in middle-upper SES individuals (Walcott et al., 2003). Past literature frequently has failed to include individuals from lower SES groups in their subject pools.

When examining age, the current study revealed that there is a significant difference between the age groups with eating disturbance, but not with body image

dissatisfaction. That is, on average, girls at age 9 had higher eating disturbance scores than at age 10. This finding is supportive of current research, which states that symptoms associated with eating disorders are present in young pre-pubertal girls (Bryant-Waugh & Lask, 1995). It is interesting to observe that eating disturbance was significantly higher at age 9 than at age 10. Generally speaking, the findings in the literature show the prevalence of eating disorders increase with age. The onset of puberty is often cited as a precipitating factor for the onset of eating disturbance and eating disorders. In the present study, only 1.4% of the sample began menstruation by age 9 and 9.3% of the girls by age 10 (via parent report). Additionally, overall development or puberty status (growth in height, growth of body hair, skin changes, development of breasts, and menstruation) was also examined. Results showed that puberty status was not a significant predictor of eating disturbance; however, due to the small percentage of girls who began menstruation, the onset of menstruation may not be a useful indicator at this young age. Results from this study speak to the need for further longitudinal research, which follows females over the course of their development.

Finally, the only significant interaction occurred between age and race on eating disturbance. Results show that there is a greater difference between the eating disturbance of the racial groups at age 9 compared to age 10. Also, there was more eating disturbance at age 9 than at age 10 and the gap between the eating disturbance scores and the racial groups narrowed with age. In other words, all racial groups had much closer eating disturbance scores as they got older.

The second research question examined whether body mass index (BMI) and body image dissatisfaction (BIM) predict later eating disturbance. It was hypothesized

that BMI and body image dissatisfaction at age 9 would be significant independent predictors of eating disturbance at age 10.

For the current study, preliminary analyses revealed that the effect of racial group needed to be statistically controlled for in research questions 2 and 3. More specifically, BMI was found to be significantly higher for the Minority group than for the Caucasian group. While the mean score for body image dissatisfaction was greater in the Caucasian group than the Minority group at ages 9 and 10, the difference was not significant at either age. Results of the multiple regression analysis revealed that body mass index, racial group, and body image dissatisfaction were each significant predictors of eating disturbance. These three predictors accounted for 8.5% of the variance in eating disturbance. After removing the variance explained by body mass index and racial group (7.4%), body image dissatisfaction only accounted for an additional 1.1% of the variance, which was statistically significant. Findings from the current study support previous research that shows that a high BMI and body image dissatisfaction are predictive of later eating disturbance. For example, a study by Burrows and Cooper (2002) found that 11-12 year-old overweight girls (BMI $\geq$ 23) had more weight, shape, and eating concerns, dietary restraint, lower ratings of athletic competence, physical appearance, and global self-worth, and higher scores on a measure of depression when compared to girls with normal weight. Further, A longitudinal study by Davison, Markey, & Birch (2003) examined the development of body image dissatisfaction and concerns about weight in girls at ages 5, 7, & 9. The study found that at all ages, girls who reported more weight concerns also had higher body image dissatisfaction. Additionally, results revealed that

early weight concerns and body image dissatisfaction at ages 5 and 7 were associated with more dietary restraint and greater maladaptive eating attitudes at age 9.

The third research question examined whether social competence difficulties, feelings of loneliness, and victimization by peers predict later eating disturbance after controlling for BMI and body image dissatisfaction. For this question, it was hypothesized that social competence difficulties, feelings of loneliness, and being a victim of peer teasing will contribute unique variance to the prediction of eating disturbance after controlling for BMI and body image dissatisfaction.

In the current study, a multiple regression analysis was conducted in order to determine which independent variables (social competence difficulties (SSRS Child and SSRS Teacher), feelings of loneliness (LSDQ), and victimization by peers (PVS and BVQ)) are predictors of eating disturbance. After controlling for BMI, racial group, and body image dissatisfaction, regression results indicate an overall model of four predictors (racial group, body image dissatisfaction, social competence difficulties (SSRS Teacher), and peer victimization (PVS)) that significantly predict eating disturbance. Overall, this model accounted for 15% of the variance in eating disturbance and all significant predictors had low or weak correlations with eating disturbance. This finding supports the assumption in the current eating disorder literature that eating disorders result from numerous factors interacting over the course of the individual's life. In this study, one's racial group (Caucasian versus Minority) contributed the most to the prediction of eating disturbance followed by body image dissatisfaction (BIM), peer victimization (PVS), and social competence (SSRS Teacher). When rerunning the regression analysis with only the significant predictors (racial group, body image dissatisfaction (BIM), social competence

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(SSRS Teacher), and peer victimization (PVS), all four of the predictors were again significant in predicting eating disturbance. Only this time, the model accounted for 12% of the total variance in eating disturbance.

Interestingly, a review of the beta weights indicates that racial group no longer contributed the most to the regression model. Instead, accounts of peer victimization reported by the young girls and racial group membership switched places. Therefore, childhood reports of peer victimization contributed the most to the prediction of eating disturbance. Next, body image dissatisfaction continued to contribute the second greatest amount, racial group the third greatest amount, and social competence the fourth greatest amount.

The importance of peer victimization is consistent with other studies that have found victimization by peers to be a significant predictor of future weight control behaviors, eating disorders, and body image dissatisfaction (Gleason, Alexander, & Somers, 2000; Striegel-Moore, Dohm, Pike, Wilfley, & Fairburn, 2002; Thompson, Coovert, Richards, Johnson, & Cattarin, 1995). It is interesting to note, that the child self-report on the PVS was a significant predictor of later eating disturbance, but the teacher report on the BVQ was not a significant predictor. While these two measures are collected from different informants, they also tap slightly different dimensions of victimization. The nine questions on the PVS (VS subscale) ask the child to record how often a behavior is directed at the participant (e.g. "A kid said he or she was going to hurt me or beat me up" and "A kid told lies about me so other kids wouldn't like me"). Therefore, this measure examines how often children are exposed to physical, verbal, and relational aggression. In contrast, the 3-item Victim Subscale on the BVQ examines

vulnerability to frequent and repeated manipulation and exploitation. As such, findings from the current research study suggest that the actual experience of physical, verbal, and/or relational victimization may be more important than how vulnerable children are to repeated manipulation and exploitation when predicting eating disturbance.

Similarly to other studies, social competence difficulties were found to be a significant predictor of later eating disturbance. Previous studies have discovered that social difficulties are more often observed in individuals with eating disorders compared to individuals without eating disorders (Gillberg et al., 1994; Grissett & Norvell 1992; Herzog, Keller, Lavori, & Ott, 1987; Holt & Espelage 2002; McFall, Eason, Edmondson, & Treat 1999). Moreover, several studies report that individuals with eating disorders display lower degrees of social competence when compared to control subjects (Grissett & Norvell 1992; Herzog et al. 1987; Holt & Espelage, 2002, McFall et al., 1999). Additionally, individuals with eating disorders have reported lower confidence in their social skills and self-reliance in numerous social situations (Wagner, Halmi, & Maguire, 1987). Unfortunately, difficulties in the social arena have been linked to poorer treatment outcomes (Gillberg et al., 1994). In the current study, the teacher report of social competence was a significant predictor of eating disturbance, but the child self-report was not. While both versions have demonstrated good reliability in the current study (Cronbach's alpha of .94 and .88 respectively), the teacher version may be a more valid report. Considering, teachers have the opportunity to compare a particular child's social skills with that of her peers. Also, children may respond to items addressing their social skills in socially desirable ways, thereby inflating their scores.

In the current study, childhood reports of loneliness were not a significant predictor of future eating disturbance. While little research has been conducted with children, a study by Troop and Bifulco (2002) found that women with eating disorders reported significantly more feelings of loneliness, shyness, and inferiority in adolescence but not in childhood than women with out eating disorders. Therefore, preliminary results suggest that loneliness may not become a significant risk factor for eating disturbance until adolescence.

Finally, results from the third research question reveal that BMI was no longer a significant predictor of later eating disturbance after additional predictors were examined. Past research has shown that peer victimization is strongly associated with body image dissatisfaction and that body image dissatisfaction in turn is closely associated with eating disturbance (Lunner et al., 2000; Thompson et al., 1995). Further, peer victimization has been found to mediate the relationship between high BMI and body image dissatisfaction (Lunner et al., 2000; Thompson et al., 1995). As a result, the addition of peer victimization as a predictor may explain why BMI was no longer a significant predictor of eating disturbance.

<center>Strengths and Limitations of Study</center>

Overall, the present study exhibits several strengths. For instance, the current study utilized a large-scale community sample of girls assessed longitudinally (from age 9 to age 10). Secondly, this study examined a younger sample than typically focused on in the eating disorder literature. An additional strength is the study's inclusion of a more racially diverse sample from various levels of socio-economic status. This study also addressed the issue of recall bias by obtaining prospective reports from all measures. In

many cases, the young girls were permitted to report their subjective experiences via self-report measures. In order to increase the validity of the study, data were collected from multiple informants on several measures. An additional advantage to this study is its attempt to address problems associated with the validity of current eating disorder criteria in children by examining scores of symptom severity rather than relying on diagnostic criteria that may be inappropriate.

Conversely, the current study also had several limitations. For example, according to census data, the lower income neighborhoods were oversampled. As such, the sample utilized in the current study may be considered "at-risk." This factor should be taken into consideration when generalizing the results of this study. Secondly, while this study examined a more racially diverse sample than typically focused on in the eating disorder literature, the racial groups could not be examined separately and needed to be collapsed into two groups: Caucasian and Minority. As a result, the researcher was unable to examine similarities and differences between the various racial groups. A third limitation surrounds the use of the Body Mass Index (BMI) as a measure of weight status. According to the Centers for Disease Control (CDC; 2003) the BMI compares well with measures of body fat taken in laboratory settings; however, the BMI does not take into account one's muscle mass. Consequently, one could receive a high BMI without actually being overweight or obese. Fourth, the current study did not control for pre-existing eating difficulties. If the variance of prior eating difficulties was accounted for, it is possible that the correlations between the predictors and the criterion may have been reduced or no longer significant. Fifth, it is possible that girls of different weights may report eating disturbance differently. More specifically, girls who are underweight may

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try to hide restrictive eating thoughts/behaviors, while girls who are overweight may feel that it is socially desirable for them to report more restrictive eating thoughts/behaviors (e.g. "I think a lot about wanting to be thinner"; "I stay away from eating when I am hungry"; "I eat diet foods", etc.). Lastly, the current study was only able to examine the girls over a period of one year rather than following the girls over the course of their development.

<center>Implications of Findings</center>

There are several important implications that may be drawn from the findings of the current research study. While eating disorders are generally thought to begin in early adolescence or early adulthood, this study found maladaptive eating behaviors to be present in girls as young as age 9. As such, we must be careful not to overlook the presence of eating disturbance in young girls. We must also recognize that the onset of puberty is not a necessary precondition for the development of eating disturbance. If we are able to recognize maladaptive eating behaviors early on, we may be able to prevent the problems from becoming more severe. Further, early detection of eating disturbance is related to a better treatment prognosis. If future studies validate the finding that eating disturbance occurs in young girls, policymakers may wish to reexamine the current diagnostic criteria for its appropriateness for young children.

In addition to the stereotype that eating disorders begin no earlier than adolescence, we also have historically viewed eating disorders as predominantly occurring in Caucasian, female adolescents from middle-upper SES levels. For example, some research has shown that racial stereotypes may interfere with the detection of eating disorders in minority groups. More specifically, a study by Gordon et al. (2002)

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investigated whether Caucasian, Hispanic, and African American undergraduate students would be less likely to identify maladaptive eating behaviors in a fictional female whose symptoms remained the same, while her demographic profile changed. Results revealed that the fictional female's race influenced the detection of the maladaptive eating behaviors. Moreover, when the girl was Caucasian, 93% of the subjects recognized the symptoms. In contrast, when she was portrayed as African American or Hispanic, only 79% recognized the maladaptive eating patterns. Results from the current study show that eating disturbance occurs in individuals from minority groups and varying SES levels. Therefore, it is important for family, friends, and paraprofessionals to be cognizant of historical stereotypes and recognize that eating disturbance occurs in individuals from various racial groups and SES levels.

Findings from the current study also support the premise that eating disturbance results from numerous factors, which interact of the course of the individual's life. Results from the current study indicate that victimization by peers, body image dissatisfaction, racial group membership, and social competence difficulties are significant predictors of eating disturbance in young girls. Therefore, policymakers should advocate for the implementation of evidence-based bullying prevention and social skills training programs in our schools. The current study and past researchers have identified that body image dissatisfaction plays a role in the development of eating disturbance. As a result, we must teach our children to be critical viewers of the media and to be comfortable with their own body weights and shapes. Additionally, we must foster the development of healthy self-esteem and body image and break the connection between body size and self-worth. Consequentially, we must model healthy eating

behaviors for our children. Lastly, while Anorexia Nervosa has the highest premature mortality rate of any psychiatric illness, it has consistently received inadequate research funding (National Eating Disorders Association, 2005). Moreover, the National Eating Disorders Association (2005) reports that while the prevalence of Eating Disorders is greater than Alzheimer's disease and Schizophrenia, Eating Disorders have received considerably less funding by the National Institutes of Health. Therefore, it is important for activists to continue to advocate for increased funding for Eating Disorder research.

Future Research

Based on the results and implications drawn from the current research study, there are several areas surrounding eating disturbance and eating disorders that will benefit from future research studies. First, it is recommended, that future studies focus on including more diverse samples. These samples should include individuals from various racial groups and SES levels when examining body image dissatisfaction and eating disturbance. Additionally, results from the current study show that body image dissatisfaction and eating disturbance occur as young as age 9. Moreover, the onset of puberty is not a necessary precondition for the development of maladaptive eating behaviors. Therefore, future studies should continue to include young girls in their samples and follow the girls over the course of their development. When considering more diverse participants, studies should consider examining body image dissatisfaction and eating disturbance in males. Like females, males experience cultural pressure to develop and maintain a certain body physique. Further, young males often participate is sports that require a certain weight and/or body shape (e.g. wrestlers and jockeys). Present research estimates that approximately 5-10% of eating disorder patients from

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clinical samples are male (Hoek, 1995). Furthermore, in samples of children, the proportion of boys with eating disorders is higher than one would expect based on adolescent and adult rates (Bryant-Waugh & Lask, 1995; Doyle & Bryant-Waugh, 2000).

In addition to including more diverse samples, future research should continue to examine other potential risk factors for the development of body image dissatisfaction and eating disturbance. While the current study found racial group, body image dissatisfaction, social competence difficulties, and victimization by peers to be significant predictors of eating disturbance at age 10, these variables only accounted for a small percentage of the total variance in eating disturbance, suggesting that there are other factors that contribute to the development of eating disturbance.

Also, it is hypothesized that the prevalence of Bulimia Nervosa in prepubertal girls is low compared to adolescent and adult rates (Bryant-Waugh & Lask, 1995; Thelen et al., 1992); however, the current study found binging behavior was endorsed frequently by 9.5% of 9 year-olds and 5.2% of 10 year-olds, vomiting by 1.9% of the 9 year-olds and 1.4% of the 10 year-olds, and the urge to vomit after eating by 3.1% of 9 year-olds and 2.9% of 10 year-olds. These findings suggest a need to further examine the presence of symptoms associated with Bulimia Nervosa in younger female samples.

Quite often, individuals with eating disorders face additional mental health difficulties including, mood disorders and anxiety disorders (Walsh & Cameron, 2005). In fact, Walsh and Cameron (2005) state that over 70% of individuals across age groups with anorexia nervosa and 75% of individuals with bulimia nervosa also have other comorbid mental health difficulties. Also, it is possible that the presence of depression and anxiety could affect the results of the current study. For example, an individual who

is depressed and/or anxious could have difficulties in the social domain, and may receive low ratings on a measure of social competence. Future research may wish to investigate the role co-occurring difficulties such as depression and anxiety play on the development of eating disturbance and eating disorders in young children.

Lastly, future research may wish to investigate whether children of different weight status groups (e.g. fall into different BMI categories) report varying levels of body image dissatisfaction and eating disturbance. It is quite possible that the cognitive processes of girls who fall into the BMI categories of "At Risk of Overweight" or "Overweight" who report body image dissatisfaction and restrictive eating may be different from the cognitive processes of girls that fall into the BMI categories of "Healthy Weight" or "Underweight." The latter group needs to either maintain their current weight or gain weight and should report less body image dissatisfaction and eating disturbance than girls with BMI scores at the higher ranges. On the other hand, girls at the higher BMI ranges may report more body image dissatisfaction and restrictive eating behaviors that may be viewed as more socially acceptable ways to lose weight. For example, one question on the ChEAT states, "I stay away from eating when I am hungry." It may be considered less maladaptive for a girl who is overweight to endorse this item than a girl who is of average weight or underweight. As such, it is important for future studies to determine whether there are significant differences between the body image dissatisfaction and eating disturbance reported by girls of varying weight categories.

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