VALIDATING A MODEL OF RISK FACTORS ASSOCIATED WITH EATING DISORDER RISK IN ADOLESCENTS

DISSERTATION

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By

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ABSTRACT

Research has demonstrated that an estimated 65% of adolescent females and 50% of adolescent males are participating in behaviors in which to control their weight (Lawrence and Thelen, 1995). The purpose of this study was to examine the connection of possible correlates (body mass index, teasing, depression, family norms, self-esteem, and perfectionism) and their link to eating disorder risk. Eating disorder risk was measured using the Eating Disorder Risk Composite score of the Eating Disorder Inventory-3. The study was conducted with a convenience sample of 215 high school students, who ranged in age from 15-18 years old and were from varying ethnic backgrounds. It was anticipated that that a difference would exist between males and females in terms of Eating Disorder Risk Composite score. In addition, based upon the correlates used in this study, the strongest predictor of eating disorder risk would be determined for both males and females. Correlates were assessed using a variety of assessment tools, such as the Eating Disorder Inventory-3, the Reynolds Adolescent Depression scale, and the Perception of Teasing scale.

Results of the study indicate that males and females differ on their Eating Disorder Risk Composite scores based upon all three norm groups (Anorexia Nervosa Restrictive Type, Anorexia Nervosa Binging/Purging Type, and Bulimia Nervosa). Of the students surveyed 50.60% fell into the clinical range of the Eating Disorder Risk
Composite based upon the norms for Anorexia Nervosa Restrictive type, 37.40% fell into the clinical range of the Eating Disorder Risk Composite based upon the norms for Anorexia Nervosa Binging/Purging Type, and 13.50% fell into the clinical range of the Eating Disorder Risk Composite for the norms based upon Bulimia Nervosa. Regression analyses were conducted to find the best predictor of eating disorder risk for each norm group. Results of all regression analyses revealed that the best predictor of eating disorder risk was self-esteem and family norms. The second best predictor of eating disorder risk was self-esteem.
Dedicated to my mother and father
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>ii</td>
</tr>
<tr>
<td>Dedication</td>
<td>iv</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>v</td>
</tr>
<tr>
<td>Vita</td>
<td>vi</td>
</tr>
<tr>
<td>List of Tables</td>
<td>ix</td>
</tr>
<tr>
<td>1. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>2. Methods</td>
<td>28</td>
</tr>
<tr>
<td>3. Results</td>
<td>42</td>
</tr>
<tr>
<td>4. Discussion</td>
<td>68</td>
</tr>
<tr>
<td>5. References</td>
<td>128</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Table 1</td>
<td>Descriptive Statistics for Demographics</td>
</tr>
<tr>
<td>Table 2</td>
<td>Descriptive Statistics for Year In School</td>
</tr>
<tr>
<td>Table 3</td>
<td>Descriptive Statistics for Race/Ethnicity</td>
</tr>
<tr>
<td>Table 4</td>
<td>T Scores for EDRC subscales of the EDI</td>
</tr>
<tr>
<td>Table 5</td>
<td>Descriptive Statistics for Independent Variables</td>
</tr>
<tr>
<td>Table 6</td>
<td>Percentage of Students at Clinical Levels for each EDRC</td>
</tr>
<tr>
<td>Table 7</td>
<td>Eating Disorder Risk Composite scores for each group by gender</td>
</tr>
<tr>
<td>Table 8</td>
<td>Fisher’s Exact Test for each subscale of the EDRC ANRT</td>
</tr>
<tr>
<td>Table 9</td>
<td>Fisher’s Exact Test for each subscale of the EDRC ANBPT</td>
</tr>
<tr>
<td>Table 10</td>
<td>Fisher’s Exact Test for each subscale of the EDRC BNT</td>
</tr>
<tr>
<td>Table 11</td>
<td>Correlation Matrix of EDRC ANRT (total sample)</td>
</tr>
<tr>
<td>Table 12</td>
<td>ANOVA for EDRC ANRT (total sample)</td>
</tr>
<tr>
<td>Table 13</td>
<td>Correlation Matrix for EDRC ANBPT (total sample)</td>
</tr>
<tr>
<td>Table 14</td>
<td>ANOVA for EDRC ANBPT (total sample)</td>
</tr>
<tr>
<td>Table 15</td>
<td>Correlation Matrix for EDRC BNT (total sample)</td>
</tr>
<tr>
<td>Table 16</td>
<td>ANOVA for EDRC BNT (total sample)</td>
</tr>
<tr>
<td>Table 17</td>
<td>Correlation Matrix of EDRC ANRT (male sample)</td>
</tr>
<tr>
<td>Table 18</td>
<td>ANOVA for EDRC ANRT (male sample)</td>
</tr>
<tr>
<td>Table 19</td>
<td>Correlation Matrix for EDRC ANRT (female sample)</td>
</tr>
<tr>
<td>Table 20</td>
<td>ANOVA for EDRC ANRT (female sample)</td>
</tr>
<tr>
<td>Table 21</td>
<td>Correlation Matrix for EDRC ANBPT (male sample)</td>
</tr>
<tr>
<td>Table 22</td>
<td>ANOVA for EDRC ANBPT (male sample)</td>
</tr>
<tr>
<td>Table 23</td>
<td>Correlation Matrix of EDRC ANBPT (female sample)</td>
</tr>
<tr>
<td>Table 24</td>
<td>ANOVA for EDRC ANBPT (female sample)</td>
</tr>
<tr>
<td>Table 25</td>
<td>Correlation Matrix for EDRC BNT (male sample)</td>
</tr>
<tr>
<td>Table 26</td>
<td>ANOVA for EDRC BNT (male sample)</td>
</tr>
<tr>
<td>Table 27</td>
<td>Correlation Matrix for EDRC BNT (female sample)</td>
</tr>
<tr>
<td>Table 28</td>
<td>ANOVA for EDRC BNT (female sample)</td>
</tr>
</tbody>
</table>
CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

In the December 5, 2005 issue of Newsweek Magazine, a story was written illustrating the effects that anorexia nervosa can have on a child and their family. The child that was featured in the article was just 10 years old. The child had always been considered to be slim, but over a span of a few weeks, the child began to engage in behaviors to limit her food intake and refused any form of coercion from anyone, including professionals. After many attempts to get the child to eat, her parents put her in a residential facility that specializes in the treatment of young children with eating disorders (http://www.msnbc.msn.com/id/10219756/site/newsweek/from/ET/).

Since the 1960’s, the number of individuals who have been diagnosed with an eating disorder has doubled and eating disorders now have the highest mortality rate of any mental illness today (Daw, 2001). The issue of eating disorders becomes even more problematic by the presence of disordered eating behaviors or eating disorder risk. Many individuals will not have a clinical diagnosis of an eating disorder as defined by the DSM-IV or the ICD-10, but the number of individuals who have disordered eating behavior or eating disorder risk is on the rise (Phelps & Bajorek, 1991).

In addition, the age in which one begins to engage in dangerous behavior has decreased. Children as young as seven are beginning to diet (Daw, 2001) and those as
young as five are worrying about becoming fat and are experiencing issues with regard to their body image (Feldman, et al., 1998 as cited in Shapiro & Newcomb, 1997). These issues alone demonstrate the need to examine eating disorder risk, early intervention and prevention programs that aim to reduce this incidence.

Approximately 8 million people in America suffer from some type of eating disorder. Although eating disorders are predominantly restricted to women, about 10% of males suffer from a clinical eating disorder (Cumella, 2003). Most recently, eating disorders and disordered behaviors are starting to cross into gender and racial/cultural groups that were once thought to be protected from such disorders (Phelps & Bajorek, 1991). With the rising levels of prevalence among various groups, it is imperative that early intervention be utilized in order to assist in lessening the impact that eating disorders will have in terms of long-term outcome. Examination of the psychological correlates of eating disorders and eating disorder risk is necessary to develop a better understanding of the problem. Correlates can include levels of self-esteem, family environment (Littleton & Ollendick, 2003), levels of depression (Casper, 1998), teasing (Thompson, Coover, Richards, Johnson, & Cattarin, 1995), and body image/body dissatisfaction (Rierdan & Koff, 1997).

As many as 65% of adolescent girls and 50% of adolescent boys are estimated to participate in activities to control their weight (Lawrence & Thelen, 1995). Weight controlling behaviors have currently been identified in children that are considered to be in the pre-adolescent years, demonstrating that eating disorder symptomology is starting at a younger age than was thought of previously (Thelen, Powell, Lawrence, & Kuhnert, 1992). Young people who engage in unhealthy behaviors in which to control their
weight, may place themselves at risk for the development of disordered patterns of eating behaviors (Neumark-Sztainer, Wall, Story, & Perry, 2003).

The issue of eating disorders is typically found to be more severe with females who are in their adolescent and young adult years (Shapiro & Newcomb, 1997), as compared to other groups. The adolescent years appear most significant in terms of impact due to the emergence of puberty. As children begin to experience puberty, their bodies go through significant changes. Such changes, as the development of breasts in females and voice changing for males can have a significant impact on an individual’s body image. Not only is an adolescent’s body changing in many ways, but there is a lack of control over these changes. For some, development may come quicker or slower than others, making one uncomfortable with these changes and impacting how an adolescent views themselves, when compared to their peers. In some cases, many adolescents will believe that they are fat even though their weight-height ratio is in the normal range. Many of these individuals are participating in behaviors to control their weight. Twenty-five percent of adolescent girls have clinical levels of body dissatisfaction, although the risk factors have not been thoroughly explored (Stive & Whitenton, 2002, as cited in Presnell, Bearman, & Stice, 2004).

The DSM-IV (2000) specifies three types of eating disorders including Anorexia Nervosa, Bulimia Nervosa, and Eating Disorder Not Otherwise Specified. The diagnostic criteria for anorexia nervosa (307.1) states that the individual must have a refusal to maintain weight at or above a minimally normal weight for age and height, an intense fear of gaining weight or becoming fat, a disturbance in the way that they experience their body, and experience amenorrhea. The diagnostic criteria for bulimia nervosa
(307.51) states that an individual must have repeated periods of binge eating, which involves eating an amount of food that is considered to be much larger than most would eat in a similar period of time, as well as a sense of a lack of control during this time. In addition, they must engage in an activity in which to prevent gaining weight, such as self-induced vomiting, use of laxatives, or enemas. The DSM-IV also specifies diagnostic criteria for Eating Disorder Not Otherwise Specified. This disorder states that the individual meets the criteria for anorexia nervosa, but may have regular periods or the individual’s weight is within the normal range. The individual may meet the criteria for bulimia nervosa, but the behavior of binging and purging occurs less than twice a week, the individual may participate in such activities after eating a small amount of food, or may chew and spit out large amounts of food. The full criteria as set forth by the DSM-IV (2000) for these eating disorders can be found in Appendix A.

Prognosis/Outcomes/Treatment Effectiveness

The recovery rate for individuals who suffer from an eating disorder is very bleak. For those who suffer from anorexia nervosa, an estimated 50 percent of such individuals have reached the point of recovery (Patton, 1989 in Felker & Stivers, 1994; Klein & Walsh, 2003). Anorexia nervosa can lead to death in one out of every 30 who suffer from the disorder. Klein and Walsh (2003) state that 5 to 10 percent of those individuals who have anorexia nervosa die from complications that are associated with the disorder, including suicide. Approximately 33 percent will have partial recovery, but will continue to have some disordered symptomology (Steinhausen, 2002 as cited in Klein & Walsh, 2003). For bulimics, many of those who make their way to recovery eventually relapse. Keel and Mitchell (1997) reviewed 88 published outcome studies for individuals with
bulimia nervosa, 6 months after the initial evaluation of the disorder. Several studies were not included in the review. In total, 60 studies, with a total of 2,194 women with a diagnosed case of bulimia nervosa were reviewed. Results revealed that 5 to 10 years after the original onset of the disorder, 50 percent had recovered completely, 20 percent still met the standards of a clinical diagnosis, and 30 had partial recovery while still engaging in disordered behavior. Short effects of treatment give the appearance of recovery, but do not always lead to complete recovery in the long-term (Keel & Mitchell, 1997 as cited in Klein & Walsh, 2003).

Treatment of an eating disorder is often a complex task that requires a combination of medical care, nutritional counseling, psychological services, and the possibility of medication. Hospitalization may be required if the individual’s case is severe and may cause immediate harm to that person (NIMH, 2001). The National Institute of Mental Health, in their booklet that provides information about eating disorders, suggests several areas that need to be addressed when dealing with eating disorders. For individuals with anorexia nervosa, restoring body weight, treating the psychological instability associated with low self-esteem and other personal issues, and rehabilitation of the individual toward recovery are of utmost importance. The most important area of concern when treating individuals with bulimia nervosa is halting the cycle of binging and purging (NIMH, 2001). Treatment for bulimia nervosa also includes developing healthy eating behaviors, psychological interventions, such as individual or group therapy, and medication if needed. References for this booklet were listed on the NIMH web site.
Overall, when treatment modalities have been compared, inpatient hospitalization appears to be the most effective (Levitt & Sansone, 2003). Many inpatient facilities focus on controlling the symptoms, re-feeding, as well as helping the individual to learn ways in which to prevent the disordered behavior from occurring in the future (Stein, 2004). A pattern of healthy eating needs to be developed and treatment of any comorbid conditions needs to be addressed as well. Medications, such as antidepressants may work well for patients who have bulimia nervosa, especially when they have comorbid conditions, such as depression or anxiety. Treatment in an inpatient setting is often limited to stabilization and usually occurs for only several days (Levitt & Sanson, 2003). Partial hospitalization or day treatment programs are often used when patients are not in a state of crisis. They will usually go to the clinic or hospital during the day where they will participate in a variety of therapeutic activities and will return to their homes and families in the evening and weekends. (Stein, 2004). Both types of treatment are costly, although partial hospitalization and day treatment programs are more cost-effective and may have more coverage provided by insurance companies. Treatment of an eating disorder, although successful at times, remains ineffective for many, it is not cost-effective based upon the rising costs of hospitalization, and is often limited to those who can afford it (Levitt and Sansone, 2003).

Need for Early Intervention/Identification

With the bleak rates of recovery and the rise of prevalence rates associated with eating disorders, the most beneficial and cost-effective form of treatment for disordered behaviors and eating disorders is early intervention and prevention. The early academic years appears to be an important time to make the most influence and thus prevent
disordered behaviors and thought processes from developing into eating disorders (Patton, 1989, as cited in Felkers & Stivers, 1994). Providing prevention and intervention services to individuals when they are still young in age is extremely important. At an early age, they have yet to fully develop negative thought processes regarding their self-esteem and body image (Klein & Walsh, 2003).

When considering early interventions for eating disorders, etiological factors must be explored (Phelps & Bajorek, 1991). Awareness of the symptoms associated with eating disorders, can assist in preventing the development of disordered eating behaviors or eating disorders from occurring in the future. Etiology associated with disordered eating behaviors can include a variety of influences, although direct causality has not been determined (Klein & Walsh, 2003). Such influences include genetics, personality traits, sociocultural influences, body image/body dissatisfaction, previous dieting patterns, as well as comorbid psychological conditions. By identification of factors that cause body dissatisfaction, early intervention programs can prevent an individual from developing symptomology related to disorder eating behaviors (Phelps, Sapia, Nathanson, and Nelson, 2000). The purpose of this study was to examine the correlates associated with eating disorder risk, as way of providing a basis for prevention and intervention.

When reviewing the literature on correlates for eating disorder risk, Garner (2004) conceptualizes a model of risk factors that can be helpful when organizing the current research. Eating disorders stem from 3 risk areas including predisposing factors, precipitating factors, and perpetuating factors. Predisposing factors include individual, familial, and socio-cultural variables, such as biology, genetics, temperament, and
personality which increase one’s chances of developing eating disorder risk. Precipitating factors such as stressors and dieting begin the cycle of disordered eating behaviors and attitudes that aim to increase self-control and self-worth. Perpetuating factors assist in the continuation of the symptoms of the disorder after it manifests itself and are related to such things as starvation which results in chemical changes in the body that may perpetuate the disordered behavior

Predisposing Factors

*Biology/Genetics*

Usually anorexia nervosa is considered to stem from psychological, family, and socio-cultural influences, but recently researchers have stated that there is a genetic link associated with anorexia nervosa. Tori DeAngelis (2002) stated that researchers have discovered a genetic linkage to anorexia nervosa on chromosome 1. If an eating disorder is seen among two or more family members, the biological trait has a greater than chance of existence to be linked to the development of anorexia nervosa, meaning that it is more likely to occur when two or more family members have an eating disorder. Further research of DNA samples of family members that have anorexia nervosa have demonstrated that there are certain genetic markers associated with anorexia nervosa (DeAngelis, 2002). Such research must be interpreted carefully, as research has not shown that a direct link is associated with eating disorders, but susceptibility exists on chromosome 1 when comparing multiple family members together. Research of monozygotic twins has shown a higher association rate of eating disorders than were found with dizygotic twins (Klein & Walsh, 2003). Although knowing that a family member has or had an eating disorder does not mean that an eating disorder is
predestined for another family member, this information can be helpful when examining early intervention programs. If it is known that a child’s family has a history of eating disorders or disordered eating behaviors, that child can be involved in programs in which to limit the likelihood of developing problems later in life.

**Dieting**

Patterns of dieting have shown a degree of association with the development of eating disorders. In a Canadian study that examined both males and females between the ages of 9 and 14 years old, the act of dieting was ineffective in helping an individual to lose weight, but actually may be linked to an increase in weight, through a constant cycle of limiting food intake, followed by binging (McVey, Tweed, & Blackmore, 2004). 10.5% of pre and early adolescent girls had scores that were in the clinical range on the Children’s Eating Attitudes Test (ChEAT). Further comparisons with this study revealed that age had a significant impact and that 14-year old girls had much higher scores on the ChEAT than any other group, indicating that age is an important factor to consider when examining risk factors associated with eating disorders and knowing when to intervene (McVey, Tweed, & Blackmore, 2004). Being aware of children who may be engaging in early patterns of dieting gives educators and researchers an opportunity to intervene early before these patterns manifest themselves into disordered eating behaviors or eating disorders.

**Temperament and Personality**

Researchers have shown that certain types of characteristics may predispose some people more to the development of an eating disorder versus others. Characteristics such as perfectionism, obsessiveness and a high level of persistence are more common in
individuals who have anorexia nervosa (Klein & Walsh, 2003). Similar characteristics have also been found in those who have bulimia nervosa. Bulimics often have additional characteristics associated with impulse control, as well as aggressive behavior toward oneself (Klein & Walsh, 2003). Additional studies revealed characteristics such as low self-esteem and poor interoceptive awareness (Zaider, Johnson, & Cockell, 2002), as well as avoidant and compulsive behavior (Pryor & Wiederman, 1998). Strober (1981) found that those with anorexia nervosa were more self-regulating and were more reserved in terms of their levels of emotions.

Socio-cultural factors

Socio-cultural factors such as the media can have a strong impact on the development of eating disorders and disordered eating behaviors. The media has often been highly associated with perpetuating the myth of the ideal body to young men and women all over the world, thus having an indirect impact on the development of eating disorders and disordered eating behaviors. Current research has demonstrated that in non-industrialized countries, anorexia nervosa still exists, which refutes the idea that eating disorders are limited to westernized cultures (Felkers & Stivers, 1994). This refutation proposes that there must be some other factors aside from cultural influences that play a role in the development of eating disorders.

Speculation exists that the family environment plays a large role in the development of eating disorders. Felkers & Stivers (1994) have stated that the dynamic of the family relationships has been documented as playing a major role in prevalence and outcomes of eating disorders and disordered eating behaviors. Leon, Fulkerson, Perry, and Dube (1994) conducted a study on the influence of family and school behaviors on
future risk of eating disorders. The study was conducted with 181 adolescents (45 males and 136 females), grades 7-10, in a predominantly Caucasian middle-class suburban school district. Results found that dysfunctional family systems, as well as communication within the family, may have an influence on the development of eating disorders for some individuals. In addition, parental mental conditions can also be influential. Since some mental conditions may be genetically liked, it is possible that there could be a genetic link for an eating disorder as well within the same family (Leon, Fulkerson, Perry, & Dube, 1994).

Resiliency/Developmental Approach to Eating Disorders

Prior research has focused mainly on risk factors associated with eating disorders. Just as family environment and certain psychological correlates, such as low self-esteem and depression may serve as factors contributing to the development of eating disorders, these factors may also serve as a way to protect the individual from the development of a clinical case of anorexia nervosa or bulimia. A positive relationship that exists within families can serve to provide social support for a child, help to develop better coping strategies, as well as a better integrated identity for the child (Littleton & Ollendick, 2003).

The development of coping skills and self-efficacy can be imperative to the reduction of the development of eating disorders and unlike certain long-term treatment procedures that occur after the detection of the disorder, coping skills and self-efficacy can be taught and thus lessen the risk of development in the future (Phelps, Sapia, Nathanson, & Nelson, 2000). Increasing levels of self-esteem, as well as the development of coping skills, can enhance an individual’s resistance to the stress they experience in
certain situations (Albee, 1996 as cited in Phelps, Sapia, Nathanson, & Nelson, 2000). Phelps, Sapia, Nathanson, and Nelson (2000) conducted an empirically supported eating disorder program with 530 female middle school students. The program was incorporated into the Home and Career class curriculum and included a pre and post experimental and control design. Results of the prevention program demonstrated that an increase in self concept and competence may lead to a decrease in Body Dissatisfaction and Drive for Thinness, as measured on the Eating Disorder Inventory. This increase was correlated with the participation in an eating disorder prevention program that focused on increasing levels of self-esteem, as well as feelings of personal competence. Results of the study demonstrated higher levels of significance when conducted with high school aged girls versus middle school aged girls.

The integration of a positive self-concept that promotes good health and well-being appears to be paramount in terms of resiliency for eating disorders (Steck, Abrams, & Phelps, 2004). By focusing on protective factors, as opposed to the negative risk factors, prevention may be possible to a greater degree. Steck, Abrams, & Phelps (2004) conducted a study that examined self-concepts, as measured with the Multidimensional Self Concept Scale. Results indicated that a negative correlation existed between the self-concept areas and the incident of disordered eating behaviors. Increasing positive feelings about self power and appearance, led to a decrease in disordered behavior. Steck, Abrams, and Phelps’ model focused on three distinct units that were necessary to resiliency and treatment of eating disorders, which included subjective well being, positive individual traits, and positive institutions...
Protective and Risk Factors

The development of eating disorders and disordered eating behaviors has often been linked to a variety of risk factors, yet these risk factors may also act as protective factors for various individuals. Research on individuals who have been diagnosed with anorexia nervosa or bulimia nervosa indicates that certain psychological characteristics are central to the disorder. In addition to certain psychological characteristics, eating disorders can be affected by mediating risk factors such as negative body image/body dissatisfaction (Littleton & Ollendick, 2003), low self-esteem, unhealthy eating behaviors, family environment (Neumark-Sztainer, Wall, Story, & Perry, 2003), and depression (Casper, 1998). On the other side, higher levels of self-esteem, positive body image, and strong family connections can serve as a way to protect an individual from developing disordered eating habits that can further lead to an eating disorder. Exploration of these factors is critical to the development of prevention and intervention programs for young individuals.

Precipitating Factors

Self-Esteem and Self-Concept

The terms self-esteem and self-concept have often been used interchangeably within research causing much confusion as to the nature of the constructs. The lack of agreement in terms of definition and construct structure has led many to misrepresent both terms in the literature (Blyth & Trager, 2001), yet some interpret the two constructs as being very distinct from each other (King, 1997). Some researchers have stated that self-esteem, as an evaluative concept, plays an important role in the structure of self-concept (Rogers, 1981; Tesser & Campbell, 1983, as cited in Campbell, 1990). The
Miriam-Webster Dictionary (2001) defines self-concept as a “mental image one has of oneself”. Self-esteem is the difference between how an individual views themselves and the how an individual would like to be (King, 1997). This difference can be in either a positive or negative direction depending on the individual viewpoint in relation to the difference. The Miriam-Webster Dictionary (2001) defines self-esteem as “a confidence and satisfaction in oneself”. Unlike self-esteem, which delineates a negative or positive view, self-concept is more a concrete view of how a person views themselves.

Researchers support a connection between self-esteem/self-concept and disordered eating behaviors. Low levels of self-esteem can lead to increased levels of body dissatisfaction, as well as increased levels of ineffectiveness (Littleton & Ollendick, 2003). Ineffectiveness is considered to be related to feelings of loss of control, worthlessness, and high levels of inadequacy (Garner, 1991). Self-esteem plays an important role not only in the development of dieting and disordered eating behaviors, but also in the perpetuation of inaccurate perceptions that an individual has of their body (Friedstad & Rise, 2004). Thomas and Ricciardelli (2000) conducted a study that examined the role that age, Body Mass Index, and self-concept had in relation to disordered eating and levels of body dissatisfaction. The study consisted of 202 children (97 females and 105 males) in grades 3 and 4. The primary schools were located near Melbourne, Australia. 85% of the study population was Caucasian and 15% were from non-English backgrounds. Results of the study indicted that self-concept was a strong predictor of dieting in girls and General Self-Concept was correlated with levels of restricting and purging as defined by the ChEAT (Children’s Eating Attitudes Test). Additional studies have continued to demonstrate that deficits in self-concept can be a
contributory factor in relation to the development of disordered eating behaviors and
eating disorders (Jacobi, Paul, Zwaan, Nutzinger, & Dahme, 2004).

Depression

Individuals, who have eating disorders, often have comorbid psychological
conditions. Within the adolescent and adult population that have an eating disorder, it has
been reported that the rates of concordance for Axis I disorders can be as high as 80-97%
(Zaider, Johnson, & Cockell, 2002). Issues, such as depression, negative affect, poor
interoceptive awareness, and perfectionism, may precede the development of eating
disorders. Depression appears to be a major issue in regard to being a precursor to the
development of an eating disorder or disordered behavior and results from a study
conducted by Braun et al. (1994, as cited in Zaider, Johnson, & Cockell, 2002)
demonstrated that a majority of patients that were diagnosed with bulimia nervosa, also
had Axis I disorders, such as depression, followed by anxiety disorders and then
substance abuse disorders.

Depression has been highly correlated with the development of eating disorders,
although direct causality has yet to be determined (Casper, 1998). During the adolescent
years, females experience more bouts with depression, than do their male counterparts,
possibly connected to issues of self-esteem that can be connected to changes in body size
201 adolescents (21.90% male, 78.10% female) to explore the connection between
certain disorders (anxiety, depression, personality, and substance abuse) and their
connection to risk of eating disorders in the adolescent population. Risk included onset,
persistence, and recurrence of symptoms. If an adolescent is experiencing a bout of
depression, the negative mood associated with the period of depression may often precede the engagement of binge eating in female high school students (Zaider, Johnson, & Cockell, 2002).

The role of depression and the development of an eating disorder have been widely debated. Casper (1998) states that eating disorders and depression may have commonalities that cause them to occur together, or that the process of the development of an eating disorder may be a risk factor for the development of depression (Casper, 1998). Depressive symptoms that are considered to be chronic in nature, can be an integral part of the development of eating disorders, such as bulimia nervosa and binge eating disorder. In addition to depression often preceding an eating disorder, individuals who have an eating disorder are at a heightened risk for depression due to the symptomology associated with the eating disorder. The effects of staring onself, for example, can produce not only psychological, but physiological changes, that are similar to depression. It is possible that a causal relationship may not exist between eating disorders and depression, but instead, the relationship may be bidirectional in nature, such that many individual who have eating disorders, also have comorbidity with other disorders, making the determination of which disorder preceded the other difficult (Casper, 1998).

Studies have demonstrated a correlation between levels of depression and subscales measured by the Eating Disorders Inventory. Willcox and Sattler (1996) conducted a study that examined the relationship between depression and eating disorders. Results of that study indicated that the depression scores, as measured on the SMDI (Multiscore Depression Inventory) were positively correlated with specific
subscales on the Eating Disorder Inventory (drive for thinness, bulimia, interoceptive awareness, and maturity fears), thus concluding that a correlation exists between eating disorders and depression. In addition to depression, the prevalence of other comorbid conditions, such as mood disturbances, phobias, and substance abuse were high as well. Studies within the adolescent population have revealed that there is a correlation between mood disturbances and eating disorders in both males and females (Casper et al.; Richards et al. as cited in Casper, 1998). The prevalence of major affective disorders is found to be higher among families of anorexia nervosa and bulimia nervosa patients (Casper, 1998). Even after overcoming an eating disorder, many individuals still experience affective disorders, such as depression, two to three times more likely than other individuals.

Zaider, Johnson, and Cockell (2002) examined the relationship between anxiety, depression, personality, or substance abuse and an increased risk for the development, continuation, and reappearance of eating disorder symptoms among adolescents. Results of the study indicated that those individuals who reported continual depressive symptoms could be at a higher level of risk for the development or reoccurrence of bulimia nervosa or binge eating disorder during the adolescent years. Researchers did not believe that this increased risk of development was accounted for by these other conditions that were occurring at the same time, but that such conditions may not be independently connected with an increased risk for development or continuation of bulimia nervosa or binge eating disorder during adolescence. Research on the correlation of depression and eating disorders has concluded that in many cases, depression often occurs before the onset of
eating disorders as proposed by Braun et al. (1994) and Fairburn et al. (1997, as cited in Zaider, Johnson, & Cockell, 2002).

**Teasing**

Teasing about an individual’s weight can have a profound impact on how they view themselves and can lead to more severe problems related to body image and eating behaviors (Neumark-Sztainer, Falkner, Story, Perry, Hannan, & Mulert, 2002). Studies have indicated that with an overweight population, the frequency of one being teased was highly correlated with the level of body dissatisfaction that they experienced as an adult Neumark-Sztainer, Falkner, Story, Perry, Hannan, & Mulert, 2002; Thompson, Coover, Richards, Johnson, & Cattarin, 1995). This elevated level of body dissatisfaction can ultimately lead to disordered eating behaviors and eating disturbances (Thompson, Coover, Richards, Johnson, & Cattarin, 1995). Wertheim, Koerner, and Paxton (2001) conducted a study of 748 adolescent females in the Melbourne area of Australia to explore predictor variables of future eating problems in female adolescents. Results found that for adolescent populations, teasing is a predictive factor in the development of disordered eating behaviors. In the Neumark-Sztainer, et al. (2002) study on weight-teasing, found that weight-teasing was significantly correlated with disordered behaviors in both overweight and non-overweight males and females.

**Family Norms**

Poor family environment plays a major role as a risk factor in the development of disordered eating behaviors and lower levels of body dissatisfaction (Littleton & Ollendick, 2003). Studies conducted on girls with disordered eating found that they were usually from families that were not cohesive or organized and had less expressiveness
within the family setting. In a study conducted by Felker and Stivers (1994), 586 students from a private secondary school participated in a study to examine the risk of developing disordered eating behaviors including factors such as family environment. Of the group that was determined to be at risk, higher scores were found for perceived family conflict and control and lower scores were found on the subscales that measured expressiveness, organization, and independence. As demonstrated in previous research, the family environment in which an individual lives is highly associated with the risk of developing an eating disorder. Increased risk of the development of an eating disorder was also associated with a higher perception of conflict, control, and achievement orientation (Felker & Stivers, 1994).

Perfectionism

The constant pursuit of trying to be perfect can be another reason that an individual will develop an eating disorder (Garner, 2004). Pressure to achieve goals set by oneself or by others can often become so great, that an individual may feel that the only thing that they can control is their weight. Not only is perfectionism strongly related to the development of eating disorders and disordered behaviors, but it also strongly tied to the perpetuating factors of such disordered behaviors. Garner (2004) describes two types of perfectionism. “Self-oriented perfectionism reflects a drive to meet high standards for performance that are not explicitly linked to family or teachers; socially-prescribed perfectionism is related to the values of performance set f indicates a need to meet high standards for performance that are tied to expectations from parents and teachers. (Garner, 2004, p. 16). Perfectionism has been thought of to be an integral factor,
not only as a developmental factor for eating disorders, but as a maintenance factor as well.

Perpetuating Factors

*Body Image/Body Dissatisfaction*

Freud stated that the core component of one’s personality is the image that an individual has of their body. This image is unique to each individual and is very subjective in nature. Body image is then termed to be a “biopsychosocial construction, partially determined by, but not reducible to, the objective physical body” (Rierdan & Koff, 1997, p.615). Since each individual has their own experiences and beliefs of their body, the uniqueness of each individual’s body image can be considered to be highly related to an individual’s personality as well as linked to levels of psychological disorders, such as depression and eating disorders.

Body image disturbances are stated as being highly correlated with self-esteem and this disturbance of self-esteem has been highly associated with the development of eating disorders (Gardner, Friedman, & Jackson, 1999). Likewise, body dissatisfaction is said to be the strongest predictor of symptomotology associated with eating disorders (Phelps, Sapia, Nathanson, & Nelson, 2000). Body Image is made up of behavior and attitudes that lead to a subjective view that one has of their body (Rierdan & Koff, 1997). When examining body dissatisfaction and body image, it must be understood that body image is a concept that one has of their body and body dissatisfaction is the affective feelings of negative body image.

Researchers have demonstrated a number of links that body image has to various issues, such as body image disturbances, as well as depression. For adolescents, the link
between body image and depression is important to realize. It is during this tumultuous time that the rates of depression increase, and it is reported that the rates for girls are much higher than those reported for boys. During puberty, the body goes through many changes, as do the personal relationships that these young people have with their friends, siblings, parents, peers, etc. For females, not only does the body go through significant physical changes, but the idea of thinness that is held by our society changes as well (Faust, 1983, as cited in Rierdan & Koff, 1997). For females, the goal is often to achieve a thin body (Shapiro, 1997), but for males, the idea is to achieve a more masculine and defined body (Cumella, 2003). In a study by Rierdan and Koff (1997), it was hypothesized that early adolescent females would have higher levels of depressive symptoms as associated with negative weight-related aspects of body image. Weight-related aspects of body image were evaluated using self-reported weight, weight categorization, weight satisfaction, and weight concerns. It was suspected that as these females experienced the changes of their body, such as the development of certain body parts and the additional amount of fat in their body that their weight-related body image would decrease due to these physical changes.

Although much knowledge has been gained regarding the link between body image with other factors, it is imperative to realize that the concept of body image is not the same for all subpopulations in the United States. When comparisons are made between Caucasian and African-American women, the concept of body image, beauty and how women view themselves is much different (Molloy & Herzberger, 1998). Research has demonstrated that many African-American women are much less concerned about the ideals of thinness that has become dominant for Caucasian women. In addition,
African-American women tend to be more realistic in their attempt to lose weight (Molloy & Herzberger, 1998). Within the African-American culture it is the belief that males are more accepting of larger women and identification with this cultural belief may serve as a protective factor for some individuals.

Research on Gender

Within the 8 million that are reportedly affected with an eating disorder, researchers have had a difficult time in delineating the prevalence rates for various subgroups, such as males. Reports conducted by the Association of Anorexia Nervosa and Associated Disorders in 1994 state that 18% of American females suffer from various eating disorders (Noden 1994). Research has demonstrated that the incidence of eating disorders, such as anorexia nervosa and bulimia nervosa within the male population is considered to be relatively low in comparison to the female population. Among college age women approximately 1-3% of the population are affected with an eating disorder (Lester & Petrie, 1998).

The prevalence rates for males associated with eating disorders have been difficult to determine and have been speculative at best. Cumella (2003) stated that 10% of the individuals with eating disorders are male. Males make up 10-15% of individuals who are diagnosed with bulimia nervosa and there is less prevalence with anorexia nervosa due to unfamiliarity with the disorder (Spitzer et al., 1992, 1993 as cited in Keel, Klump, Leon, & Fulkerson, 1998.) In a longitudinal study of eighth to twelfth grade males, results found that 2% were discovered to have disordered eating patterns. Using several measures, which included the Eating Disorder Inventory, it was discovered that such individuals had higher levels of restraint, body dissatisfaction, depression,
perfectionism, and lower levels of interoceptive awareness as compared to the other males in the study (Keel, Klump, Leon, & Fulkerson, 1998).

Males

When examining the male population, generalization of findings are difficult due to the limited number of males included in sample populations of studies (Keel., Klump, Leon, & Fulkerson, 1997; Strober, Freeeman, Lampert, Diamond, & Kaye, 2001.). Males, as opposed to their female counterparts are often thought to be immune from the psychological stressors that women face that may put an individual at risk for the development of an eating disorder.

Research on males has been contradictory and inconclusive at best regarding factors associated with males with eating disorders. Some researchers have stated that males are not all that much different from females in terms of age of onset, comorbidity with other disorders, levels of body dissatisfaction, psychological features, and prognosis (Crisp, Burns, & Bhat, 1986; Fitcher & Daser, 1987; and Margo, 1987, as cited in Strober, Freeman, Lampert, Diamond, & Kaye, 2001; Olivardi, Pope, Mangweth, & Hudson, 1995, as cited in Joiner, Katz, & Heatherton, 2000), while others have stated that men have less preoccupation with weight and weight control and greater difficulty with relationships, as compared to females (Herzog et al., 1984, as cited in Joiner, Katz, & Heatherton, 2000). Some studies have reported that differences have been found that males with eating disorders were more likely than females to report that they were homosexual (Herzog, Norman, Gordon, & Pepose, 1984, as cited in Joiner, Katz, & Heatherton, 2000), where as other studies have not been able to make such a determination (Cumella, 2003).
As we examine eating disorders and disordered behavior, it is evident that students have special needs that need to be addressed, especially as they reach their adolescent years. Steck, Abrams, & Phelps (2004) state that the educational setting can be extremely influential and significant with children in terms of providing a positive experience for the student. The setting can provide an opportunity to enhance self-esteem through a de-emphasis on physical attractiveness and more emphasis on academic success and that in reference to sports, if the emphasis is on athleticism, as opposed to physical appearance, the participation can serve as a protective factor for individuals. School psychologists have a unique opportunity to provide services, such as positive psychology to the students that they work with by enhancing coping skills through prevention programs not only for eating disorders, but as a way to promote positive mental health in all areas of living (Steck, Abrams, & Phelps, 2004).

Lecapitiane (2000) discusses the changing role of the school psychologist with high risk students. The definition of the high risk student can involve many issues, such as drug abuse, drop out, as well as eating disorders and disordered behavior. Since school psychologists have been able to expand their role from that of working with special populations that dealt with academic and intellectual testing, they are an advantage to their schools, as they provide a different perspective than do teachers and administrators. School psychologists bring with them a psychological perspective that aids in bringing a more comprehensive view to various issues, thus resulting in a more centralized location to provide services.
The NASP *Communique* in September 2001 published an executive summary that discussed various guidelines and models that focused on mental health within the schools. Understanding the need for mental health services within the schools is a priority in that if an issue is affecting a child in terms of their ability to learn, then it is the responsibility of the school to address that concern. If issues are ignored, then proper learning cannot occur. Without proper intervention and assistance, the cycle continues. Policy makers have pushed to address such issues by implementing programs such as counseling services and social service programs that link the school with outside agencies, as well as other community resources.

Within the educational setting, many individuals have often ignored the need to provide more comprehensive care to their students. Many view a distinction to what is considered a medical problem versus what is considered an educational problem (Phelps & Bajorek, 1991). Often times, issues such as eating disorders will affect a student in their educational setting as well. Although many individuals report that they know someone who is suffering from an eating disorder or disordered behavior, the number of adolescents who admit to having an eating disorder is very low. Many adolescents, even if demonstrated symptomology associated with eating disorders, will often deny that they are having a problem (Phelps & Bajorek, 1991) or they simply do not know who to go to for help. It is imperative that school psychologists be aware of the symptoms associated with eating disorders, as a way as being able to identify when a student might be suffering from such issues and be able to provide the proper intervention when necessary. School psychologists must advocate for their role, not simply as an assessor, but as a multi-modal individual who is capable of many things within the school setting.
Neumark-Sztainer, Wall, Story and Perry Study

A study conducted by Neumark-Sztainer, Wall, Story, & Perry (2003), called Project EAT, which investigated the correlates associated with unhealthy behaviors of weight control with an adolescent population. The study included 4,746 students and used a structural equation model to demonstrate their proposed model. The chosen correlates focused on those that were considered to be personal factors, such as psychological well being, BMI, and body-weight concerns.

Results of the final model for adolescent girls indicated that weight-body concerns were the highest predictors of unhealthy behaviors. Weight-body concerns were determined by BMI, family-peer weight norms and family connectedness. The final model for boys also indicated that weight-body concerns was the highest predictor of unhealthy behaviors, but weight-body concerns were determined by BMI, family –peer weight norms, family connectedness, and weight teasing.

Initial model testing for both girls and boys failed to prove significance on several factors, which included psychological well-being. Psychological well-being was comprised of both self-esteem and depressive mood. Research has indicated repeatedly that depression (Casper, 1998; Zaider, Johnson, & Cockell, 2002) and low self-esteem (Garner, 2004) play a major role in the development of disordered eating behaviors. It is possible that by combing these two constructs into one factor, limits the significance that such a factor has on the outcome of unhealthy weight-control behaviors.

For the purpose of this study, a general linear model was used to answer the intended research questions. Unlike the study by Neumark-Sztainer, Wall, Story, & Perry (2003), family connectedness and health-nutrition attitudes was not be included, as
health-nutrition proved to be non-significant in both final models and family connectedness was not used due the limited research on its influence with disordered eating behaviors and does maintain parsimony in relation to the model.

Many correlates have been examined in the literature, but for the purpose of this study, the following correlates were studied: body mass index, self-esteem, depression, family norms, perfectionism, and teasing. In addition, this study examined the differences that exist between genders in relation to the suggested correlates and outcome variable. The purpose of this study was to explore the correlates that are associated with eating disorder risk, as measured on the Eating Disorder Risk Composite of the Eating Disorder Inventory-3. The following research questions were examined in this study:

1. Is there a difference between males and females students on their Eating Disorder Risk Composite (EDRC) score?

2. Is there a difference in percentage of males and females that fall into each of the clinical ranges for the EDRC score?

3. Which of the individual variables (BMI, depression, family/peer norms, self-esteem, perfectionism, and teasing) significantly predicts Eating Disorder Risk Composite Score for male students?

4. Which of the individual variables (BMI, depression, family/peer norms, self-esteem, perfectionism, and teasing) significantly predicts Eating Disorder Risk Composite Score for female students?
CHAPTER 2

METHODS

Sample Population and Method of Sampling

The targeted population of this study was from various high schools in a midwestern city. All students in grades 9-12 and within the ages of 15-18 were allowed to participate in the study. A sample size of approximately 215 students was achieved. Specific days were assigned for each school. Once approval was made from the Institutional Review Board of The Ohio State University (IRB protocol number: 2005B0206; approval 08/11/05), the school district, and the school principal, two parent permission forms and a parent information sheet were given to the students to take home to their parents. Explanation of the study was included, as well as information regarding anonymity of the questionnaire responses. Materials were stored in a secured location that was only accessible to the researchers involved in the study. All participation was completely voluntary and the students were told that they may withdraw at any time. Parents had the opportunity to withdraw their children at any point in this study. If parents had any questions regarding the study, they were given information in which to contact the researcher at any time via telephone or email.
Measures

*Dependent Variable*

**Eating Disorder Risk Composite (EDRC).** The Eating Disorder Risk Composite (EDRC) was measured by combining “the summed T-scores for the Drive for Thinness (DT), Bulimia (B), and the Body Dissatisfaction (BD) scales”. The EDRC provides a “global measure of these constructs with equal weighting for each of the contributing scales. The EDRC can be used for screening purposes or to obtain one score reflecting the level of eating concerns.” (Garner, 2004, p. 18). Test-Retest coefficients of the ERDC of the EDI indicate an r-value of .98. Alpha coefficients for the ERDC indicate a level of .91 (AN-R), .97 (AN-B/P), .95 (B), and .94 (EDNOS) for the adolescent clinical sample.

Scores for the EDRC are broken down into different levels representing clinical ranges. “An EDRC score in the Elevated Clinical Range is within the 67th to 99th percentile (T Score ≥ 57), for the U.S. Adult Combined Clinical sample and indicates that the respondent has extreme eating and weight concerns that consist of fear of weight gain, desire to be thinner, binge eating tendencies, and body dissatisfaction. An EDRC score in this range is uncommon among those with clinical eating disorders and an estimate of this level of eating and weight concern in the nonclinical samples suggests it is rare, occurring in about 5% of the adult sample and 1% of the adolescent sample.” (Garner, 2004, p. 60). The Typical Clinical Range is from the 25th to 66th percentile. “An EDRC score in this range is common among those diagnosed with clinical eating disorders; however, it is relatively rare among respondents from the nonclinical samples (adolescents, 91st to 98th percentile; adults, 76th to 94th percentile) and reflects significant weight preoccupation and disturbed attitudes regarding eating.” (Garner, 2004, p.
The Low Clinical Range is from 1st to 24th percentile. “An EDRC score in this range is common among adolescents and adult respondents in the nonclinical samples (90% and 75% respectively).” (Garner, 2004, p. 60). Additional information regarding risk can be found in the Proximal Risk Factors section of the literature review.

When comparing individuals on their EDRC score, the score must be compared based upon a normative group (Anorexia Nervosa Restrictive type, Anorexia Nervosa Binging/Purging type, and Bulimia Nervosa type. The EDRC provides an overall measure of disordered eating attitudes (body dissatisfaction) and behaviors (restricting, binging, and purging) and the scales measuring these components are equally weighed (Drive for Thinness, Bulimia, and Body Dissatisfaction). Each type of risk is created using the related clinical normative group, and raw scores for the three subscales that comprise the EDRC are converting to different T scores depending on the normative group being used.

*Eating Disorder Inventory*-3. The Eating Disorder Inventory-3 (EDI) is used as a screener or as a tool to assess the level of symptomology associated with eating disorders and is considered to be the most widely used measure of psychological traits associated with eating disorders (Garner, 2004). As stated by Garner (2004), this tool is designed to measure symptomology of several psychological domains that pertain to eating disorders. The Eating Disorder Inventory-3 does not claim to be a diagnostic tool for eating disorders, but instead is used to measure symptomology that is associated with such disorders. Further evaluation of criteria of behaviors needs to be completed in order to diagnosis for an eating disorder. The Eating Disorder Inventory-3 is also a very useful tool when assessing outcomes related to treatment plans.
The original Eating Disorder Inventory-3 was designed in 1983, which was made up of three subscales which sought to measure attitudes and behaviors associated with weight, body size, and eating behaviors. These subscales were called Drive for Thinness, Bulimia, and Body Dissatisfaction. Along with these three subscales were an additional five subscales that were considered to be more generalized in nature that measured psychological traits that were associated with eating disorders, such as Perfectionism and Maturity Fears. The Eating Disorder Inventory-3 is the latest revision of the most widely used self-report measure. The EDI-3 can be administered in about 20 minutes in either an individual or group setting. It is recommended for ages 13 and older and is intended to measure symptomology associated with eating disorders. For the dimensions that are applicable to eating disorders, standardized scores are provided for in the manual.

The Eating Disorder Inventory-3 is a 91-item, 6 point Likert-type scale, with responses that range from “always” to “never”. The EDI is arranged into “12 nonoverlapping scales and 6 composite scores that can be used to create clinically meaningful profiles” (Garner, 2004, p.1). The 12 subscales include Drive for Thinness (DT), Bulimia (B), Body Dissatisfaction (BD), Low Self-Esteem (LSE), Personal Alienation (PA), Interpersonal Insecurity (II), Interpersonal Alienation (IA), Interoceptive Deficits (ID), Emotional Dysregulation (ED), Perfectionism (P), Asceticism (A), and Maturity Fears (MF). The 6 composite scores include Eating Disorder Risk Composite (EDRC), Ineffectiveness Composite (IC), Interpersonal Problems Composite (IPC), Affective Problems Composite (APC), Overcontrol Composite (OC), and General Psychological Maladjustment (GPMC).
The Eating Disorder Inventory-3 was based upon archival data sets for use to update the Eating Disorder Inventory-2. Clinical sites in the United States included Indiana, Maryland, Michigan, Ohio, and Wisconsin. The total sample was 1192 individuals (873 adults, 319 adolescents). Clinical international sites included, Australia, Canada, Italy, and the Netherlands. 306 adults were used from the international sites and 35 adolescents were used from the Australia site only. Nonclinical sites included the Netherlands and Ohio.

For each specific subscale, the higher the reported score, the greater expression of that particular psychological attribute, as a measure of that subscale. Scores that are reported to be high on a particular subscale indicates that the individual may have concerns in relation to that attribute. If an individual scores high, then further evaluation should be conducted for the detection of a clinical diagnosis of an eating disorder. For the EDRC, the EDI provides an elevated clinical range, a typical clinical range and a low clinical range. Those individuals who obtain scores on the EDRC that are above a T-score of 57 (67th-99th percentile) are considered to be at risk.

Comparisons can be made with a number of different norm groups, including U.S. Adults, International Adults, and U.S. Adolescents. Norms for these subscales provided on the profile sheet are for typical clinical range and adult female control sample. Internal consistency reliability of the Eating Disorder Inventory-3 subscales range from .63 to .94 for the U.S. Adult clinical sample, .83 to .95 for the International Adult clinical sample, and .63 to .97 for the adolescent clinical sample (Garner, 2004). Test-Retest reliability for the EDI-3 range from .86 to .98 and are considered to be excellent (Garner, 2004). The Eating Disorder Risk Composite reliability for the EDI-3 has a median value of .94 with a
range of .90 to .97 across 4 diagnostic groups and 3 normative groups. The four diagnostic groups are related to the DSM-IV criteria for eating disorder, which includes Anorexia Nervosa Restrictive type, Anorexia Nervosa Binging/Purging type, Bulimia Nervosa, and Eating Disorder Not Otherwise Specified. The three normative groups for the Eating Disorder Inventory include, U.S. Adult, International Adult, and U.S. Adolescent. The U.S. Adult and the International adult normative groups are or individuals who are 18 years or older. The U.S. Adolescent normative group is for individuals who are between the ages of 11 to 17. Reliability for the three Eating Disorder Risk scales ranges from the high .80s to low .90s. Reliability for the psychological scales, along with composites are considered to be high. The Drive for Thinness and the Body Dissatisfaction scales are highly correlated, .96 and .97 with the EDI-2. The normative sample for the EDI-3 was based upon a U.S. Adult Clinical sample (145), International Adult Clinical sample (165), and U.S. Adolescent Clinical sample (101). All participants in the normative group were female and had a clinical diagnosis of an eating disorder. Data was also collected with males based upon US, International, and Adolescents populations. Similar score patterns were found on the scales of the Eating Disorder Inventory-3 and scores were generally lower in comparison to the female samples.

Validity of this instrument has been discussed within the manual of the Eating Disorder Inventory-2. Content validity was determined using 146 items, which were designed to measure 11 constructs. Of these, 8 dimensions met reliability and validity requirements for a particular subscale (Garner, 1991). Criterion-related validity was conducted based upon the differences between eating disorder and nonpatient samples.
All items of the subscales met the requirements for this instrument. For the provisional subscales, not all of the items met the standards, but were still retained. Concurrent validity was conducted by the comparison of self-report profiles along with therapists or consultants that were familiar with the patients. Correlations with clinician’s ratings ranged from .43 to .68 on all subscales of the Eating Disorder Inventory. Intercorrelations for the Eating Disorder Inventory-3 can be found in the Appendix D of the EDI-3.

The EDI provides T-scores based upon the raw scores and norms for a U.S. Adult, International Adult, and Adolescent population. For exploration of the EDRC, scores from the Drive for Thinness, Bulimia, and Body Dissatisfaction scales are combined. Scores should then be compared to the Adolescent Clinical sample without having to indicate a specific diagnostic group. The profile sheets provided shaded information indicating clinical samples versus a control group that did not have an eating disorder

Independent Variables

Gender/Race. Gender and Race was self-reported on the demographics sheet. Gender was indicated by either male or female. Race was indicated by the following choices: White, African-American, Hispanic/Latino(a), Asian, Somali, or Other, with a space to write in. Students that are bi-racial can check more than one choice.

Self-Esteem. Self-esteem was measured as a self-report subscale from the Eating Disorder Inventory-3. The Low Self-Esteem (LSE) “scale measures the basic concept of negative self evaluation” (Garner, 2004, p.15). Constructs such as ineffectiveness and insecurity are explored on the LSE scale. This scale consists of 6 likert-type items with questions such as “I feel ineffective as a person” and “I have a low opinion of myself”. Test-Retest coefficients of the LSE scale of the EDI indicated an r value of .95. Alpha
coefficients of the Low Self-Esteem scale indicate a level of .89 for the adolescent sample.

*Depression.* Depression was measured using the Reynolds Adolescent Depression Scale-2 (RADS-2). The RADS-2 does not provide a clinical diagnosis of depression, but does provide level of severity of symptomology associated with depression. This scale screens for symptomology associated with 4 areas of depression, which include Negative Self-Evaluation, Somatic Complaints, Anhedonia/Negative Affect, and Dysphoric Mood.

The Reynolds’s Adolescent Depression Scale-2 is a 30-item self-report measure that can be filled out in a few minutes. The preliminary development of the RADS was based on a sample of 8,000 adolescents and the RADS-2 was based upon a sample of 9,000 adolescents. This instrument can be used with individuals that are between 11 and 20 years of age. Results of the standardization sample indicate that females score on average 5-7 raw points higher than males. The RADS-2 includes questions such as “I worry about school” and “I feel sorry for myself”. Several statements are reverse score items, such as “I feel like having fun” and “I feel loved”.

Internal consistency reliability of the RADS-2 based upon the total school sample ranges from .80 to .93. The manual also provides internal consistency reliability based on gender, as well as by age group. Test-retest reliability based upon the total school sample ranges from .77 to .85. Content validity of the RADS-2 was established with item-total scale correlations. Correlation coefficients were in the .40s and .50s. Criterion-related validity was established with comparison to the Hamilton Depression Rating Scale and results indicated correlations of .54 to .82 based upon school validity study. Correlations
between the RADS and other self-report measures indicate correlation coefficients that range from .68 to .76.

**BMI** (Calculated using height and weight and the CDC website). BMI was calculated using the self-reported height and weight of each student and then calculating the BMI using the Center for Disease Control website (http://www.cdc.gov/nccdphp/dnpa/bmi/calc-bmi.htm). For this calculation, height and weight must be entered and then you press “calculate”, which gives an overall body mass index for that individual. BMI can also be calculated using the table provided in the EDI manual on page 98.

**Family Norms.** Family norms were assessed using questions that focus on parental concerns-behaviors and peer dieting behaviors. These questions were created by Neumark-Sztainer, Wall, Story, & Perry and used in their Project EAT study (2003). Questions are presented on a 4-point Likert type scale. The four questions include “My mother diets to lose weight or keep from gaining weight and my mother encourages me to diet to control my weight”. Questions were presented for both mother and father. A Cronbach’s alpha of .77 was achieved for these questions.

**Teasing.** Teasing was assessed by examining frequency of teasing and source of teasing based upon the Perception of Teasing Scale (POTS). The POTS has two subscales which are a general weight teasing subscale and a competency subscale. The POTS was standardized based upon a sample of 227 female undergraduates and is considered to be valid for adolescents as well. The alpha correlation for the general weight teasing subscale is .94 and for the competency subscale, it is .78. Sample questions on the POTS include “People made jokes about you being heavy.” and “How upset were you?”
Responses range from “Never” to Very Often” for the Teasing subscale and from “Not Upset” to “Very Upset” on the Competency subscale. For this study, only the weight teasing subscale was used which included six items.

*Perfectionism.* Perfectionism was measured as a self-report subscale from the Eating Disorder Inventory-3. This subscale has six likert-type items that measure the degree to which an individual places value on achievement of goals. Perfectionism is stated to be an integral part in the development, as well as continuation of an eating disorder. Sample items from this subscale include: “I hate being less than best at things” and “I have extremely high goals”. Test-Retest coefficients of the Perfectionism subscale of the EDI indicated an r value of .93. Alpha coefficients of the Perfectionism subscale indicate a level of .82 for the adolescent sample.

**Procedure of Study**

Approval was obtained by The Ohio State University Institutional Review Board (IRB protocol number: 2005B0206) on August 11, 2005. Approval from each district was obtained through the College of Education and a copy was sent to the Institutional Review Board prior to the start of the study.

On the information day, the investigator spoke with all students who participated in a variety of school classes. Students were given a packet from the researcher that includes general information regarding the intended study (Appendix E) and two parent consent forms (Appendix F) that they needed in order to participate in the intended date. In order to participate in the study, the student had to present a signed consent form from their parent. If a student brought both signed parent consent forms to school, one copy was retained by the investigator and one copy was be given back to the student to be
given to the parent. Students who did not bring a parent consent form or chose not to participate in the study, were allowed to remain in the classroom and continued to do work that they would normally do during the class period.

On the day of data collection, if students had the signed parent consent form, they were to present the consent form to the investigator at the time that it was requested. Students were given a letter regarding the study (Appendix F) from the researcher, told the importance of their participation, and were given two assent forms (Appendix F) stating that they were willing participants in the study. Students were told that their answers would be completely anonymous and confidential. In addition, participation was completely voluntary and they had the option to not participate at any time during the study. One assent form was be retained by the investigator and one was returned to the student for them to keep. After the assent forms had been returned to the investigator, the project packet containing the Eating Disorder Inventory-3, the Reynolds Adolescent Depression Scale, the modified Project Eat Questions, and the Perception of Teasing Scale were given to each student, along with a demographics sheet that asked for information, such as age, height, weight, and grade level. These instruments can be found in Appendix B. Students were asked to fill out the information as specified in the Student Script (Appendix D).

The approximate time needed for administration of these instruments was approximately 45 minutes and students filled out materials within a classroom setting. Once the students from the group were completely finished filling out the instruments, they returned the materials back in to the researcher in the envelope provided and were given a debriefing packet (Appendix G) that explained the study, as well as important
information surrounding eating disorders. It was explained within the packet that should they have any additional questions or concerns regarding the study that they were to contact the researcher at any time. If additional assistance was needed, the students may also contact a school administrator, school counselor, or school psychologist. If referrals were needed due to the impact of the instrument, the researcher would assist in finding the proper referral. Scripts for the initial meeting with students and data collection sessions can be found in Appendix D. Aggregate results would be released to the district and each school at the conclusion of the dissertation.

Analysis of Data

The following procedures were used to analyze each research question. The level of significance for all analyses was set at a .05 alpha level.

1. Is there a difference between males and females students on their Eating Disorder Risk Composite (EDRC) score?

   The EDRC score is at the ratio level of measurement, therefore parametric procedures were used. A one-way ANOVA was used with gender as the independent variables and the EDRC scores as the dependent variable.

   The levels of gender include males and females.

2. Is there a difference in percentage of males and females that fall into each of the clinical ranges for the EDRC score?

   The clinical ranges are at the ordinal level of measurement, therefore nonparametric procedures will be used. The percentage at each clinical level will be the dependent variable and the gender groups (males and females), will be the independent variable. A Chi-Square analysis will be
used to analyze differences in patterns for the clinical ranges among the
gender groups.

3. Which of the individual variables (BMI, depression, family/peer norms, self-
esteem, perfectionism, and teasing) significantly predicts Eating Disorder Risk
Composite Score for male students?

   The proposed model suggests that there will be a direct effect of specific
correlates and factors on the Eating Disorder Risk Composite (EDRC) as measured from the combination of the Drive for Thinness (DT), Bulimia (B), and Body Dissatisfaction (BD) subscales of the Eating Disorder Inventory-3. These correlates and factors include self-esteem, body mass index (BMI), body image, teasing, depression, perfectionism, and family/social norms. Although these factors/correlates may not demonstrate direct causality of an eating disorder, they are suggested to demonstrate that if an individual is high in on such correlates and factors, their risk for the development of unhealthy eating behaviors is much higher. A regression analysis by gender was used to test the fit of the model to the data.

4. Which of the individual variables (BMI, depression, family/peer norms, self-
esteem, perfectionism, and teasing) significantly predicts Eating Disorder Risk
Composite Score for female students?

   The proposed model suggests that there will be a direct effect of specific correlates and factors on the Eating Disorder Risk Composite (EDRC) as measured from the combination of the Drive for Thinness (DT), Bulimia
(B), and Body Dissatisfaction (BD) subscales of the Eating Disorder Inventory-3. These correlates and factors include self-esteem, body mass index (BMI), body image, teasing, depression, perfectionism, and family/social norms. Although these factors/correlates may not demonstrate direct causality of an eating disorder, they are suggested to demonstrate that if an individual is high in on such correlates and factors, their risk for the development of unhealthy eating behaviors is much higher. A regression analysis by gender was used to test the fit of the model to the data.
CHAPTER 3

RESULTS

The purpose of this dissertation is to explore the precipitating factors that may influence the risk of developing an eating disorder. A model was tested to determine what factors are related to an increase in the Eating Disorder Risk composite on the Eating Disorder Inventory-3. In addition, differences in males and females were explored in terms of reaching clinical levels on the Eating Disorder Risk composite. Analyses were driven by the following research questions.

1. Is there a difference between males and females students on their Eating Disorder Risk Composite (EDRC) score?
2. Is there a difference in the percentage of males and females who reach clinical levels on the EDRC score?
3. Which of the individual variables (BMI, depression, family/peer norms, self-esteem, perfectionism, and teasing) significantly predicts each of the Eating Disorder Risk Composite Scores?
4. Which of the individual variables (BMI, depression, family/peer norms, self-esteem, perfectionism, and teasing) significantly predicts each of the Eating Disorder Risk Composite Scores for each of the gender groups?

For the analysis of each proposed research question, several types of analyses were used. Directionality was specified for some of the hypotheses; therefore, one-tailed significance, with an adjusted alpha to address the number of tests run was used, as well as two-tailed significance for the hypothesis which were non-directional in nature. To test for gender differences on the Eating Disorder Risk Composite (EDRC) score, which is comprised of three subscales of the Eating Disorder Inventory-3 (Drive for Thinness, Bulimia, and Body Dissatisfaction), independent t-tests and the Fisher’s exact test were performed. To test for predictive linear relationships between a set of independent variables and three versions of the EDRC, multiple regressions were used. The independent variables for these regressions were body mass index, depression, teasing, family norms, self-esteem, and perfectionism. In order to get a more detailed picture of these relationships, a regression analysis was run for all three norm groups as a whole (male and female) and a regression was run for each norm group, based upon gender. In total, 9 separate regressions were calculated.

*Descriptive Statistics*

Descriptive statistics were computed for all of the demographic variables. These data can be found in Tables 1 to 3. For the sample of 214 students, the average age was 15.49 with a range of 15 to 18 years of age. The gender distribution was relatively equal, with 98 (44.70%) being male and 117 (53.40%) being female with four students not indicating their gender. The study was conducted in a high school, where students ranged
in year in school from freshman to senior. The majority of students who participated were sophomores (80.40%). In a few cases, as noted in the following tables, some students left out missing information from their demographics sheet, such as age, year in school, etc.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Frequency</th>
<th>Percent</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 years old</td>
<td>128</td>
<td>59.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 years old</td>
<td>70</td>
<td>32.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 years old</td>
<td>13</td>
<td>6.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 years old</td>
<td>3</td>
<td>1.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>214</td>
<td>100</td>
<td>15.49</td>
<td>.67</td>
</tr>
</tbody>
</table>

Table 1: Descriptive Statistics for Demographics (All Students).

<table>
<thead>
<tr>
<th>Year In School</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>11</td>
<td>5.10</td>
</tr>
<tr>
<td>Sophomore</td>
<td>176</td>
<td>81.90</td>
</tr>
<tr>
<td>Junior</td>
<td>19</td>
<td>8.80</td>
</tr>
<tr>
<td>Senior</td>
<td>9</td>
<td>4.20</td>
</tr>
<tr>
<td>Total</td>
<td>215</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2: Descriptive Statistics for Year in School (n = 215).

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>183</td>
<td>85.1</td>
</tr>
<tr>
<td>African-American</td>
<td>10</td>
<td>4.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>6</td>
<td>2.8</td>
</tr>
<tr>
<td>Asian</td>
<td>4</td>
<td>1.9</td>
</tr>
<tr>
<td>Somali</td>
<td>5</td>
<td>2.3</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>1.9</td>
</tr>
<tr>
<td>Mixed</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>215</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 3: Descriptive Statistics for Race/Ethnicity
**T-scores for subscales of the Eating Disorder Risk Composite**

The Eating Disorder Inventory-3 includes three types of risk composite including the Eating Disorder Risk Composite (EDRC) for Anorexia Nervosa Restrictive Type, Anorexia Nervosa Binging/Purging Type, and Bulimia Nervosa Type. When calculating the t scores for each subscale and the overall composite, a different set of norms was used for each type of risk composite resulting in three different composite scores. The t scores for each subscale that comprises each composite score as well as the composite score for each eating disorder type can be found in Table 4.

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Anorexia Nervosa Restrictive Type</th>
<th>Anorexia Nervosa Binging/Purging Type</th>
<th>Bulimia Nervosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive for Thinness</td>
<td>Mean 38.27 SD 8.25</td>
<td>Mean 37.59 SD 8.50</td>
<td>Mean 30.19 SD 10.86</td>
</tr>
<tr>
<td>Bulimia</td>
<td>Mean 55.33 SD 15.26</td>
<td>Mean 45.82 SD 6.74</td>
<td>Mean 36.82 SD 6.27</td>
</tr>
<tr>
<td>Body Dissatisfaction</td>
<td>Mean 39.80 SD 8.33</td>
<td>Mean 39.16 SD 7.89</td>
<td>Mean 32.71 SD 10.06</td>
</tr>
<tr>
<td>EDRC</td>
<td>Mean 42.55 SD 11.06</td>
<td>Mean 38.13 SD 8.16</td>
<td>Mean 28.31 SD 9.78</td>
</tr>
</tbody>
</table>

Table 4: T-scores of Eating Disorder Inventory-3 subscales of Eating Disorder Risk Composite (EDRC) After EDRC T-Score Conversion.

In addition to the Eating Disorder Risk Composites, six other variables were included in the study to assess correlates of eating disorder risk. Descriptive statistics for these variables can be found in Table 5.
Table 5: Descriptive Statistics for Independent Variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>23.05</td>
<td>4.66</td>
<td>15.45</td>
<td>40.50</td>
</tr>
<tr>
<td>Family</td>
<td>7.26</td>
<td>2.86</td>
<td>2.00</td>
<td>16.00</td>
</tr>
<tr>
<td>Teasing</td>
<td>8.16</td>
<td>4.16</td>
<td>6.00</td>
<td>30.00</td>
</tr>
<tr>
<td>Low Self-Esteem</td>
<td>38.91</td>
<td>7.00</td>
<td>32.00</td>
<td>58.00</td>
</tr>
<tr>
<td>Depression</td>
<td>48.52</td>
<td>9.17</td>
<td>29.00</td>
<td>76.00</td>
</tr>
<tr>
<td>Perfectionism</td>
<td>47.34</td>
<td>9.26</td>
<td>30.00</td>
<td>67.00</td>
</tr>
</tbody>
</table>

Gender Differences for Clinical Levels

The EDI-3 includes cut scores to determine clinical levels for the three EDRC scores.

These clinical cut scores are determined by The Eating Disorder Inventory-3 manual. The typical clinical level was used as the cutoff for a clinical versus non-clinical individual. T scores for the Eating Disorder Risk Composite that were at or greater than 48 fell into the typical clinical range, based upon the U.S. adult clinical sample. This score reflects scores that are within the 25th to 66th percentile and is typical of someone who has eating concerns that are considerable in nature (Garner, 2004).

The percentages of students who reached clinical levels for each Eating Disorder Risk Composite broken down by gender are listed in Table 5. While gender differences are evident for the percentage of students who meet the clinical level for all three EDRC scores, the largest differences are found for the two types of anorexia nervosa, and a smaller difference exists between the males and females on bulimia nervosa. The Eating Disorder Risk Composite takes into account three subscales of the Eating Disorder Inventory-3 and is used simply to make a decision about risk, not determine if an actual eating disorder is occurring.
Three independent t-tests were conducted, one for each EDRC score, to determine statistically significant differences between the percentage of males and females who met the clinical level of risk. The Independent t-test is used when you are determining differences between two groups using a 2 X 2 contingency table of nominal data. The Independent t-test test is not based on a probability distribution, but instead calculates an exact value for $p$. Because three analyses were being run for this research question, the alpha level was adjusted to .017. The one-sided exact significance is being reported due to the directional nature of the hypothesis. If the null hypothesis is true, it can be expected that the percentage of students meeting clinical levels for each composite type would be the same for males and females. The alternative hypothesis for this analysis states that the percentage of females who meet the clinical level for each EDRC score will be greater than the percentage of males. The percentages for males and females for each EDRC score can be found in Table 5. Significantly more females met clinical levels for risk on the EDRC Anorexia Nervosa Restrictive type ($p = .00$) and the Binging/Purging type ($p = .00$). The results of the independent t- test between groups for the Eating Disorder Risk Composite Bulimia Nervosa type indicate that there is not a significant difference between males and females ($p = .17$).

<table>
<thead>
<tr>
<th></th>
<th>Anorexia Nervosa Restrictive Type</th>
<th>Anorexia Nervosa Binging/Purging Type</th>
<th>Bulimia Nervosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>17.30</td>
<td>9.20</td>
<td>4.10</td>
</tr>
<tr>
<td>Females</td>
<td>33.30</td>
<td>28.20</td>
<td>9.40</td>
</tr>
<tr>
<td>Total Sample</td>
<td>50.60</td>
<td>37.40</td>
<td>13.50</td>
</tr>
</tbody>
</table>

Table 6: Percentage of Students at Clinical levels for each EDRC.
Gender Differences for Each Eating Disorder Risk Composite Score.

In order to determine significant differences between males and females on the EDRC scores for each eating disorder types, independent t tests were used to test differences in means. Based on prior literature, the alternative hypotheses for these analyses states that the female adolescents will have significantly higher scores on each of the EDRC scores as compared to male adolescents (Neumark-Sztainer, Perry, and Story, 2003). Because three analyses were conducted for this research question, the alpha level was adjusted by dividing the alpha of .05 by the number of t tests being conducted, therefore, the adjusted alpha was .17.

Assumptions for T tests

The following assumptions were checked for the t-tests that were conducted. Independence was met, as all scores are independent within each group, as well as between groups. For this study, each observation is in no way related to any other observation. All subjects responded to surveys independently of one another. Interval Measure Level was checked in that the unit of measure that was used in this study was based on an interval scale. Normality was checked by visually examining the histograms for each Eating Disorder Risk Composite score by combined gender and by separating gender. The test used to check for normality was a visual analysis of histograms plots. Although all three composite scores were positively skewed to a moderate degree, the EDRC scores approximate a normal distribution. In addition, the independent T-test is robust to violations of the normality assumption. The results of this test of normality indicate that all groups are normal. To test the assumption of homogeneity of variance, the Levene’s Test of Equality of Error Variance was used. The F value for all three
independent t tests was 3.91 for Anorexia Nervosa Restrictive Type, 6.80 for Anorexia Nervosa Binging/Purging Type, and 7.62 for Bulimia Nervosa Type. Levels of significance for all three analyses was less than .05, therefore the homogeniety of variance assumption was violated. Adjusted degrees of freedom were used to account for this violation. When examining each group for absence of outliers, examination of Q-Q plots indicates that the distribution of scores for all programs were relatively close to the line.

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th></th>
<th>Females</th>
<th></th>
<th>df</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDRC ANRT</td>
<td>39.73</td>
<td>10.00</td>
<td>44.92</td>
<td>11.47</td>
<td>206.84</td>
<td>-3.49</td>
<td>.00</td>
</tr>
<tr>
<td>EDRC ANBPT</td>
<td>35.63</td>
<td>7.11</td>
<td>40.19</td>
<td>8.47</td>
<td>207.74</td>
<td>-4.23</td>
<td>.00</td>
</tr>
<tr>
<td>EDRC BN</td>
<td>25.27</td>
<td>8.42</td>
<td>30.82</td>
<td>10.18</td>
<td>207.90</td>
<td>-4.32</td>
<td>.00</td>
</tr>
</tbody>
</table>

Table 7: Eating Disorder Risk Composite scores for each norm group by gender.

Female adolescents reported significantly higher risk scores for all three eating disorder types (Anorexia Nervosa Restrictive Type, Anorexia Nervosa Binging/Purging Type, and Bulimia Nervosa). The descriptive statistics and t test information can be found in Table 7. In order to determine which subscales that comprised the risk composite scores may be playing a larger role in the gender differences, independent t tests were conducted on each subscale score for each all three risk composites.
Table 8: Independent t-tests for each subscale of the EDRC Anorexia Nervosa Restrictive Type.

Females scored significantly higher than males on drive for thinness and body dissatisfaction but not on the bulimia subscale.

Table 9: Independent t-tests for subscales of the EDRC Anorexia Nervosa Binging/Purging Type.

Females scored significantly higher than males on drive for thinness and body dissatisfaction but not on the bulimia subscale.
<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Drive for Thinness</td>
<td>26.93</td>
<td>8.80</td>
</tr>
<tr>
<td>Bulimia</td>
<td>36.31</td>
<td>6.28</td>
</tr>
<tr>
<td>Body Dissatisfaction</td>
<td>29.17</td>
<td>8.06</td>
</tr>
</tbody>
</table>

Table 10: Independent t-tests for the subscales of the EDRC Bulimia Nervosa Type.

The independent t-test for each group of subscale that make up the Eating Disorder Risk Composite Bulimia Nervosa type is shown in Table 10. Females scored significantly higher than males on drive for thinness and body dissatisfaction but not on of the bulimia subscale.

Significant Predictors of the Eating Disorder Risk Composite Scores

The third and fourth research questions ask which of the correlate variables (BMI, depression, family/peer norms, self-esteem, perfectionism, and teasing) significantly predict each Eating Disorder Risk Composite score for the total sample, for male students and for female students respectively. In order to answer this question, a series of multiple regression analyses was conducted with Body Mass Index, Depression, Low Self-Esteem, Teasing, Family Norms, and Perfectionism as the independent variables and each of the Eating Disorder Risk Composites as the dependent variable. Given the three dependent variables (EDRC type) and the three samples (total sample, males, and females), nine regression analyses were completed. Because of the lack of theory and research on eating disorders for adolescents, especially adolescent males, a true stepwise method was used. In addition, a more conservative alpha of .01 was used given the number of analyses that were being conducted. The alpha was not adjusted by dividing .05 by the number of
analyses because if the alpha becomes too small, the chances of making a Type II error are increased. So, a more balanced approach of using a .01 alpha was used.

Assumptions for Regression Analyses

In order to ensure that our model demonstrates the correct fit, we tested the regression assumptions by conducting sensitivity analysis. The regression assumptions of residual homoscedasticity, residual independence, and residual normality were all determined to have been met. Through examination of the residual plots, residual homoscedasticity was determined. We can say that residual independence was met by sampling randomly and independently from the population. The assumption of residual normality was checked visually and was determined to be assumed. Sensitivity analysis of the following numbers indicates that the $R^2$ does/does not change significantly, therefore, such data points will remain in the data set and will not be removed.

EDRC: Anorexia Nervosa Restrictive Type (total sample)

A Pearson correlation matrix was computed for each sample for the EDRC Anorexia Nervosa Restrictive type. For the total sample, the correlation matrix can be found in Table 11. Statistically significant ($p < .05$) correlations are indicated with an asterisk.
Table 11: Correlation Matrix for the Independent Variables and the Dependent Variable of EDRC ANRT (total sample).

For the Eating Disorder Risk Composite Anorexia Nervosa Restrictive Type (male and female), self-esteem and family norms were entered into the model and collectively accounted for 54.70% of the variance (beta = .674) in EDRC ANRT for the total sample. Self-esteem was entered into the model first and accounted for 54.10% of the variance (beta = .642), and family norms was entered second and accounted for 9.60% of the variance (beta = .314). These results indicate that students who have a lower self-esteem are more likely to have a higher risk for Anorexia Nervosa Restrictive Type. Likewise, students whose parents (either or both) are highly focused on dieting are more likely to have a higher risk for Anorexia Nervosa Restrictive Type. Both models are significant at the .05 alpha level. No other variables entered the model due to their high correlation with variables already in the model or their low correlation to the EDRC ANRT. ANOVA results for each model can be found in Table 12.
Table 12: Analysis of Variance for Regression and Residual for Anorexia Nervosa
Restrictive Type (Total Sample).

EDRC: Anorexia Nervosa Binging/Purging Type (males and females)

A Pearson correlation matrix was computed for each sample for the EDRC Anorexia Nervosa Binging/Purging type. For the total sample, the correlation matrix can be found in Table 13. Statistically significant (p < .05) correlations are indicated with an asterisk.

<table>
<thead>
<tr>
<th>Source</th>
<th>Df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1</td>
<td>11517.94</td>
<td>11517.94</td>
<td>163.73</td>
<td>.00</td>
</tr>
<tr>
<td>Residual</td>
<td>197</td>
<td>13857.89</td>
<td>70.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>198</td>
<td>25375.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>2</td>
<td>13996.37</td>
<td>6998.18</td>
<td>120.53</td>
<td>.00</td>
</tr>
<tr>
<td>Residual</td>
<td>196</td>
<td>11379.46</td>
<td>58.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>198</td>
<td>2537.83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 13: Correlation Matrix for the Independent Variables and the Dependent Variable of EDRC ANBPT (Males and Females).
For the Eating Disorder Risk Composite Anorexia Nervosa Binging/Purging type (male and female), self-esteem and family norms were entered into the model and collectively accounted for 55.00% of the variance (beta = .665) in EDRC ANBPT for the total sample. Self-esteem was entered into the model first and accounted for 44.00% of the variance (beta = .631), and family norms was entered second and accounted for 11.00% of the variance (beta = .336). These results indicate that students who have a lower self-esteem are more likely to have a higher risk for Anorexia Nervosa Binging/Purging Type. Likewise, students whose family norms are highly suggestive of dieting, by either or both parents, are more likely to have a higher risk for Anorexia Nervosa Binging/Purging Type. Both models are significant at the .05 alpha level. No other variables entered the model due to their high correlation with variables already in the model or their low correlation to the EDRC ANBPT. ANOVA results for each model can be found in Table 14.

<table>
<thead>
<tr>
<th>Model</th>
<th>Source</th>
<th>Df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 LSE</td>
<td>Regression</td>
<td>1</td>
<td>6027.28</td>
<td>6027.28</td>
<td>156.42</td>
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</tr>
<tr>
<td></td>
<td>Residual</td>
<td>197</td>
<td>7590.70</td>
<td>38.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>198</td>
<td>13617.99</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2 FN</td>
<td>Regression</td>
<td>2</td>
<td>7551.01</td>
<td>3775.50</td>
<td>121.97</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>196</td>
<td>6066.97</td>
<td>30.95</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>198</td>
<td>13617.99</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Table 14: Analysis of Variance for Regression and Residual for Anorexia Nervosa Binging/Purging Type (Total Sample, males and females).
EDRC: Bulimia Nervosa Type (males and females)

A Pearson correlation matrix was computed for each sample for the EDRC for Bulimia Nervosa Type. For the total sample, the correlation matrix can be found in Table 15. Statistically significant (p < .05) correlations are indicated with an asterisk.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDRC ANRT (1)</td>
<td>1.00</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Teasing (2)</td>
<td>.385*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index (3)</td>
<td>.166*</td>
<td>.428*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (4)</td>
<td>.470*</td>
<td>.379*</td>
<td>.066</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Self-Esteem (5)</td>
<td>.657*</td>
<td>.367*</td>
<td>.102</td>
<td>.637*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Norms (6)</td>
<td>.403*</td>
<td>.366*</td>
<td>.254*</td>
<td>.194*</td>
<td>.102</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Perfectionism (7)</td>
<td>.168*</td>
<td>.117</td>
<td>-.134</td>
<td>.102</td>
<td>.044</td>
<td>.208*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 15: Correlation Matrix for the Independent Variables and the Dependent Variable of EDRC BNT (Males and Females)

For the Eating Disorder Risk Composite Bulimia Nervosa type (male and female), self-esteem and family norms were entered into the model and collectively accounted for 54.50% of the variance (beta = .657) in EDRC BNT for the total sample. Self-esteem was entered into the model first and accounted for 43.10% of the variance (beta = .622), and family norms was entered second and accounted for 11.40% of the variance (beta = .340). These results indicate that students who have a lower self-esteem are more likely to have a higher risk for Bulimia Nervosa Type. Likewise, students whose family norms are highly suggestive of dieting, by either or both parents, are more likely to have a higher risk for Bulimia Nervosa Type. Both models are significant at the .05 alpha level. No other variables entered the model due to their high correlation with variables already in...
the model or their low correlation to the EDRC BNT. ANOVA results for each model can be found in Table 16.

<table>
<thead>
<tr>
<th>Model</th>
<th>Source</th>
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<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 LSE</td>
<td>Regression</td>
<td>1</td>
<td>8359.17</td>
<td>8329.78</td>
<td>149.22</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>197</td>
<td>11035.76</td>
<td>56.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>198</td>
<td>19394.93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 FN</td>
<td>Regression</td>
<td>2</td>
<td>10575.15</td>
<td>5287.57</td>
<td>117.50</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>196</td>
<td>8819.78</td>
<td>44.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>198</td>
<td>19394.93</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Table 16: Analysis of Variance for Regression and Residual for Bulimia Nervosa Type (Total Sample, males and females).

**EDRC: Anorexia Nervosa Restrictive Type (males only)**

A Pearson correlation matrix was computed for each sample for the EDRC for Anorexia Nervosa Restrictive Type. For the male sample, the correlation matrix can be found in Table 17. Statistically significant (p < .05) correlations are indicated with an asterisk.
Table 17: Correlation Matrix for the Independent Variables and the Dependent Variable of EDRC ANRT (Males Only).

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDRC ANRT (1)</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teasing (2)</td>
<td>.471*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index (3)</td>
<td>.235*</td>
<td>.370*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (4)</td>
<td>.457*</td>
<td>.395*</td>
<td>.196*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Self-Esteem (5)</td>
<td>.692*</td>
<td>.382*</td>
<td>.166</td>
<td>.592*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Norms (6)</td>
<td>.154</td>
<td>.357*</td>
<td>.187</td>
<td>.121*</td>
<td>-.108</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Perfectionism (7)</td>
<td>.019</td>
<td>.017</td>
<td>-.141</td>
<td>-.067</td>
<td>-.162</td>
<td>.218*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

For the Eating Disorder Risk Composite Anorexia Nervosa Restrictive type (male), self-esteem and family norms were entered into the model and collectively accounted for 53.20% of the variance (beta = .692) in EDRC ANRT for the total sample. Self-esteem was entered into the model first and accounted for 47.90% of the variance (beta = .717), and family norms was entered second and accounted for 5.30% of the variance (beta = .231). These results indicate that students who have a lower self-esteem are more likely to have a higher risk for Anorexia Nervosa Restrictive Type. Likewise, students whose family norms are highly suggestive of dieting, by either or both parents, are more likely to have a higher risk for Anorexia Nervosa Restrictive Type. Both models are significant at the .05 alpha level. No other variables entered the model due to their high correlation with variables already in the model or their low correlation to the EDRC ANRT. ANOVA results for each model can be found in Table 18.
Table 18: Analysis of Variance for Regression and Residual for Anorexia Nervosa
Restrictive Type (Males only).

<table>
<thead>
<tr>
<th>Model</th>
<th>Source</th>
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<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 LSE</td>
<td>Regression</td>
<td>1</td>
<td>4488.52</td>
<td>4288.52</td>
<td>81.90</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>89</td>
<td>4660.19</td>
<td>52.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>90</td>
<td>8948.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 FN</td>
<td>Regression</td>
<td>2</td>
<td>4759.85</td>
<td>2379.92</td>
<td>49.99</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>88</td>
<td>4188.86</td>
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<td></td>
<td>Total</td>
<td>90</td>
<td>8948.72</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*EDRC: Anorexia Nervosa Restrictive Type (females only)*

A Pearson correlation matrix was computed for each sample for the EDRC for Anorexia Nervosa Restrictive Type. For the female sample, the correlation matrix can be found in Table 19. Statistically significant (p < .05) correlations are indicated with an asterisk.

Table 19: Correlation Matrix for the Independent Variables and the Dependent Variable of EDRC ANRT (Females Only).
For the Eating Disorder Risk Composite Anorexia Nervosa Restrictive type (female), self-esteem and family norms were entered into the model and collectively accounted for 54.20% of the variance (beta = .659) in EDRC ANRT for the total sample. Self-esteem was entered into the model first and accounted for 43.40% of the variance (beta = .591), and family norms was entered second and accounted for 10.80% of the variance (beta = .336). These results indicate that students who have a lower self-esteem are more likely to have a higher risk for Anorexia Nervosa Restrictive Type. Likewise, students whose family norms are highly suggestive of dieting, by either or both parents, are more likely to have a higher risk for Anorexia Nervosa Restrictive Type. Both models are significant at the .05 alpha level. No other variables entered the model due to their high correlation with variables already in the model or their low correlation to the EDRC ANRT. ANOVA results for each model can be found in Table 20.

<table>
<thead>
<tr>
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<th>P</th>
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<td>6439.45</td>
<td>6439.45</td>
<td>81.30</td>
<td>.00</td>
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<tr>
<td></td>
<td>Residual</td>
<td>106</td>
<td>8395.46</td>
<td>79.20</td>
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<td></td>
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<td>.00</td>
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<td></td>
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<td>107</td>
<td>14834.91</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 20: Analysis of Variance for Regression and Residual for Anorexia Nervosa Restrictive Type (Females only).
EDRC: Anorexia Nervosa Binging/Purging Type (males only)

A Pearson correlation matrix was computed for each sample for the EDRC for Anorexia Nervosa Binging/Purging Type. For the male sample, the correlation matrix can be found in Table 2. Statistically significant (p < .05) correlations are indicated with an asterisk.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
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<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDRC ANBPT (1)</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teasing (2)</td>
<td>.472*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index (3)</td>
<td>.257*</td>
<td>.370*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (4)</td>
<td>.451*</td>
<td>.395*</td>
<td>.196*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Self-Esteem (5)</td>
<td>.670*</td>
<td>.382*</td>
<td>.166</td>
<td>.592*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Norms (6)</td>
<td>.187</td>
<td>.357*</td>
<td>.187</td>
<td>.121</td>
<td>-.108</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Perfectionism (7)</td>
<td>.054</td>
<td>.017</td>
<td>-.141</td>
<td>-.067</td>
<td>-.162</td>
<td>.218*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 21: Correlation Matrix for the Independent Variables and the Dependent Variable of EDRC ANBPT (Males Only).

For the Eating Disorder Risk Composite Anorexia Nervosa Binging/Purging type (male), self-esteem and family norms were entered into the model and collectively accounted for 51.60% of the variance (beta = .670) in EDRC ANRT for the total sample. Self-esteem was entered into the model first and accounted for 44.80% of the variance (beta = .698), and family norms was entered second and accounted for 6.80% of the variance (beta = .262). These results indicate that students who have a lower self-esteem are more likely to have a higher risk for Anorexia Nervosa Binging/Purging Type. Likewise, students whose family norms are highly suggestive of dieting, by either or both parents, are more likely to have a higher risk for Anorexia Nervosa Binging/Purging
Type. Both models are significant at the .05 alpha level. No other variables entered the model due to their high correlation with variables already in the model or their low correlation to the EDRC ANBPT. ANOVA results for each model can be found in Table 22.

<table>
<thead>
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<th>Source</th>
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<th>P</th>
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<td>Regression</td>
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<td>1961.55</td>
<td>1961.55</td>
<td>72.35</td>
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<td>Residual</td>
<td>89</td>
<td>2412.97</td>
<td>27.11</td>
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<td></td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
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<td>Regression</td>
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<td>2258.11</td>
<td>1129.05</td>
<td>46.94</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>88</td>
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</tr>
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<td></td>
<td>Total</td>
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<td>4374.52</td>
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</tr>
</tbody>
</table>

Table 22: Analysis of Variance for Regression and Residual for Anorexia Nervosa Restrictive Type (Males only).

**EDRC: Anorexia Nervosa Binging/Purging Type (females only)**

A Pearson correlation matrix was computed for each sample for the EDRC for Anorexia Nervosa Binging/Purging Type. For the female sample, the correlation matrix can be found in Table 23. Statistically significant (p < .05) correlations are indicated with an asterisk.
<table>
<thead>
<tr>
<th></th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDRC ANBPT (1)</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teasing (2)</td>
<td>.387*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index (3)</td>
<td>.196*</td>
<td>.487*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (4)</td>
<td>.490*</td>
<td>.372*</td>
<td>-.025</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Self-Esteem (5)</td>
<td>.668*</td>
<td>.362*</td>
<td>.078</td>
<td>.667*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Norms (6)</td>
<td>.459*</td>
<td>.399*</td>
<td>.370*</td>
<td>.220*</td>
<td>.202*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Perfectionism (7)</td>
<td>.273*</td>
<td>.215*</td>
<td>-.128</td>
<td>.253*</td>
<td>.229*</td>
<td>.211*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 23: Correlation Matrix for the Independent Variables and the Dependent Variable of EDRC ANBPT (Females Only).

For the Eating Disorder Risk Composite Anorexia Nervosa Binging/Purging type (female), self-esteem and family norms were entered into the model and collectively accounted for 55.50% of the variance (beta = .668) in EDRC ANRT for the total sample. Self-esteem was entered into the model first and accounted for 44.60% of the variance (beta = .599), and family norms was entered second and accounted for 10.90% of the variance. (beta = .337). These results indicate that students who have a lower self-esteem are more likely to have a higher risk for Anorexia Nervosa Binging/Purging Type. Likewise, students whose family norms are highly suggestive of dieting, by either or both parents, are more likely to have a higher risk for Anorexia Nervosa Binging/Purging Type. Both models are significant at the .05 alpha level. No other variables entered the model due to their high correlation with variables already in the model or their low correlation to the EDRC ANBPT. ANOVA results for each model can be found in Table 24.
Table 24: Analysis of Variance for Regression and Residual for Anorexia Nervosa

Binging/Purging Type (Females only).

EDRC: Bulimia Nervosa Type (males only)

A Pearson correlation matrix was computed for each sample for the EDRC for Bulimia Nervosa Type. For the male sample, the correlation matrix can be found in Table 25. Statistically significant (p < .05) correlations are indicated with an asterisk.

Table 25: Correlation Matrix for the Independent Variables and the Dependent Variable of EDRC BNT (Males Only)
For the Eating Disorder Risk Composite Bulimia Nervosa type (male), self-esteem and family norms were entered into the model and collectively accounted for 50.60% of the variance (beta = .657) in EDRC BNT for the total sample. Self-esteem was entered into the model first and accounted for 43.10% of the variance (beta = .686), and family norms was entered second and accounted for 7.50% of the variance (beta = .274). These results indicate that students who have a lower self-esteem are more likely to have a higher risk for Bulimia Nervosa Type. Likewise, students whose family norms are highly suggestive of dieting, by either or both parents, are more likely to have a higher risk for Bulimia Nervosa Type. Both models are significant at the .05 alpha level. No other variables entered the model due to their high correlation with variables already in the model or their low correlation to the EDRC BNT. ANOVA results for each model can be found in Table 26.

<table>
<thead>
<tr>
<th>Model</th>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 LSE</td>
<td>Regression</td>
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<td>2589.06</td>
<td>2589.06</td>
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<td>.00</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>89</td>
<td>3412.89</td>
<td>38.34</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>90</td>
<td>6001.95</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2 FN</td>
<td>Regression</td>
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<td>3035.30</td>
<td>1517.65</td>
<td>45.01</td>
<td>.00</td>
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<td>Residual</td>
<td>88</td>
<td>2966.65</td>
<td>33.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>190</td>
<td>6001.95</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 26: Analysis of Variance for Regression and Residual for Bulimia Nervosa Type (Males only).
EDRC: Bulimia Nervosa Type (females only)

A Pearson correlation matrix was computed for each sample for the EDRC for Bulimia Nervosa Type. For the female sample, the correlation matrix can be found in Table 27. Statistically significant (p < .05) correlations are indicated with an asterisk.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDRC ANRT (1)</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teasing (2)</td>
<td>.371*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index (3)</td>
<td>.193*</td>
<td>.487*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (4)</td>
<td>.480*</td>
<td>.372*</td>
<td>-.025</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Self-Esteem (5)</td>
<td>.663*</td>
<td>.362*</td>
<td>.078</td>
<td>.667*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Norms (6)</td>
<td>.452*</td>
<td>.399*</td>
<td>.370*</td>
<td>.220*</td>
<td>.202*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Perfectionism (7)</td>
<td>.265*</td>
<td>.215*</td>
<td>-.128</td>
<td>.253*</td>
<td>.229*</td>
<td>.211*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 27: Correlation Matrix for the Independent Variables and the Dependent Variable of EDRC BNT (Females Only).

For the Eating Disorder Risk Composite Bulimia Nervosa type (female), self-esteem and family norms were entered into the model and collectively accounted for 54.50% of the variance (beta = .663) in EDRC BNT for the total sample. Self-esteem was entered into the model first and accounted for 43.90% of the variance (beta = .596), and family norms was entered second and accounted for 10.60% of the variance (beta = .332). These results indicate that students who have a lower self-esteem are more likely to have a higher risk for Bulimia Nervosa Type. Likewise, students whose family norms are highly suggestive of dieting, by either or both parents, are more likely to have a higher risk for Bulimia Nervosa Type. Both models are significant at the .05 alpha level. No other variables entered the model due to their high correlation with variables already in
the model or their low correlation to the EDRC BNT. ANOVA results for each model can be found in Table 28.

<table>
<thead>
<tr>
<th>Model</th>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
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<tbody>
<tr>
<td>1 LSE</td>
<td>Regression</td>
<td>1</td>
<td>5116.41</td>
<td>5116.41</td>
<td>83.10</td>
<td>.00</td>
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<tr>
<td></td>
<td>Residual</td>
<td>106</td>
<td>6533.43</td>
<td>61.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>107</td>
<td>11649.85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 FN</td>
<td>Regression</td>
<td>2</td>
<td>6348.42</td>
<td>3174.21</td>
<td>62.86</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>105</td>
<td>5301.43</td>
<td>50.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>107</td>
<td>11649.85</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Table 28: Analysis of Variance for Regression and Residual for Bulimia Nervosa Type (Females only).
CHAPTER 4

DISCUSSION

Overview of Study Findings

The purpose of this study was to examine the connection of possible correlates (body mass index, teasing, depression, family norms, self-esteem, and perfectionism) and their relationship to eating disorder risk. Eating disorder risk was measured using the Eating Disorder Risk Composite score of the Eating Disorder Inventory-3. The study was conducted with a convenience sample of 215 high school students, who ranged in age from 15-18 years old and were primarily Caucasian. Differences between males and females on the Eating Disorder Risk Composite scores were examined. In addition, based upon results of the Neumark-Sztainer et al study, a set of possible predictors of eating disorder risk were examined for the total sample, male students, and female students using multiple regressions. Predictors were measured using a variety of assessment tools including scales on the Eating Disorder Inventory-3, the Reynolds Adolescent Depression scale, and the Perception of Teasing scale.

Results of the study indicate that males and females differ on their Eating Disorder Risk Composite scores based upon all three norm groups (Anorexia Nervosa Restrictive Type, Anorexia Nervosa Binging/Purging Type, and Bulimia Nervosa). Of the students surveyed 50.60% fell into the clinical range of the Eating Disorder Risk
Composite based upon the norms for Anorexia Nervosa Restrictive type, 37.40% fell into the clinical range of the Eating Disorder Risk Composite based upon the norms for Anorexia Nervosa Binging/Purging Type, and 13.50% fell into the clinical range of the Eating Disorder Risk Composite Bulimia Nervosa type. Regression analyses were conducted to find the best predictor of eating disorder risk for each norm group. Results of all regression analyses revealed that the best predictor of eating disorder risk was self-esteem and family norms. The second best predictor of eating disorder risk was self-esteem.

The percentage of participants who reached the clinical level for risk was high when compared to the percentage of individuals diagnosed with an eating disorder in the general population, which has been reported at 1-3% (Noden, 1994). The prevalence of disturbed eating behaviors is quite different from prevalence rates associated with clinical cases of eating disorders. Some researchers have estimated that for the school age population, the prevalence of disturbed eating behaviors is closer to 18-20% (Phelps & Bajorek, 1991). This rate is similar to the percentage of cases that fell into the clinical range for the Eating Disorder Risk Composite. The Eating Disorder Risk Composite simply measures risk for the development of an eating disorder as opposed to diagnosing clinical cases. At younger ages, individuals may not have yet developed an actual eating disorder, but may have elevated risk. For adolescents it may more important to examine the level of risk, as the level of risk may be a precursor to the later development of an eating disorder. Disturbed eating patterns typically begin during the adolescent years, yet most individuals deny that they have a problem (Phelps & Bajorek, 1991).
Results of research conducted by Neumark-Sztainer, Wall, Story, and Perry (2003) reported a prevalence of disordered eating habits over the past year of 57.50% for girls and 32.80% for boys. These unhealthy behaviors include, but are not limited to eating very little, skipping meals, taking diet pills, and use of laxatives. For this study 33.30%, 28.20%, and 9.40% of females reached clinical levels of eating disorder risk based upon eating disorder group type (Anorexia Nervosa Restrictive type, Anorexia Nervosa Binging/Purging Type, and Bulimia Nervosa Type). Males accounted for 17.30%, 9.20%, and 4.40% of clinical levels of eating disorder risk. When the current study is compared to the Neumark-Sztainer et al. (2003) study, it is obvious that a difference exists in the percentage of cases. The Neumark-Sztainer et al. (2003) study examined unhealthy eating behaviors, which consist solely of behaviors that had occurred in the past year. The Eating Disorder Risk Composite also looks at unhealthy behavior, but also includes an attitude component (body dissatisfaction). In addition, the questions related to the Eating Disorder Risk Composite are more related to the current time period, which could be a reason why the rates were so much higher for the Neumark-Sztainer et al. study. Also, body dissatisfaction is often looked at as a predictor variable of eating disorders or disorder eating behaviors. Garner (2004) suggests that if an individual has body dissatisfaction, but does not have other co-occurring risk factors, body dissatisfaction alone may not be enough to initiate an eating disorder. Body dissatisfaction is not only a risk factor for the initiation of disordered behaviors, but also as a perpetuating factor if disordered behaviors occur.
Gender Differences in Clinical Levels of Eating Disorder Risk

In the current study, significantly more females than males met clinical levels of risk for all three EDRC scores. Examining results for the three types of risk more closely, the biggest differences between the percentages meeting clinical levels were found for the Anorexia Nervosa Restrictive type, followed by the Anorexia Nervosa Binging/Purging Type, and a much smaller difference was found for the Bulimia Nervosa Type.

Similarities were found for both males and females. The research on gender difference for adolescence is very limited, with most research focusing on examining the female adolescent population.

The amount of females who are reported to have a clinical diagnosis for an eating disorder is almost 10 million, as compared to 1 million for males (National Eating Disorders Association, 2006). When investigating eating disorders for females, researchers have demonstrated that 80% of women are unsatisfied with how they look (Smolak, 1996). Girls often report higher levels of body dissatisfaction than boys, place more emphasis on the appearance of their bodies, and are more likely to engage in behaviors in which to decrease weight (McCabe and Ricciardelli, 2001). The pressure to be thin appears to be greater for adolescent females, than the pressure for adolescent males to be larger and muscular. For females, the emphasis of the ideal body is on being thin and satisfaction with their body was only mediated when females were actually underweight, whereas for males the emphasis is on gaining muscle and body dissatisfaction was mediated when males were at an average weight (Presnell, Bearman, & Stice, 2004). These factors may explain why females have higher rates of eating disorders when compared to males.
Lower prevalence of eating disorders for males may be related to the different body ideals for males, as compared to females (Carlat and Camargo, 1991 as cited in Leon, Fulkerson, Perry, Keel, & Klump, 1999). Males may find it easier to attain the muscular body associated with masculinity, as opposed to the thin ideal that is desired by females. Males may actually focus on decreasing fat and increasing weight by changing muscle structure, whereas females may be more focused on loosing weight overall in order to be smaller in size (McCabe & Riccardelli, 2001).

Overall, the number of students reaching the clinical level on the Eating Disorder Risk Composites was much lower for the Bulimia Nervosa Type, when compared to the Anorexia Nervosa Restrictive Type and Anorexia Nervosa Binging/Purging Type. Current research suggests a higher prevalence of clinical cases of bulimia nervosa, as compared to anorexia nervosa in the general population (National Eating Disorder Association, 2006). This research contradicts the findings of this study, as it would have been expected that the Bulimia Nervosa Type group would have had a higher level of clinical cases on the Eating Disorder Risk Composite.

The level of incidence in which individuals are diagnosed as having bulimia nervosa varies greatly, with reports ranging from 1% to 35%. Some studies have stated that the real number is somewhere between 4% to 8% (Miller, McCluskey-Fawcett, & Irving, 1993). Current research on adolescents has not been exhaustive and reports of prevalence rates have been limited. In a study done on high school students in 1988, Gross and Rose (as cited in Felker & Stivers, 1994) found that 9.6% of the females and 1.2% of the males were identified as being bulimic. Research on prevalence of behaviors related to disturbed eating behaviors, such as skipping meals and fasting are more related
to anorexia nervosa, than bulimia. Nemark-Sztainer (2005) found that over 50% of females and over 33% of males engaged in such behaviors and Kurth et al. (1995, as cited in National Eating Disorder Association, 2006) found that 91% of the college females surveyed in their study, tried to control their weight through activities related to dieting, as opposed to bulimic indices. Because the prevalence rates of bulimia are so varied across studies, understanding fully the reason as to why the percentage of adolescents who reached clinical levels of risk was lower for bulimia nervosa, as compared to the anorexia nervosa types may be difficult. It may be hypothesized that behaviors and attitudes associated with anorexia, such as being afraid of gaining weight, limiting caloric intake, or thinking about dieting, have become commonplace in our society and is not considered to be abnormal thought or behaviors. Bulimic behaviors or attitudes, such as vomiting food, taking laxatives to rid oneself of food, eating in secrecy, or thinking about overeating are considered to be more extreme types of behaviors, when compared to those associated with anorexia, therefore it would seem that less people would actually engage in bulimic behaviors.

*Gender Differences in Eating Disorder Risk Composite Scores.*

When comparing males and females on their EDRC scores, females reported significantly higher scores for the EDRC Anorexia Nervosa types, but not for Bulimia Nervosa. Females in general were expected to have high mean T-scores than their male counterparts, as the research has demonstrated that a majority of the individuals that have an eating disorder or have elevated levels of eating disorder risk are female (Cumella, 2003; Felkers & Stivers, 2002). Garner (2004) found that males who had been diagnosed with an eating disorder usually scored lower than females on the subscales associate with
Eating Disorder Risk, as measured on the Eating Disorder Inventory-3. Females have a
tendency to engage in dieting behaviors more than males and will usually resort to more
extreme measures in order to attain the goal of having a thinner body (Dwyer, Feldman,
Posen & Gross, 1987 as cited in Shapiro, Newcomb, & Loeb, 1997).

Examination of the individual subscales that make up the Eating Disorder Risk
Composite indicates a statistically significant difference between males and females on
their Drive for Thinness and Body Dissatisfaction scores, but statistical significance was
not determined for their Bulimia scores. These differences were found when comparing
the subscales for all three risk types for both males and females. When examining the
subscale scores for adolescents who were not at the clinical level of risk, the biggest
gender difference was found for body dissatisfaction, followed by the drive for thinness
subscale. The smallest gender difference was noted on the bulimia subscale (Garner,
2004).

Based upon the results of this study, males and females engage in bulimic type
behaviors to a lesser degree, as compared to behaviors associated with anorexia nervosa
restrictive type and anorexia nervosa binging/purging type. Females often have higher
levels of body dissatisfaction as compared to males (Stive and Whitenton, 2002, as cited
in Presnell, Bearman, and Stice, 2004). As the level of body dissatisfaction rises, females
may be more likely to engage in dangerous behaviors such as restricting calorie intake,
eating low-fat or no-fat foods, and over-exercising. For females the focus is to lose
weight and the way to do that is to cut down on the amount of fat and calories that the
body consumes. It is commonplace today for individuals to engage in behaviors such as
exercising more and cutting back on calories without causing alarm. For males, the focus is often on building muscle, as opposed to losing weight (Cumella, 2003) therefore, although their level of body dissatisfaction may rise, they are not as likely to cut calories like females.

When analyzing the questions of the Eating Disorder-3, the questions that are associated with bulimia, include questions related to eating or drinking in secrecy, thinking about overeating, and stuffing oneself with food (Garner, 2004). The questions associated with drive for thinness related to dieting in general, being upset over gaining weight, and being afraid that one will continue to gain. When comparison of the individual subscales of the Eating Disorder Risk Composite are completed for each risk type, the weighting of the three subscales can vary, depending on the comparison group. Population (Garner, 2004).

Correlates of Eating Disorder Risk

For all three risk types and for all three samples (males, females, and total sample), low self-esteem and family norms were significant predictors of the Eating Disorder Risk Composite with low self-esteem being the most salient factor. Self-esteem plays an influential role in the development and maintenance of eating disorders and eating disorder risk (Friedstad & Rise, 2004). Some researchers have suggested that self-esteem can lead to feelings of ineffectiveness which places the individual at a higher risk for the development of disordered behaviors (Hart & Ollendick, 1985; Shisslak et al., 1998, as cited in Littleton & Ollendick, 2003; Posavac & Posavac, 2002). With the perpetual influence of media portraying to individuals the idea that being thin and beautiful is the norm, many young people feel pressure to meet these ideals (Snow,
If a young person begins to develop a negative view of themselves, due to these influences, one can experience lower levels of self-esteem and self-confidence. This lower self-confidence leads children and adolescents to develop an increased risk for the development of an eating disorder or disordered eating behaviors (Snow, 2000).

For this study, family norms were related to the impact that parental dieting or parental influence to diet. Although family norms were a part of the second model of this study, the contribution as a risk factor was not as strong of a factor as self-esteem. Garner (2004) discusses a number of risk factors associated with eating disorders in the Eating Disorder Inventory-3 manual. One high risk parental risk factor is whether or not the mother of the individual has an eating disorder, thus linking family norms as a strong predictor for eating disorder risk. Medium risk family factors included parental dieting and parental critical comments about weight (Garner, 2004). Pike and Rodin (1991, as cited in Liittleton & Ollendick, 2003) found that modeling of disordered behaviors by mother had an impact on girls’ behavior as well, in that the girls would also participate in similar disordered behaviors. It is also possible, that there may be a genetic predisposition among families who have multiple family members that have eating disorders (DeAngelis, 2002).

There has been speculation that parents who pressure their child to lose weight can influence the way that their child perceives their body. Dissatisfaction with body weight can thus influence the risk of disordered eating behaviors or eating disorders (Byely et al., 2000; Gowers & Shore, 2001 as cited in Littleton and Ollendick, 2003). Vincent and McCabe(2000, as cited in Littleton & Ollendick, 2003) found that parental comments influenced disordered eating behaviors, body dissatisfaction, and
dieting. Parents can make comments to their child to lose weight and thus the views that the child has about their body may become negative in nature, thus becoming a risk factor for disordered eating behaviors or eating disorders in the future.

The role of the family and the influence that it has on the development of eating disorders or increased eating disorder risk is not unfounded in the research. In addition, family relations that are considered to be stressed, can pose as a risk factor for increased eating disorder risk (Byely et al. 2000; Swarr & Richards, 1996, as cited in Littleton & Ollendick, 2003). Felkers & Stivers (2002) examined the role of family environment on eating disorder risk development and found that there is a significant association between the two factors. Results of the Family Environment Scale (FES) demonstrated that perception of low cohesion, organization and independence was associated with increased levels of eating disorder risk (Felkers and Stivers, 2002). The family environment in which an individual lives is highly associated with the risk of developing an eating disorder (Leon, Fulkerson, Perry, & Dube, 1994).

Low levels of self-esteem are also considered to be a high risk factor for the development of eating disorder risk, as compared to other factors. Garner (2004) states that most theories have held low self-esteem to be a major factor, not only as a risk factor, but also as a perpetuating factor with eating disorders. Many researchers have discovered that low self-esteem is related to disordered eating behaviors in several ways. Low self-esteem can be linked to body dissatisfaction and then lead to disordered eating behaviors or low self-esteem can be linked to ineffectiveness and thus to restrictive dieting, as a means of control (Littleton & Ollendick, 2003). If an individual has low self-esteem in relation to their body, they may develop a heightened level of dissatisfaction.
with their body. Once the level of dissatisfaction becomes extreme enough, the individual may resort to disordered eating behaviors as a way of lessening the dissatisfaction. Some individuals may also resort to engage in disordered behaviors, as way to gain control over certain aspects of their lives. The easiest way would be by controlling the behaviors associated with eating.

Several factors did not contribute to the model. On such factor was depression. Wertheim, Koerner, and Paxton (2001) conducted a study that examined the longitudinal predictors of restrictive eating and bulimic tendencies in adolescent girls. When self-esteem was used as a predictor of restrictive eating and bulimic tendencies, it was correlated strongly with depression, which was correlated with bulimia. Depression had a high correlation with low self-esteem, but overall, did not add anything different to the final model. It is possible that the level of depression affects an individual’s level of self-esteem. Overall results suggested a moderate level of predictability for depression and self-esteem on drive for thinness and bulimic behaviors.

Body mass index, perfectionism, and teasing were additional factors that were suspected to be related to scores of the Eating Disorder Risk Composite, based upon the current literature. Contrary to the results of this study, body mass index has been found to be correlated with body dissatisfaction for males and females and correlated with drive for thinness with males (Wiseman, Peltzman, Halmi, and Sunday, 2004). It is possible that a bimodal distribution may exist with the correlates of BMI and teasing, in that if you have a low BMI, you are less likely to be teased about your weight and vice versa if you have a high BMI. Perfectionism may be linked more closely with depression or self-esteem as a precursory factor related to eating disorder risk. It is possible that although
these factors were not significant enough to be part of the model related to the Eating Disorder Risk Composite, these factors can still play an influential part in the development of disordered eating behaviors and eating disorders. As opposed to having a direct effect, these factors may have more of an effect on the factors such as depression and self-esteem.

The initial model in the Neumark-Sztainer, Wall, Story, and Perry (2003) study listed several socio-environmental correlates (family-peer weight norms and teasing and family connectedness) that were thought to be related to personal correlates (body mass index, weight-body concerns, psychological well being, and health-nutrition attitudes), which would ultimately lead to unhealthy weight control behaviors. Final model testing revealed that psychological well-being, which was a combination of depression and self-esteem, was significant when model testing was performed. Body mass index was not a direct correlation to unhealthy weight control behaviors, but was correlated with weight-body concerns, which was significantly related to unhealthy weight control behavior. What is important to understand is the implications of certain factors, such as BMI, teasing, and perfectionism that may not demonstrate a direct correlation with eating disorder risk, but may have a more indirect correlation through such factors as self-esteem, which has a more direct effect.

Clinical Implications

Everyday, individuals are bombarded with ways to lose weight. From the email inbox, shows on television that push individuals to be the person who has lost the most, the infomercials on TV and radio, to the magazine that is received in the mail (Cumella, 2005). Most Americans are constantly trying to lose weight and keep it off. That
mentality has not been limited to adults, but as the research has demonstrated, even adolescents and children are facing those same issues everyday. Adults who work closely with adolescents need to understand the aesthetic pressures that are put on people at such a young age, and be aware of the precursory risks (low self-esteem, depression, etc.) and the symptoms of eating disorders. Parents, especially must be proactive if they suspect that their child may be at risk for the development of an eating disorder (Cumella, 2005, ANRED, 2006). The ANRED web site (www.anred.com) provides some tips for parents, such as modeling healthy food and exercise behavior, not participating in power struggles over food, and eating together as a family. It is also helpful for parents to participate in stress reduction programs where the focus is on helping themselves, so that they may better help their child. Parents can learn about strategies for helping their child if they suspect that they may have an eating disorder or disordered eating behaviors by visiting the ANRED web site (www.anred.com) or the National Eating Disorder Association web site (www.edap.org), which provides parents with links to resources, books, handouts, videos, etc.

While parents need to be aware of the warning signs of eating disorders, as well as the predisposing factors that can increase risk, parents also need to be aware of the influence that their actions and comments have on their children and their body image. The findings of this study have demonstrated that family norms may be related to the increase of eating disorder risk. Parents who have a preoccupation with weight or suggest to their child to that they lose weight, can be setting their child up for an increase in risk down the road (McCabe & Ricciardelli, 2001). Parents should model healthy eating behaviors, such as planning healthy meals, engaging in moderate amounts of exercise,
encouraging the family to participate in fun activities, actively listening to their child, and trying to promote self-esteem (ANRED, 2006; National Eating Disorder Association, 2006). It is important that parents stay away from criticizing their own body, as well as their child’s in an effort to show acceptance, instead of expecting perfection.

As the age in which individuals are developing eating disorders continues to decline (Daw, 2001), identifying methods for assessing risk in younger children is needed. Although some assessment tools cut across a wide age span, developmental differences need to be examined. Developmental differences between children who are 5 years old and adolescents who are 16 years old are likely to result in different conceptualizations regarding the correlates that are related to eating disorder risk. In addition, other factors such as culture, behavior, and physical symptoms have not been adequately addressed (Jimerson, Pavelski, & Orliss, 2002).

The following are some self-report assessment tools that are currently being used with children. The Eating Disorder Inventory-C (EDI-C) is a self-report survey, similar in format to the Eating Disorder Inventory-3 and based on the Eating Disorder Inventory-2 (year). The Children’s Eating Attitudes Test (ChEAT) is the children’s version of the EAT (Garner & Garfinkel, 1979) and is a screening tool that can be used with children under the age of 15 (Smolak & Levine, 1994). Both instruments assess the severity of symptoms that are associated with specific eating disorders (anorexia nervosa and bulimia nervosa). These instruments provide some information as to the severity of symptoms associated with eating disorder risk and disordered eating behaviors, but how is it handled when a child who is 7 years old, who is suffering from an eating disorder already, be capable of answering questions, when they can hardly read them themselves?
The school environment provides a safe haven for many children and it also provides educators with access to serve children who are experiencing issues, such as those associated with eating disorders (Boes, Ng, & Daviston, 2004). Educators and administrators need to incorporate the mental health needs of their students as a number one priority (NASP Comminique, 2001). School psychologists especially, have an opportunity to provide services to children that are in their schools, both on an individual and group basis, as well as serving as a point of information and referral. Focusing on academics and mental health may seem daunting to school professionals, but many simple yet effective strategies can be used. A resource area with information on various mental health concerns, including eating disorders, can be included in the school building to provide both education and prevention. A psychoeducational method of prevention has been commonly used as a tool for prevention, and can also begin the starting place for intervention for some students (Littleton & Ollendick, 2003). Talking about eating disorders and disordered eating behaviors at an early age, even in the elementary schools, is another prevention strategy for eating disorders (Jimerson, Pavelski, and Orliss 2002), and this information is likely to be consistent with state standards of learning related to health education. To assist school professionals with this strategy, curricula materials need to be developed based on evidenced-based practice. Jimerson, Pavelski, and Orliss (2002), suggest that educators have a distinctive opportunity to provide not only help to students who have disordered eating behaviors, but also as a prevention tool. Such prevention can be provided in several ways, which include providing risk prevention with the general school population, selective programming for targeted students, and direct
intervention with students who have been identified as high-risk or have a clinical diagnosis.

Limitations of Study

The use of the Eating Disorder Inventory-3 with an adolescent sample is likely to be problematic for various reasons. Although the EDI-3 can be used with children as young as 13 years of age according to the manual, could be considered a limitation of the study, as the instrument does not have a large national representative adolescent normative group. Although the instrument is considered to be adequate for individuals who are 13 years and older, the questions might be viewed in a much different manner depending on the age of the individual. The scale provides a normative group of adolescents that the results of the instrument should be compared to, but again, the number of individuals used for this normative group is relatively small (319 U.S. sample and 35 International sample). In addition, the Low Self-Esteem scale used for this study was a subscale of the EDI-3, which means that there may have been a greater chance that Low Self-Esteem would have been highly correlated to the EDRC scores. For future studies, it may be more advantageous to use a separate instrument to measure self-esteem, as to avoid any possibility of item contamination. For the purpose of the study, the typical clinical range, based on a clinical sample of eating disorder patients, was used as the cut score to determine if an individual reports symptomatology at the clinical level. These are also patients who can afford treatment and are willing to seek help, thus possibly limiting generalizability to a large population. It may be oversensitive in the determination of clinical versus nonclinical cases of eating disorder risk, which may increase the risk of false positives.
Students in the school districts where the data was collected were largely Caucasian and middle class. Due to the limited number of African-American, Latino(a) and other ethnic groups of students in the current study, investigating ethnic differences related to gender differences and correlates of eating disorder risk for African American adolescents could not be completed. This lack of external validity limits the degree to which these results can be generalized to students in districts outside of those that are suburban, primarily Caucasian, and in the Midwest.

The study was conducted using a convenience sample, not a true random sample, due to the need for district approval, parent approval, and participant assent. Students who did not participate may have been afraid to answer the questions relating to eating habits and how they feel about themselves. If this hypothesis is true, the percentage of students who reached clinical levels on the Eating Disorder Risk Composite may actually be lower than the student body at large for that district. Students who did participate may come from families that are more open and willing to talk about issues, thus being more open about their feelings on the survey materials. Regardless, this study does provide at least a small snapshot of how students feel about themselves and provides evidence to begin understanding eating disorder risk among adolescent populations.

Although the sample size for the study was sufficient in terms of power for the statistical analyses, the sample size relative to the overall population of students of the targeted high schools was small. The sample size for this study was considerably smaller than the study conducted by Neumark-Sztainer, Wall, Story, and Perry (2003), which included over 4,000 adolescent males and females, but the percentage of students who participated from each school may have been similar. The strength of the Neumark-
Sztainer study was the inclusion of urban and suburban school district (31 middle and high schools), but similarities to this study include one metropolitan area and the class subjects were similar as well.

An additional limitation of the study relates to the floor effect for age. Only students who were 15 years or older could participate in the study due to age limits in the normative samples for several of the study instruments. Although the participating high schools have students as 14 years of age, none of these students in the participating high schools were allowed to participate. This limitation on the age range reduces the ability of the results to be generalized to other populations, such as middle school or elementary age school children. Attitudes and influences can change as an individual gets older, therefore knowing how and when these changes occur can help in the development of better programming for prevention and intervention.

**Directions for Future Research**

Research is desperately needed with the younger age group, even with those who are in their preadolescent years. Given the declining age with which students are expressing disordered eating behaviors, younger populations need to be studied (McVey, Tweed, & Blackmore, 2004). The difficulty with research, especially with younger school-age children is accessibility to these populations. Many schools do not want to expose their students to research, as the demands in the classroom have become even more rigid than ever before, in terms of academic accountability from the installation of No Child Left Behind (www.ed.gov).

More research needs to be conducted on evidence-based practice with prevention programs in the schools. Prevention programs could be conducted on several different
levels, such as a school wide program on healthy eating, proper exercise, self-esteem building or focused more intensely on children who may show signs of risk (Littleton & Ollendick, 2003). As school psychologists have expand their role beyond that of a psychometrician (Bracken, 2003), they could easily assume the role of coordinator for prevention programs in the schools, especially for students who are considered to be at-risk (LeCapitane, 2000).

Intervention of eating disorders has been a continual issue, especially for young individuals. Treatment of an eating disorder is often a complex task that requires a combination of medical care, nutritional counseling, psychological services, and the possibility of medication (Klein & Walsh, 2003). Hospitalization may be required if the individual’s case is severe and may cause immediate harm to that person (NIMH, 2001). Many intervention/treatment options are costly (Levitt and Sansone, 2003) and are not located close to where many children live (Stein, 2004). For many individuals, have an eating disorder is often a persistent illness, even with treatment (Klein & Walsh, 2003), therefore more research should explore the long-term efficacy of treatment modalities, as well as efficacy based upon age groups.

More research is needed in the areas of different racial/ethnic groups, as well as identification of the proper assessment tools in which to measure eating concerns among these diverse groups (Franko et al., 2004). As eating disorders cross into ethnic and racial groups that were once thought to be immune from such issues, researchers and test constructors need to validate their instruments with normative groups that have proportionate racial representation. Much of the research on eating disorders have not included females from diverse ethnic backgrounds, such as African-American or Latina
(Lester & Petrie, 1998) and many assessment tools do not include a variety of racial and ethnic groups in their normative sample, thus making it difficult to justify applicability of the test results to these groups (Franko et al., 2004). Cultural differences, such as level of identification with a specific ethnic group, socioeconomic status, parental education level, etc. need to be taken into account when assessment of these individuals in conducted (le Grange, Stone, & Brownell, 1998).

Summary/Conclusion

Results of this study indicate a difference on the Eating Disorder Risk Composite scores for both male and female adolescents. A difference was found in the percentage of males and females who reached clinical levels on the Eating Disorder Risk Composite score, as measured by the Eating Disorder Inventory-3. When examining the factors associated with eating disorder risk, two variables reached statistical significance. As the variable with the strongest zero-order correlation with all three EDRC types, low self-esteem was entered into the model first for both males and females, and the total sample. In the second step, family norms was entered into the model and predicted a significant amount of variance above and beyond that of low self-esteem for all three samples.

As the age of the development of eating disorders continues to decrease, eating disorders and eating disorder risk needs to be investigated further in younger populations. Parents and educators need to take a proactive role in helping to provide prevention, as well as intervention as soon as possible. Promoting positive self-esteem and decreasing the influence of the thin ideal is imperative to lessen the destruction that is caused by eating disorders, given the low recovery rate for clinical cases and the life-long battle it
causes for its victims. Prevention programs in schools have at least demonstrated short-term positive effects, but more long-term efficacy of these programs is still needed.
APPENDIX A

DSM-IV CRITERIA FOR EATING DISORDERS
Diagnostic criteria for 307.1 Anorexia Nervosa (DSM-IV, 2000, p. 589)

A. Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less that 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).

B. Intense fear of gaining weight or becoming fat, even though underweight.

C. Disturbance in the way in which one’s body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.

D. In postmenarcheal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration.)

Specify type:

Restricting Type: during the current episode of Anorexia Nervosa, the person has not regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

Binge-Eating/Purging Type: during the current episode of Anorexia nervosa, the person has regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas)
Diagnostic criteria for 307.51 Bulimia Nervosa (DSM-IV, 2000, p. 594)

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:

(1) eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances

(2) a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating

B. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.

C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for 3 months.

D. Self-evaluation is unduly influenced by body shape and weight.

E. The disturbance does not occur exclusively during episodes of Anorexia

Specify Type

Purging Type: during the current episode of Bulimia Nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas

Nonpurging type: during the current episode of Bulimia Nervosa, the person has used other inappropriate compensatory behaviors, such as fasting or excessive
exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas
The Eating Disorder Not Otherwise Specified category is for disorders of eating that do not meet the criteria for any specific Eating Disorder. Examples include

1. For females, all of the criteria for Anorexia Nervosa are met except that the individual has regular menses.
2. All of the criteria for Anorexia Nervosa are met except that, despite significant weight loss, the individual’s current weight is in the normal range.
3. All of the criteria for Bulimia Nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur at a frequency of less than twice a week for a duration of less than 3 months.
4. The regular use of inappropriate compensatory behavior by an individual of normal body weight after eating small amounts of food (e.g. self-induced vomiting after the consumption of two cookies).
5. Repeatedly chewing and spitting out, but not swallowing, large amounts of food.
APPENDIX B

INSTRUMENTS
INSTRUCTIONS

First, write your name and the date on the EDI-3 Answer Sheet. Your ratings on the items below should be circled on the Answer Sheet. The items ask about your attitudes, feelings, and behaviors. Some of the items relate to food or eating; other items ask about your feelings about yourself.

For each item, decide if the item is true about you ALWAYS (A), USUALLY (U), OFTEN (O), SOMETIMES (S), RARELY (R), or NEVER (N). Circle the letter that corresponds to your rating on the Answer Sheet. For example, if your rating for an item is OFTEN, you would circle the “O” for that item on the Answer Sheet.

Respond to all of the items, making sure that you circle the letter for the rating that is true about you. DO NOT ERASE! If you need to change an answer, mark an “X” through the incorrect letter, and then circle the correct one.

1. I eat sweets and carbohydrates without feeling nervous.
2. I think that my stomach is too big.
3. I wish that I could return to the security of childhood.
4. I eat when I am upset.
5. I stuff myself with food.
6. I wish that I could be younger.
7. I think about dieting.
8. I get frightened when my feelings are too strong.
9. I think that my thighs are too large.
10. I feel ineffective as a person.
11. I feel extremely guilty after overeating.
12. I think that my stomach is just the right size.
13. Only outstanding performance is good enough in my family.
14. The happiest time in life is when you are a child.
15. I am open about my feelings.
16. I am terrified of gaining weight.
17. I trust others.
18. I feel alone in the world.
19. I feel satisfied with the shape of my body.
20. I feel generally in control of things in my life.
21. I get confused about what emotion I am feeling.
22. I would rather be an adult than a child.
23. I can communicate with others easily.
24. I wish I were someone else.
25. I exaggerate or magnify the importance of weight.
26. I can clearly identify what emotion I am feeling.
27. I feel inadequate.
28. I have gone on eating binges where I felt that I could not stop.
29. As a child, I tried very hard to avoid disappointing my parents and teachers.
30. I have close relationships.
31. I like the shape of my buttocks.
32. I am preoccupied with the desire to be thinner.
33. I don’t know what’s going on inside me.
34. I have trouble expressing my emotions to others.
35. The demands of adulthood are too great.
36. I hate being less than best at things.
37. I feel secure about myself.
38. I think about bingeing (overeating).
39. I feel happy that I am not a child anymore.
40. I get confused as to whether or not I am hungry.
41. I have a low opinion of myself.
42. I feel that I can achieve my standards.
43. My parents have expected excellence of me.
44. I worry that my feelings will get out of control.
45. I think my hips are too big.
46. I eat moderately in front of others and stuff myself when they’re gone.
47. I feel bloated after eating a normal meal.
48. I feel that people are happiest when they are children.
49. If I gain a pound, I worry that I will keep gaining.
50. I feel that I am a worthwhile person.
51. When I am upset, I don’t know if I am sad, frightened, or angry.
52. I feel that I must do things perfectly or not do them at all.
53. I have the thought of trying to vomit in order to lose weight.
54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).
55. I think that my thighs are just the right size.
56. I feel empty inside (emotionally).
57. I can talk about personal thoughts or feelings.
58. The best years of your life are when you become an adult.
59. I think my buttocks are too large.
60. I have feelings I can’t quite identify.

(continued)
61. I eat or drink in secrecy.
62. I think that my hips are just the right size.
63. I have extremely high goals.
64. When I am upset, I worry that I will start eating.
65. People I really like end up disappointing me.
66. I am ashamed of my human weaknesses.
67. Other people would say that I am emotionally unstable.
68. I would like to be in total control of my bodily urges.
69. I feel relaxed in most group situations.
70. I say things impulsively that I regret having said.
71. I go out of my way to experience pleasure.
72. I have to be careful of my tendency to abuse drugs.
73. I am outgoing with most people.
74. I feel trapped in relationships.
75. Self-denial makes me feel stronger spiritually.
76. People understand my real problems.
77. I can’t get strange thoughts out of my head.
78. Eating for pleasure is a sign of moral weakness.
79. I am prone to outbursts of anger or rage.
80. I feel that people give me the credit I deserve.
81. I have to be careful of my tendency to abuse alcohol.
82. I believe that relaxing is simply a waste of time.
83. Others would say that I get irritated easily.
84. I feel like I am losing out everywhere.
85. I experience marked mood shifts.
86. I am embarrassed by my bodily urges.
87. I would rather spend time by myself than with others.
88. Suffering makes you a better person.
89. I know that people love me.
90. I feel like I must hurt myself or others.
91. I feel that I really know who I am.
Fill in your name and the date. Follow the instructions in the EDI-3 Item Booklet and enter your ratings on this sheet.

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<td>A U O S R N</td>
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<td>A U O S R N</td>
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<td>A U O S R N</td>
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</table>
Directions: Listed below are some sentences about how you feel. Read each sentence and decide how often you feel this way. Decide if you feel this way almost never, hardly ever, sometimes, or most of the time. To answer each item, circle the number under the answer that best describes how you really feel. Remember, there are no right or wrong answers. Just choose the answer that tells how you usually feel.

|   |   | Almost | | Hardly | | Sometimes | | Most of | the time |
|---|---|--------|---|--------|---|-----------|---|---------|
| 1. I feel happy |   | 1 | 2 | 3 | 4 |   |
| 2. I worry about school |   | 1 | 2 | 3 | 4 |   |
| 3. I feel lonely |   | 1 | 2 | 3 | 4 |   |
| 4. I feel my parents don’t like me |   | 1 | 2 | 3 | 4 |   |
| 5. I feel important |   | 1 | 2 | 3 | 4 |   |
| 6. I feel like hiding from people |   | 1 | 2 | 3 | 4 |   |
| 7. I feel sad |   | 1 | 2 | 3 | 4 |   |
| 8. I feel like crying |   | 1 | 2 | 3 | 4 |   |
| 9. I feel that no one cares about me |   | 1 | 2 | 3 | 4 |   |
| 10. I feel like having fun with other students |   | 1 | 2 | 3 | 4 |   |
| 11. I feel sick |   | 1 | 2 | 3 | 4 |   |
| 12. I feel loved |   | 1 | 2 | 3 | 4 |   |
| 13. I feel like running away |   | 1 | 2 | 3 | 4 |   |
| 14. I feel like hurting myself |   | 1 | 2 | 3 | 4 |   |
| 15. I feel that other students don’t like me |   | 1 | 2 | 3 | 4 |   |
| 16. I feel upset |   | 1 | 2 | 3 | 4 |   |
| 17. I feel life is unfair |   | 1 | 2 | 3 | 4 |   |
| 18. I feel tired |   | 1 | 2 | 3 | 4 |   |
| 19. I feel I am bad |   | 1 | 2 | 3 | 4 |   |
| 20. I feel I am no good |   | 1 | 2 | 3 | 4 |   |
| 21. I feel sorry for myself |   | 1 | 2 | 3 | 4 |   |
| 22. I feel mad about things |   | 1 | 2 | 3 | 4 |   |
| 23. I feel like talking to other students |   | 1 | 2 | 3 | 4 |   |
| 24. I have trouble sleeping |   | 1 | 2 | 3 | 4 |   |
| 25. I feel like having fun |   | 1 | 2 | 3 | 4 |   |
| 26. I feel worried |   | 1 | 2 | 3 | 4 |   |
| 27. I get stomachaches |   | 1 | 2 | 3 | 4 |   |
| 28. I feel bored |   | 1 | 2 | 3 | 4 |   |
| 29. I like eating meals |   | 1 | 2 | 3 | 4 |   |
| 30. I feel like nothing I do helps any more |   | 1 | 2 | 3 | 4 |   |
PERCEPTION OF TEASING SCALE

We are interested in whether you have been teased and how this affected you.

First, for each question rate how often you think you were teased (using the scale provided, "never" (1) to "always" (5)).

<table>
<thead>
<tr>
<th>Never</th>
<th>1</th>
<th>Sometimes</th>
<th>3</th>
<th>Very Often</th>
<th>5</th>
</tr>
</thead>
</table>

Second, unless you responded "never" to the question, rate how upset you were by the teasing "not upset" (1) to "very upset" (5).

<table>
<thead>
<tr>
<th>Not upset</th>
<th>1</th>
<th>Somewhat upset</th>
<th>3</th>
<th>Very upset</th>
<th>5</th>
</tr>
</thead>
</table>

1. People made fun of you because you were heavy.  
   How upset were you?  
   1  2  3  4  5

2. People made jokes about you being heavy.  
   How upset were you?  
   1  2  3  4  5

3. People laughed at you for trying out for sports because you were heavy.  
   How upset were you?  
   1  2  3  4  5

4. People called you names like "fatso."  
   How upset were you?  
   1  2  3  4  5

5. People pointed at you because you were overweight.  
   How upset were you?  
   1  2  3  4  5

6. People snickered about your heaviness when  

100
you walked into a room alone.  

How upset were you?  

7. People made fun of you by repeating something you said because they thought it was dumb.  

How upset were you?  

8. People made fun of you because you were afraid to do something.  

How upset were you?  

9. People said you acted dumb.  

How upset were you?  

10. People laughed at you because you didn't understand something.  

How upset were you?  

11. People teased you because you didn't get a joke.  

How upset were you?
Please answer the following questions to the best of your ability using the following responses:

1 (Not at All)
2 (A little bit)
3 (Somewhat)
4 (Very much)

<table>
<thead>
<tr>
<th>Description</th>
<th>Response</th>
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<tbody>
<tr>
<td>My mother diets to lose weight or keep from gaining weight.</td>
<td></td>
</tr>
<tr>
<td>My mother encourages me to diet to control my weight.</td>
<td></td>
</tr>
<tr>
<td>My father diets to lose weight or keep from gaining weight.</td>
<td></td>
</tr>
<tr>
<td>My father encourages me to diet to control my weight.</td>
<td></td>
</tr>
</tbody>
</table>
Demographics

Please fill in the following information to the best of your knowledge

Gender (M/F) ___________________
Age: __________________
Year in School: __________________
Height: __________________
Weight: __________________
Race or Ethnicity (check all that apply):
White/Caucasian __________________
African American __________________
Hispanic __________________
Asian __________________
Somali __________________
Other (please indicate) _________________

Additional Questions:

Do you participate in any varsity sports within school or competitive sports outside of school? __________________

How many times per week do you participate in exercise activities, such as running, walking, weight-lifting, etc. __________________
APPENDIX C

ETHICAL ISSUES
Ethical Issues

As the purpose of this study will be to examine attitudes associated with eating disorders, depression, and body image, it is imperative to be sensitive to how it may affect the individuals that will be participating in the study. Ethical issues that must be addressed are: benefits of the study, risks involved in the study, confidentiality, informed consent, and debriefing of the participants.

Benefits of Study

The issue of eating disorders is one that has often been ignored within the school setting. The research in many school psychology and educational journals have often ignored eating disorders as an issue that should be investigated, as it has not been considered to be an educationally related topic. It has been demonstrated that children are engaging in disordered behaviors toward eating at younger ages than ever before (Daw, 2001), therefore calling attention to fact that these types of disorders are affecting those in the educational setting. Although there is risk involved when asking children to answer questions relating to how they feel about themselves, eating behaviors, and depression, but many benefits can be gained from this study. Results of this study may facilitate school based prevention and intervention programs that can address issues related to self-concept, depression, self-esteem, and eating behaviors long before they become an eating disorder. The premise is to gain perspective from the students within the school as to the impact that the feelings that they possess about themselves can influence the long-term outcomes related to eating disorders. Eating disorders can be costly to treat and the recovery rate is bleak, therefore if prevention and intervention is put in place in an
environment in which children may already feel safe, the chances of lessening the prevalence of eating disorders later will be greatly enhanced.

*Risks of Study*

Administering instruments regarding eating habits, depression, and body image to individuals who are in high school, may cause certain participants to begin thinking about such behaviors or to start examining if these behaviors are occurring currently in their lives. It is crucial that the investigator of the study be available if needed by the school if a student is in need of assistance. The investigator should be prepared with a list of available providers of service, as well as any referral information that may be of assistance to the school and the involved students. If administering such an instrument causes an individual to realize that they may have an issue with an eating disorder, depression, or body image and is willing to seek help for it, then a great service has been done, in that it may lead to someone getting help whereas they may not have done so before.

A study was conducted by Celio, Bryson, Killen, and Taylor (2003) that examined the issue of possible risks involved when adolescents are asked questions about weight control behavior and attitude questions. Some individuals may hold the view that by asking students such questions, a possibility arises of an increase of incidence due to the context of the information. The study by Celio et al, (2003) explored whether or not asking young girls about their eating attitudes and behaviors would lead to increase in such behaviors over time. Results of the study indicated that there was no harmful effect from asking the questions about attitudes and behaviors. In addition, they may have acted as a benefit to individuals in that the information from the questionnaires made the
students aware of unhealthy behaviors and helped the students to lessen the prevalence of such behaviors in the future.

**Available Resources (local and nonlocal)**

Available Resources will be provided to each school and each student that participates in this study. This list, as well as handouts can be found in Appendix J.

**Confidentiality**

All materials filled out by the students and their parents will be kept strictly confidential and anonymous. The only materials that will have the student’s names on them will be the informed consent and the student assent form. All materials that are involved in the study, such as the EDI-3, Reynold’s Adolescent Depression Scale, Project EAT questions, and the Perception of Teasing Scale will only be connected through numbering and will not have names listed on them. Each data packet will include a demographics sheet along with the data materials. Questions on the demographics sheet may include such things as school of attendance, year in school, race, and gender. The only time that there may be a break in confidentiality is if the student discloses to me that they are planning to cause harm to themselves or to someone else. If that occurs, I am obligated to tell my supervisor, the parents, and the school of the situation.

**Informed Consent**

For this study, all participation must be voluntary. Students should in no way feel as they are pressured to be involved simply because their school is taking part in the study. As most of the students that will be participating in the study will be under the age of 18, it will be necessary that all parents agree to consent to have their children be a part of the study. Parent permission forms and child assent forms will be given to all students, along
with a brief explanation of the study. Even if the parent has consented to have their child participate, if the child does not fill out the child assent form, the child will not be allowed to participate in the study. All consent forms and scent forms will be given solely to the investigator of the study.

*Debriefing*

A debriefing packet will be given to all students after each student has turned in the instrument packet. An explanation of study, along with information and resources on eating disorders will be included in the packet.

*Limitations*

It is possible, due to the nature of the context of the instruments, that some students may not answer the instruments in a truthful way and may instead answer the questions in a way that is more socially acceptable or in a way as to not draw attention to oneself. This is a risk that any researcher takes when enlisting individuals to participate in a study. It is imperative that the students know that in no way will their names appear on any of the information that will be used in this study project and that all individual results will be kept strictly confidential. The only thing that will have their name on it will be the permission forms that their parents will be filling out. All materials will be kept strictly confidential and there will be no names listed on any part of the instruments or final data analysis.

*Management of Data*

After the data has been collected and the study has concluded, all materials will be kept in a locked file drawer under the sole possession of the investigator of the study. Data
collected will be kept separate from all consent and assent forms, as to maintain confidentiality of the participants of the study.
APPENDIX D

SCRIPTS
Student Script for Initial Meeting with Students

Thank you all for coming. I am a graduate student in the School Psychology program at The Ohio State University. I am doing a study that will investigate how teenagers feel about themselves. I would like you to consider participating in this study as I feel that it will be beneficial to other students in the future. Your participating in the study is strictly voluntary and is not required by your school. The study will consist of an information sheet that will ask you questions about yourself, such as age, year in school, what school you attend, and your race/ethnicity. The other materials will be questionnaires that will ask you various things such as how you feel about yourself and your eating habits. All materials that you fill out will not be labeled with your name, only by a number so that all of the materials and packets stay together. By only having numbers on the materials, all answers will be confidential and anonymous, meaning that no one will know how you answered. In order to participate, your parents must fill out a parent consent form which gives permission. You will also have to fill out an assent form which says that you are a willing participant in the study. If, at any time you choose to not participate and want to be excused from the study, you may choose to do so without any penalty from me or your school and will in no way effect your school grades. Thank you for your time and I appreciate you taking part in my study.
Student Data Collection Script

Data Collection Setting

Thank you very much for agreeing to participate. All of you that are in the room have agreed to participate in my study and have parents who have also agreed to let you participate in this study. Just a reminder that all materials that you fill out for this study will be kept confidential and are anonymous. The only materials that will have your name on them will be the parent permission forms and the student assent forms. All other materials will be grouped together by number only. If at any time, you choose to not participate in this study, you may end your participation in this study. You will not be penalized by anyone if you decide that you do not want to complete the study materials. Participating or not participating in this study will not effect your school grades in any way. You will be handed an envelope that contains some questionnaires that will ask you questions about how you feel about yourself and some of your behaviors. Please answer all items truthfully, as your answers will be very valuable. If you have trouble with any of the questions, please raise your hand and I will be happy to help you out. Please keep all materials together and when you have completed with the questionnaires, place them in the envelope that you were given. When are done with the questionnaires, you may return them to me. I will give you a packet of information that will explain the study. Please do not discuss this study with others, as it is important that everyone answers the questions truthfully. Does anyone have any questions before I hand out the packets?
Dear Parents,

Your child has been asked to participate in a study conducted by Marla N. Arnold, a graduate student from The Ohio State University. The study will be conducted during a specific time during the school day. Administration of the questionnaires will take approximately 45 minutes. The study will consist of various questionnaires related to how they your child feels about themselves, how they feel about their bodies, and how they feel about eating. Participation in this study is completely voluntary. Access to information from this research study will only be available to the investigator and only the results will be used as data in this study. All information will be kept anonymous and confidential. If at anytime you or your child chooses not to participate in the study, you or your child may withdraw at any time without penalty. At the completion of the questionnaires, all students will receive a packet discussing the purpose of the study, as well as additional information related to the study topic. If you agree to have your child participate, you must fill out both copies of the parent consent form. Please send your child to school with one copy and keep the other copy for yourself. The parent permission form should be turned in to your child’s designated teacher. On the intended date, your child must sign 2 assent forms, agreeing to participate in the study. One copy will be kept by the researcher and the other will be given to the student. Your child may decide to withdraw from the study at any time. Thank you for your time and if you have any additional questions, please call Dr. Wendy Naumann at (614) 688-5829.

Marla Arnold, M.A.
The Ohio State University
Dear Student,

Thank you for taking the time to participate in this study. The following questionnaires will be asking you various questions about how you feel about yourself, how you feel about your body, as well as how you feel about eating. Please answer all questions to the best of your ability. All information from these questionnaires will be kept confidential and anonymous. Your participation is voluntary and you may withdraw at any time. When you have completed all of the materials, please bring them directly to me. Please do not leave with any materials. If you have any questions, please let me know. Thank you.

Marla Arnold. M.A.

The Ohio State University
APPENDIX F

CONSENT AND ASSENT FORMS
Parent Consent Form

CONSENT FOR PARTICIPATION

Protocol Title: 

Protocol Number: 

Principal Investigator: Dr. Wendy Naumann 
Secondary Investigator: Marla Arnold

I consent to my child’s participation in research being conducted by Marla Arnold of The Ohio State University. Students who are 15 years or older are eligible to participate.

The investigator has explained the purpose of the study, the procedures that will be followed, and the amount of time that it will take. I understand the possible benefits, if any, of my child’s participation.

I know that my child can choose not to participate without penalty to me or my child. If I agree to participate, my child can withdraw from the study at any time, and there will be no penalty.

I have had a chance to ask questions and to obtain answers to my questions. I can contact the investigators at (614) 688-5829. If I have questions about my rights as a research participant, I can call the Office of Research Risks Protection at (614) 688-4792.

I have read this form or I have had it read to me. I sign freely and voluntarily. A copy has been given to me.

Print the name of the participant: _____________________________________________

Print the name of parent: ____________________________________________________

Signature of Parent: _________________________________________________________

Date: _________________________

HS-027
Student Assent Form

I, _____________________________, state that I am a willing participant and voluntarily agree to take part in a research project being conducted by Marla N. Arnold, a graduate student at The Ohio State University.

This study is attempting to explore aspects about individuals, such as how they feel about themselves, how they feel about their bodies, and how they feel about eating. The surveys/questionnaires ask that the participant answer some questions about him/herself. Also included is a demographics sheet about who you are, but does not include your name. All surveys/questionnaires will be distributed by the researcher and will be returned to the investigator in sealed envelopes. Access to information from this research study will only be available to the investigator and only the results will be used as data in this study. All information will be kept anonymous and confidential. You must be 15 years or older to participate in this study.

For some participants, this study may cause one to become uncomfortable or apprehensive during the surveys/questionnaires. If at any time a participant wishes to withdraw without penalty from the study, they may do so.

I acknowledge that Marla N. Arnold has fully explained to me the risks involved and the need for research. Marla N. Arnold has also explained to me that I may withdraw without penalty from participation at any time. The investigator has also offered to answer any questions that I may have concerning the procedures to be followed for this study. In addition, a copy of this consent form will also be given to me.

I understand that biomedical or behavioral research such as that in which I have agreed to participate, by its nature, involves some risk.

In the event that I believe that I have suffered as a result of participating in this study, I may contact the Chairperson of the Institutional Review Board for the Protection of Human Subjects at The Ohio State University (telephone: ). If there are any questions or concerns in regard to this research study, please call Dr. Naumann at 614-688-5829.

I freely and voluntarily consent to my participation in this research study.

(Signature of participant)  (Date)

(Signature of investigator)  (Date)
APPENDIX G

STUDENT DEBREIFING PACKET
Explanation of Study

Thank you for taking the time to participate in this study. The purpose of the surveys/questionnaires that you just completed was to investigate the factors that may be associated with disordered eating behaviors. The purpose was not to determine if a student had an eating disorder, but to determine the connection that may exist between various factors. The answers that you gave in response to the surveys/questionnaires will be kept confidential and there will be no way of matching any answers with specific surveys/questionnaires. Results of the study will be available upon completion of the dissertation. Included with this packet is some information regarding different types of eating disorders, as well as information regarding where you can go for help or if you have questions. Thank you very much for your time and should you have any further questions, please contact me.

Marla Arnold, M.A.
Arnold.48@osu.edu
614-688-5829
Where to get help

**Local Resources**

Center for Eating Disorders  
445 E. Granville Rd, #N  
Worthington, OH 43085  
614-293-9549

**Web Resources**

www.anad.org

http://www.milestonesprogram.org/pages/1/index.htm

http://www.raderprograms.com/


http://www.edauk.com/

http://www.edreferral.com/

http://www.nedic.ca/

http://www.anred.com/
Ten Steps To Positive Body Image

One list cannot automatically tell you how to turn negative body thoughts into positive body image, but it can help you think about new ways of looking more healthfully and happily at yourself and your body. The more you do that, the more likely you are to feel good about who you are and the body you naturally have.

1. Appreciate all that your body can do. Every day your body carries you closer to your dreams. Celebrate all of the amazing things your body does for you — running, dancing, breathing, laughing, dreaming, etc.

2. Keep a top-10 list of things you like about yourself — things that aren’t related to how much you weigh or what you look like. Read your list often. Add to it as you become aware of more things to like about you.

3. Remind yourself that “true beauty” is not simply skin-deep. When you feel good about yourself and who you are, you carry yourself with a sense of confidence, self-acceptance, and openness that makes you beautiful regardless of whether you physically look like a supermodel. Beauty is a state of mind, not a state of your body.

4. Look at yourself as a whole person. When you see yourself in a mirror or in your mind, choose not to focus on specific body parts. See yourself as you want others to see you — as a whole person.

5. Surround yourself with positive people. It is easier to feel good about yourself and your body when you are around others who are supportive and who recognize the importance of liking yourself just as you naturally are.

6. Shut down those voices in your head that tell you your body is not “right” or that you are a “bad” person. You can overpower those negative thoughts with positive ones. The next time you start to tear yourself down, build yourself back up with a few quick affirmations that work for you.

7. Wear clothes that are comfortable and that make you feel good about your body. Work with your body, not against it.

8. Become a critical viewer of social and media messages. Pay attention to images, slogans, or attitudes that make you feel bad about yourself or your body. Protest these messages: write a letter to the advertiser or talk back to the image or message.

9. Do something nice for yourself — something that lets your body know you appreciate it. Take a bubble bath, make time for a nap, find a peaceful place outside to relax.

10. Use the time and energy that you might have spent worrying about food, calories, and your weight to do something to help others. Sometimes reaching out to other people can help you feel better about yourself and can make a positive change in our world.

For more information, contact the National Eating Disorders Association at 607 Stewart St., Suite 603, Seattle, WA 98155
Information and Referral Hotline: 1-800-955-3737 or www.NationalEatingDisorders.org
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How to Help a Friend with Eating and Body Image Issues

If you are reading this handout, chances are you are concerned about the eating habits, weight, or body image of someone you care about. We understand that this can be a very difficult and scary time for you. Let us assure you that you are doing a great thing by looking for more information! This list may not tell you everything you need to know about what to do in your specific situation, but it will give you some helpful ideas on what to do to help your friend.

Learn as much as you can about eating disorders. Read books, articles, and brochures.

Know the differences between facts and myths about weight, nutrition, and exercise. Knowing the facts will help you reason against any inaccurate ideas that your friend may be using as excuses to maintain their disordered eating patterns.

Be honest. Talk openly and honestly about your concerns with the person who is struggling with eating or body image problems. Avoiding it or ignoring it won’t help!

Be caring, but be firm. Caring about your friend does not mean being manipulated by them. Your friend must be responsible for their actions and the consequences of those actions. Avoid making rules, promises, or expectations that you cannot or will not uphold. For example, “I promise not to tell anyone.” Or, “If you do this one more time I’ll never talk to you again.”

Compliment your friend’s wonderful personality, successes, or accomplishments. Remind your friend that “true beauty” is not simply skin deep.

Be a good role model in regard to sensible eating, exercise, and self-acceptance.

Tell someone. It may seem difficult to know when, if at all, to tell someone else about your concerns. Addressing body image or eating problems in their beginning stages offers your friend the best chance for working through these issues and becoming healthy again. Don’t wait until the situation is so severe that your friend’s life is in danger. Your friend needs as much support and understanding as possible.

Remember that you cannot force someone to seek help, change their habits, or adjust their attitudes. You will make important progress in honestly sharing your concerns, providing support, and knowing where to go for more information! People struggling with anorexia, bulimia, or binge eating disorder do need professional help. There is help available and there is hope!

For more information, contact the National Eating Disorders Association at 400 Stewart St, Suite 603, Seattle, WA 98101
Information and Referral: 800-999-9997 or www.NationalEatingDisorders.org
What Should I Say?
Tips for Talking to a Friend Who May Be Struggling with an Eating Disorder

If you are worried about your friend’s eating behaviors or attitudes, it is important to express your concerns in a loving and supportive way. It is also necessary to discuss your worries early on, rather than waiting until your friend has endured many of the damaging physical and emotional effects of eating disorders. In a private and relaxed setting, talk to your friend in a calm and caring way about the specific things you have seen or felt that have caused you to worry.

What to Say—Step by Step

**Set a time to talk.** Set aside a time for a private, respectful meeting with your friend to discuss your concerns openly and honestly in a caring, supportive way. Make sure you will be some place away from other distractions.

**Communicate your concerns.** Share your memories of specific times when you felt concerned about your friend’s eating or exercise behaviors. Explain that you think these things may indicate that there could be a problem that needs professional attention.

**Ask your friend to explore these concerns** with a counselor, doctor, nutritionist, or other health professional who is knowledgeable about eating issues. If you feel comfortable doing so, offer to help your friend make an appointment or accompany your friend on their first visit.

**Avoid conflicts or a battle of the wills** with your friend. If your friend refuses to acknowledge that there is a problem, or any reason for you to be concerned, restate your feelings and the reasons for them and leave yourself open and available as a supportive listener.

**Avoid placing shame, blame, or guilt** on your friend regarding their actions or attitudes. Do not use accusatory “you” statements like, “You just need to eat.” Or, “You are acting irresponsibly.” Instead, use “I” statements. For example: “I’m concerned about you because you refuse to eat breakfast or lunch.” Or, “It makes me afraid to hear you vomiting.”

**Avoid giving simple solutions.** For example, “If you’d just stop, then everything would be fine!”

**Express your continued support.** Remind your friend that you care and want your friend to be healthy and happy.

After talking with your friend, if you are still concerned with their health and safety, find a trusted adult or medical professional to talk to. This is probably a challenging time for both of you. It could be helpful for you, as well as your friend, to discuss your concerns and seek assistance and support from a professional.

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124
What is an Eating Disorder?
Some Basic Facts

Eating disorders -- such as anorexia, bulimia, and binge eating disorder -- include extreme emotions, attitudes, and behaviors surrounding weight and food issues. Eating disorders are serious emotional and physical problems that can have life-threatening consequences for females and males.

ANOREXIA NERVOSA is characterized by self-starvation and excessive weight loss.

Symptoms include:
• Refusal to maintain body weight at or above a minimally normal weight for height, body type, age, and activity level
• Intense fear of weight gain or being “fat”
• Feeling “fat” or overweight despite dramatic weight loss
• Loss of menstrual periods
• Extreme concern with body weight and shape

BULIMIA NERVOSA is characterized by a secretive cycle of binge eating followed by purging. Bulimia includes eating large amounts of food—more than most people would eat in one meal—in short periods of time, then getting rid of the food and calories through vomiting, laxative abuse, or over-exercising.

Symptoms include:
• Repeated episodes of bingeing and purging
• Feeling out of control during a binge and eating beyond the point of comfortable fullness
• Purging after a binge, (typically by self-induced vomiting, abuse of laxatives, diet pills and/or diuretics, excessive exercise, or fasting)
• Frequent dieting
• Extreme concern with body weight and shape

BINGE EATING DISORDER (also known as COMPULSIVE OVEREATING) is characterized primarily by periods of uncontrolled, impulsive, or continuous eating beyond the point of feeling comfortably full. While there is no purging, there may be sporadic fasts or repetitive diets and often feelings of shame or self-hatred after a binge. People who overeat compulsively may struggle with anxiety, depression, and loneliness, which can contribute to their unhealthy episodes of binge eating. Body weight may vary from normal to mild, moderate, or severe obesity.

OTHER EATING DISORDERS can include some combination of the signs and symptoms of anorexia, bulimia, and/or binge eating disorder. While these behaviors may not be clinically considered a full syndrome eating disorder, they can still be physically dangerous and emotionally draining. All eating disorders require professional help.

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125
What Causes Eating Disorders?

Eating disorders are complex conditions that arise from a combination of long-standing behavioral, emotional, psychological, interpersonal, and social factors. Scientists and researchers are still learning about the underlying causes of these emotionally and physically damaging conditions. We do know, however, about some of the general issues that can contribute to the development of eating disorders.

While eating disorders may begin with preoccupations with food and weight, they are most often about much more than food. People with eating disorders often use food and the control of food in an attempt to compensate for feelings and emotions that may otherwise seem over-whelming. For some, dieting, bingeing, and purging may begin as a way to cope with painful emotions and to feel in control of one’s life, but ultimately, these behaviors will damage a person’s physical and emotional health, self-esteem, and sense of competence and control.

Psychological Factors that can Contribute to Eating Disorders:
- Low self-esteem
- Feelings of inadequacy or lack of control in life
- Depression, anxiety, anger, or loneliness

Interpersonal Factors that can Contribute to Eating Disorders:
- Troubled family and personal relationships
- Difficulty expressing emotions and feelings
- History of being teased or ridiculed based on size or weight
- History of physical or sexual abuse

Social Factors that can Contribute to Eating Disorders:
- Cultural pressures that glorify “thinness” and place value on obtaining the “perfect body”
- Narrow definitions of beauty that include only women and men of specific body weights and shapes
- Cultural norms that value people on the basis of physical appearance and not inner qualities and strengths

Other Factors that can Contribute to Eating Disorders:
- Scientists are still researching possible biochemical or biological causes of eating disorders. In some individuals with eating disorders, certain chemicals in the brain that control hunger, appetite, and digestion have been found to be unbalanced. The exact meaning and implications of these imbalances remains under investigation.

Eating disorders are complex conditions that can arise from a variety of potential causes. Once started, however, they can create a self-perpetuating cycle of physical and emotional destruction. All eating disorders require professional help.
Binge Eating Disorder

Binge Eating Disorder (BED) is a type of eating disorder not otherwise specified and is characterized by recurrent binge eating without the regular use of compensatory measures to counter the binge eating.

**Binge Eating Disorder** is characterized by:

- Frequent episodes of eating large quantities of food in short periods of time.
- Feeling out of control over eating behavior.
- Feeling ashamed or disgusted by the behavior.
- There are also several behavioral indicators of BED including eating when not hungry and eating in secret.

**Health Consequences of Binge Eating Disorder:**
The health risks of BED are most commonly those associated with clinical obesity. Some of the potential health consequences of binge eating disorder include:

- High blood pressure
- High cholesterol levels
- Heart disease
- Diabetes mellitus
- Gallbladder disease

**About Binge Eating Disorder:**

- The prevalence of BED is estimated to be approximately 1-5% of the general population.
- Binge eating disorder affects women slightly more often than men—estimates indicate that about 60% of people struggling with binge eating disorder are female, 40% are male (Smith et al., 1998).
- People who struggle with binge eating disorder can be of normal or heavier than average weight.
- BED is often associated with symptoms of depression.
- People struggling with binge eating disorder often express distress, shame, and guilt over their eating behaviors.

**References:**


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127
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http://www.ed.gov/nclb


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