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I, Ashlee R Hoffman, hereby submit this original work as part of the requirements for the degree of Master of Science in Health Education.

It is entitled:
College Students' Perceived Confidence and Importance in Helping Friends Involved in Disordered Eating

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By

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Abstract

AN ABSTRACT OF THE THESIS FOR THE MASTERS OF SCIENCE DEGREE IN HEALTH PROMOTION AND EDUCATION, PRESENTED FEBRUARY 14, 2011 AT THE UNIVERSITY OF CINCINNATI

TITLE: College Students’ Perceived Confidence and Importance in Helping Friends Involved in Disordered Eating

MASTERS COMMITTEE MEMBERS: Dr. Keith King, Chair
Dr. Rebecca Vidourek

The purpose of this study was to examine university students’ perceived importance of knowledge of eating disorders, overall confidence in appropriately intervening with a friend who has an eating disorder and whether their perceived importance of knowledge and confidence levels differed based on sex, current involvement in disordered eating and extent of social connections. This study sought to fill current gaps in the literature regarding disordered eating. This information is important to strengthen future educational efforts related to the identification and acknowledgement of eating disorders with friends and family.

A total of 421 participants were surveyed during the spring 2010 quarter at a Midwest university. The sample included students from a variety of courses. Valid and reliable subscales were developed for the 86-item questionnaire. Descriptive statistics, multivariate analysis of variance, Chi-square analysis, and Pearson correlations were used to analyze the data. Results indicated participants’ confidence addressing disordered eating in their friends was moderate. Further, participants felt having knowledge about disordered eating was important and that disordered eating is a significant issue on college campuses. Both importance of having information and confidence addressing disordered eating differed significantly based on sex. Females felt this issue was of greater importance, in addition to expressing more confidence addressing the issue. Recommendations have been included for future studies.
Acknowledgements

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Chapter 1

The Problem

Eating disorders are defined by a significant disturbance in eating habits and/or weight control behavior (APA, 2001). These issues cause significant impairment of physical and social functioning. The primary diagnostic tool for eating disturbances is the Diagnostic and Statistical Manual of Mental Disorders IV-Text Revision (DSM IV-TR) (APA, 2001). The DSM IV-TR includes three primary diagnostic classifications for eating disorders: anorexia nervosa, bulimia nervosa, and Eating Disorder Not Otherwise Specified (EDNOS). Binge eating has also been identified as a potential classification of disordered eating, but has not yet been incorporated into the current edition of the Diagnostic and Statistical Manual. Most individuals who experience issues with disordered eating also report unrealistic ideas of their physical size and shape, unhealthy evaluation of self-worth, and constant desire to reduce weight (APA, 2001).

There are presently four diagnostic criteria for anorexia nervosa. Anorexia nervosa is characterized by a person’s refusal to maintain body weight at or above appropriate weight criteria for their age, gender, and height; unrealistic fear of gaining weight; disturbance in the way the person views their body; and amenorrhea (in females) (APA, 2001). With this disorder there is a pervasive pursuit of weight loss (Fairburn & Harrison, 2003). These individuals view their weight loss as an accomplishment and thus the behavior is not seen as a problem. Additionally, the eating disturbance has to be the primary psychological dysfunction with an individual experiencing multiple psychological issues. Further, there are two subcategories of anorexia nervosa: restricting type (limiting or extinguishing food intake) or purging type (eating
followed by purging the food consumed). Those who experience this disorder express limited motivation to change the behavior due mostly to fear of weight gain.

Bulimia nervosa is described as engaging in recurrent episodes of binge eating (APA, 2001). Binge eating is defined as consuming an excessive amount (more than most people would eat) in a period of two hours or less, in addition to feeling a lack of control over eating during this time. This act is followed by recurrent inappropriate behavior to compensate for calorie intake or weight gain [i.e. purging; use of laxatives, diuretics, enemas (or other medications); fasting; or excessive exercise] (APA, 2001). This behavior must have continued for at least three months and occurred no less than twice a week (APA, 2001). This behavior is provoked by the individual’s concern with body size and weight.

Diagnostic criteria of bulimia nervosa is classified into two subtypes: purging and nonpurging. Purging type includes at least one method of purging (i.e. self-induced vomiting, enemas, misuse of laxatives, and/or diuretics). Nonpurging type uses other means of reducing calorie intake by behaviors such as fasting and/or excessive exercise.

The third category included in the DSM is eating disorders not otherwise specified (EDNOS) (APA, 2001). This criterion is a catch-all for those engaging in eating disturbances who do not meet the DSM-IV TR diagnostic criteria for any other eating disorder. Therefore, this category is designed to place an individual into a diagnostic criterion in order to obtain treatment. The DSM-IV TR specifically identifies this diagnosis for an individual who meets all criteria for anorexia nervosa but still has their menstrual cycle, meets all the criteria for anorexia nervosa without meeting the weight restriction, meets all the criteria for bulimia nervosa without engaging in the behavior for at least twice a week or at a duration less than three month, engages
in any compensatory behavior related to calorie intake and food consumption after eating a small amount of food, partakes in chewing and spitting out small quantities of food, or has binge eating disorder (APA, 2001).

At the time of the study, binge eating disorder was not yet included, as a standalone disorder, but rather was included in the category of EDNOS (APA, 2001). Binge eating disorder is similar to bulimia nervosa in relation to its consumption pattern (Spitzer et al, 1993). Those who experience this disorder eat an excessive amount of food while feeling a loss of control during a short amount of time. However, in contrast to bulimia nervosa, binge eating disorder does not consist of any compensatory behavior for the calories consumed (Spitzer et al, 1993). This disorder includes the same feelings of losing control over appetite and satisfaction when food is consumed, followed by guilt for the calories ingested.

Eating disorders are an extremely prevalent health issue in the United States (Fairburn & Harrison, 2003). The DSM IV-TR (APA, 2001) reports a prevalence rate in the US of .05-1% of the population experiencing anorexia nervosa and 1-3% experiencing bulimia nervosa. As many as 75% of women consider themselves to be too “fat.” Zerbe (1995) found that 80% of women reported that they had dieted before the age of 18; lending evidence to the fact that most females have experienced negative feelings related to their body image.

Many issues have been explored as precursors to the development of eating disorders, however specific reasons have been elusive (Fairburn & Harrison, 2003). The issue of social and emotional connectedness could possibly be linked to multiple risk factors or contributing factors to disordered eating. Connectedness is defined as the emotional closeness a person feels
associated with various issues (i.e. family, community, and school) (Williams & Galliher, 2006). Connectedness is established through the individual experiences and relationships with others.

Research indicates that disordered eating is becoming increasingly prevalent among college campuses (Krahn, Kurth, Gomberg, & Drewnowski, 2005). A study by Krahn, Kurth, Gomberg, and Drewnowski (2005) found two thirds of college females engaged in strict diets, while a sizeable percentage were considered at risk for developing an eating disorder. Bulimia nervosa reaches its peak around college age (18-24 years of age). Specifically, major life changes are thought to increase individuals’ risk for eating disorders with beginning college as one of the largest changes that can occur in someone’s life (Meyer & Russell, 1998). Oftentimes this is when the individual first experiences life away from their parents. Frequently, college students have to learn how to independently function in everyday situations. In addition, family connectedness may experience a strain or decrease at this time because of moving to college. This may occur because the individual and the family are no longer in close proximity.

In addition to the impact starting college can have on family connectedness, various areas of social connectedness can also be affected (Whitlock, 2006). Social connectedness is considered a major psychological need and therefore is important during college life (Lee, Draper, & Lee, 2001). Social connectedness is important for many reasons. When friends address concerns with others, they feel cared for, and their feelings of social strength and connectedness are enhanced (Whitlock, 2006). This is especially important with respect to getting help for mental health issues, such as disordered eating.

Further, it is important that friends are able to identify risk factors and warning signs in their peers. Social support and addressing these issues in friends is very important because of its known beneficial effects and that perception of social support is a better predictor of health
outcomes (Norris & Kaniasty, 1996). Social support has been to assist in the ability to cope with adversity in addition to increasing personal well-being (Schaefer et al., 1981). Specifically, those who experience issues with bulimia nervosa report feeling of social isolation and poor social functioning (Yager, Rorty, & Rossotto, 1995). Moreover, a negative correlation between increased levels of social functioning and bulimic symptomology has been found (Blouin et al, 2006). Tiller et al. (1997) identified those with eating disorders had significantly lower perceived support from friends and families when compared with others not engaging in disordered eating.

Interestingly, despite much research on disordered eating, various gaps currently exist. A comprehensive review of the literature found no study that had examined university students’ perceived confidence in appropriately intervening with a friend who had an eating disorder, knowledge about eating disorders and whether these issues differed based on selected variables. Therefore, the present study was conducted.

**Research Questions**

This study examined the following research questions:

1. How confident do college students feel in appropriately intervening with a friend who has an eating disorder?

2. How important do college students feel it is to be knowledgeable regarding eating disorders?

3. How knowledgeable are college students regarding eating disorders?

4. Does perceived confidence in appropriately intervening with a friend who has an eating disorder differ based on sex, current involvement in disordered eating, and extent of social connections?
5. Does college students’ perceived importance in being knowledgeable regarding eating disorders differ based on sex, current involvement in disordered eating, and extent of social connections?

6. Does overall knowledge regarding eating disorders differ based on sex, current involvement in disordered eating, and extent of social connections?

7. Does current engagement in disordered eating differ based on sex, current involvement in disordered eating, and extent of social connections?

**Purpose Statement**

The purpose of this study was to examine university students’ perceived importance of knowledge of eating disorders, overall confidence in appropriately intervening with a friend who has an eating disorder and whether their perceived importance of knowledge and confidence levels differed based on sex, current involvement in disordered eating and extent of social connections. This study sought to fill current gaps in the literature regarding disordered eating. There is currently a lack of research pertaining specifically to connectedness and eating disorders. Additionally, unlike most studies of disordered eating, this study evaluates both males and females. There has also been a lack of research addressing college students’ confidence in addressing disordered eating in their colleges. As research is lacking in these areas, this study seeks to evaluate disordered eating in both males and females, as well as to evaluate college students’ feelings of identifying and addressing disordered eating in others. This study could provide information that is important to strengthen future educational efforts related to the identification and acknowledgement of eating disorders with friends and family.
Hypotheses

**Null hypothesis 1.** There will be no significant difference in perceived confidence of college students in appropriately intervening with a friend who has an eating disorder based on sex.

**Null hypothesis 2.** There will be no significant difference in perceived confidence of college students in appropriately intervening with a friend who has an eating disorder based on current involvement in disordered eating.

**Null hypothesis 3.** There will be no significant difference in perceived confidence of college students in appropriately intervening with a friend who has an eating disorder based on extent of social connections.

**Null hypothesis 4.** There will be no significant difference in how important college students feel it is to be knowledgeable regarding eating disorders based on their sex.

**Null hypothesis 5.** There will be no significant difference in how important college students feel it is to be knowledgeable regarding eating disorders based on their current involvement in disordered eating.

**Null hypothesis 6.** There will be no significant difference in how important college students feel it is to be knowledgeable regarding eating disorders based on extent of social connections

**Null hypothesis 7.** There will be no significant difference in how knowledgeable college students are regarding eating disorders based on sex.
Null hypothesis 8. There will be no significant difference in how knowledgeable college students are regarding eating disorders based on current involvement in disordered eating.

Null hypothesis 9. There will be no significant difference in how knowledgeable college students are regarding eating disorders based on extent of social connections.

Null hypothesis 10. There will be no significant difference in college students’ current involvement of disordered eating based on sex.

Null hypothesis 11. There will be no significant difference in college students’ current involvement in disordered eating based on extent of social connections.

Operational Definitions

Social connectedness is defined by a participant endorsing statements associated with participant’s social involvement in the survey.

Current involvement in disordered eating was defined by participants’ present engagement in maladaptive eating behaviors. For this study current involvement in disordered eating behavior was defined by endorsing items presented to identify maladaptive eating behaviors.

Confidence addressing disordered eating was defined as any perceived belief individuals can identify and obtain information regarding eating disorders in their friends by their rating potential confidence items on a 5-point scale (1 = strongly disagree, 5 = strongly agree) presented in the survey.
Delimitations

1. The study was delimited to students attending the University of Cincinnati during the 2010 spring quarter and currently enrolled in leisure studies and health education courses.

2. This study sampled students in leisure studies and health education courses and therefore may not be representative of all University of Cincinnati students or college students in general.

Limitations

The study was limited by the self-reporting accuracy of the participants, the participants’ ability to read and understand the survey, and the honesty of individuals’ responses.

Assumptions

It was assumed that all the participants could read and understand the questions being presented. Further, it was assumed all participants answered the questions in the survey openly and honestly.
Chapter 2

Literature Review

The purpose of this study was to examine university students’ perceived importance of knowledge of eating disorders, overall confidence in appropriately intervening with a friend who has an eating disorder and whether their perceived importance of knowledge and confidence levels differed based on sex, current involvement in disordered eating and extent of social connections. This study sought to fill current gaps in the literature regarding disordered eating. Chapter one discussed the research questions, hypotheses, limitations, delimitations, and operational definitions. This chapter provides a comprehensive review of the literature.

The review of the literature seeks to define and illustrate eating disorders, connectedness, as well as issues related to identifying and addressing eating disorders in others. It also illustrates the prevalence and significance of eating disorders in society today. Further, the literature review aims to define various aspects of eating disorders (i.e. repercussions, treatment, and recovery). Specifically, it explores disordered eating in college students.

The online databases used for the literature review were through EBSCO and the specific article databases used were CINAHL Plus with Full Text, ERIC, MEDLINE, Psyc INFO, and PsycBOOKS. A Boolean search was conducted to find information pertaining to the issues related to this research study. Terms used to locate the information included in the literature review were “connectedness,” “school connectedness,” “community connectedness,” “family connectedness,” “friend connectedness,” “attachment theory,” “eating disorders,” “eating disorder prevalence,” “risk factors AND eating disorders,” “warning signs AND eating disorders,” “eating disorders AND college students,” “disordered eating,” “identification AND
eating disorders,” “talking about eating disorders,” “men AND eating disorders,” “gender AND eating disorders,” “acknowledgment AND eating disorders,” “treatment AND eating disorders,” and “prevention AND eating disorders.” Some articles and books were also found through references of articles and books obtained through the Boolean search. In addition to articles, books located through this database search were obtained from Amazon.com. The inclusion was solely that the information pertained to topics concerning the present research project, the article and books used scholarly resources to obtain their information, and the articles were dated from 1980 until 2010.

**Eating Disorders Defined**

Eating disorders is defined as a significant disturbance in eating habits and/or weight control behavior (APA, 2001). These issues cause significant impairment of physical and social functioning. The primary diagnostic tool for eating disturbances is the Diagnostic and Statistical Manual of Mental Disorders IV-Text Revision (DSM IV-TR) (APA, 2001). The DSM IV-TR includes three primary diagnostic classifications for eating disorders: anorexia nervosa, bulimia nervosa, and Eating Disorder Not Otherwise Specified (EDNOS). Binge eating has also been identified as a potential classification of disordered eating, but has not yet been incorporated into the current edition of the *Diagnostic and Statistical Manual*. Most individuals who experience issues with disordered eating also report unrealistic ideas of their physical size and shape, unhealthy evaluation of self-worth, and constant desire to reduce weight (APA, 2001).

There are presently four diagnostic criteria for anorexia nervosa. Anorexia nervosa is characterized by a person’s refusal to maintain body weight at or above appropriate weight criteria for their age, gender, and height; unrealistic fear of gaining weight; disturbance in the
way the person views their body; and amenorrhea (in females) (APA, 2001). With this disorder there is a pervasive pursuit of weight loss (Fairburn & Harrison, 2003). These individuals view their weight loss as an accomplishment and thus the behavior is not seen as a problem. Additionally, the eating disturbance has to be the primary psychological dysfunction with an individual experiencing multiple psychological issues. Further, there are two subcategories of anorexia nervosa: restricting type (limiting or extinguishing food intake) or purging type (eating followed by purging the food consumed). Those who experience this disorder express limited motivation to change the behavior due mostly to fear of weight gain.

Bulimia nervosa is described as recurrent episodes of binge eating (APA, 2001). Binge eating is defined as consuming an excessive amount of food (more than most individuals would eat) in a period of two hours or less and feeling a lack of control over eating during this time period. This act is typically followed by recurrent inappropriate behavior to compensate for calorie intake or weight gain [i.e. purging; use of laxatives, diuretics, enemas (or other medications); fasting; or excessive exercise] (APA, 2001). In order for this behavior to be classified as bulimia nervosa, it must have continued for at least three months and occurred no less than twice a week (APA, 2001). Bulimia nervosa is often provoked by an individual’s excessive concern with their body size and weight.

Diagnostic criteria for bulimia nervosa is classified into two subtypes: purging and non-purging. Purging type includes at least one method of purging (i.e. self-induced vomiting, enemas, misuse of laxatives, and/or diuretics). Non-purging type uses other means of reducing calorie intake by behaviors such as fasting and/or excessive exercise.
The third category of disordered eating included in the DSM is eating disorders not otherwise specified (EDNOS) (APA, 2001). This criterion is a catch-all for those engaging in eating disturbances who do not meet the current DSM-IV TR diagnostic criteria for any other eating disorder. The DSM-IV TR specifically identifies this criteria necessary for this diagnosis as an individual who meets all criteria for anorexia nervosa but still has a menstrual cycle, meets all the criteria for anorexia nervosa without meeting the weight restriction, meets all the criteria for bulimia nervosa without engaging in the behavior for at least twice a week or at a duration less than three month, engages in any compensatory behavior related to calorie intake and food consumption after eating a small amount of food, partakes in chewing and spitting out small quantities of food, or has binge eating disorder (APA, 2001).

At the time of the present study, binge eating disorder was not yet included, as a standalone disorder, but rather was included in the category of EDNOS (APA, 2001). Binge eating disorder is similar to bulimia nervosa in relation to its consumption pattern (Spitzer et al, 1993). Those who experience this disorder eat an excessive amount of food while feeling a loss of control during a short amount of time. However, in contrast to bulimia nervosa, binge eating disorder does not consist of any compensatory behavior for the calories consumed (Spitzer et al, 1993). This disorder includes the same feelings of losing control over appetite and satisfaction when food is consumed, followed by guilt for the calories ingested.

**Extent of Disordered Eating in the United States**

Disordered eating is an issue that has confronted numerous individuals for hundreds of years (NIMH, 2004). Twenty four million Americans and 70 million individuals worldwide are affected by eating disorders. Approximately 10 million females were estimated to be
experiencing issues with anorexia nervosa or bulimia nervosa (NEDA, 2006). Additionally, millions more are thought to suffer from binge eating disorder. NIMH (2004) states that one in five women experience complications with disordered eating. Additionally, the NIMH (2004) estimates that 0.5 to 3.7 percent of females experience complications with anorexia nervosa and 1.1 to 4.2 percent of females experience issues with bulimia nervosa during their lifetime. The NIMH (2004) also estimates that two to five percent of Americans engage in binge-eating disorder in a six-month period. Half of girls aged 11 to 13 reported viewing themselves as overweight. Further, 80% of 13 year olds report having attempted to lose weight at one point in their life. Additionally, 15% of females in the US exhibit attitudes and behaviors of disordered eating but have not been diagnosed (NIMH, 2004). Within the adolescent population, anorexia is the 3rd most prevalent chronic illness. Most (95%) individuals who experience complications with disordered eating are between the ages of 12 and 25 (NIMH, 2004).

Eating disorders are an extremely prevalent health issue in the US (Fairburn & Harrison, 2003). The DSM IV-TR (APA, 2001) reports a prevalence rate in the US of .05-1% of the population for anorexia nervosa and 1-3% of the population of bulimia nervosa. It also states that as many as 75% of women consider themselves to be “too fat.” This may partially be due to American society’s preoccupation and over-emphasis of being thin, which may encourage many individuals to engage in maladaptive eating behaviors. Zerbe (1995) reported that 80% of women dieted before the age of 18, and further stated that most women experience negative feelings related to their body image at some point in their life.
**Extent of Disordered Eating on College campuses**

Disordered eating is quite prevalent among college campuses. The prevalence of eating disorders is significantly higher among female college students than females in the general population (Bishop, Bauer, & Baker, 1998). Six percent of college women meet the criteria for a diagnosis of either anorexia nervosa or bulimia nervosa. Moreover, 25 to 40 percent of college women display disordered eating behaviors and attitudes (Bishop, Bauer, & Baker, 1998; Tsai, Hoerr, & Song, 1998). The most common disordered eating behaviors reported by college females are regular binge-eating, daily eating, and purging (Schwitzer, Rodriguez, Thomas, & Salimi, 2001). A study by Krahn, Kurth, Gomberg, and Drewnowski (2005) found two thirds of college women were engaging in strict diets and a sizeable percent were also thought to be at risk for developing an eating disorder. Specifically, bulimia nervosa reaches its height around college age (18-24 years of age). Significant life changes occur when one begins college and this may place them at a elevated risk for developing an eating disorder. Twenty-five percent of college-aged women report binging and purging as a means of weight management (NIMH, 2004).

**Risk Factors**

There are many risk factors associated with disordered, eating which include biological, environmental, psychosocial, and personality factors (Mash & Wolfe. 2005). Eating disorders are considered multi-determined and multi-factorial so most experiencing disordered eating will exhibit qualities from several risk factors. (White, 2000). It is also noteworthy to mention that risk factors can vary in regards to different stages of a person’s life. In addition, the symptomatology and risk factors of eating disorders tends to overlap across specific eating
disorder types. Some have even suggested a spectrum of eating disturbances in which symptoms are considered to fall on a continuum (Shisslak, Cargo, & Estes, 1995). Many studies have shown that eating and potential weight gain are major concerns in society today and have strong implications for the development and increased prevalence of eating disorders (Gustafsson, Edlund, Kjellin, & Norring, 2009).

**Biological Risk Factors**

The research examining biological risk factors related to eating disorders has been somewhat limited in its findings. First-degree relatives tend to share both genetic and environmental factors, which make it difficult to determine which variables have the larger impact (Kaye, Bulik, Thornton, Barbarich, & Masters, 2004). However, the risk of having an eating disorder is increased ten times when a first-degree relative experiences issues with an eating disorder (Treasure, 2004). Previous twin studies have also shown the presence of inherited factors in eating disorder development. Research findings from a study by Grice et al. (2002) identified a potential genetic link of anorexia nervosa residing on a region of chromosome 1. Additionally, Bulik, Sullivan, Wade, and Kendler (2000) found indication of a genetic link on chromosome 10 regarding bulimia nervosa. These researchers also found approximately 54-83% variance in genetic liability in bulimia nervosa. Further, Klump, Suisman, Burt, McGue, and Iacono (2009) found greater than 50% variability in anorexia nervosa.

Another biological factor, which contributes to increased risk for eating disorders, is sex. Raich, Sanchez-Carracedo, Lopez-Guimera, Portell, Moncada, Fauquet (2008) reported that eating disorders are most common among young females. Mash and Wolfe (2005) asserted that society tends to pressure females into maintaining a slim and slender physique, which can
increase the risk for disordered eating. Similarly, Cohen and Petrie (2005) found that some of the variation in frequency of eating disorders between males and females may be largely due to societal pressure for females to be thin. Such societal pressures may also contribute to a large percentage of females reporting higher levels of body dissatisfaction than males (Giles, Helme, & Kraemar, 2007).

**Psychological Risk Factors**

There is great complexity in the psychological issues of disordered eating (Murray, 2003). Specifically, many psychological factors regarding disordered eating tend to involve distortions in reality (Williamson & Muller, 1999). It often is the case that those experiencing eating disorders do not possess a realistic view of their body and themselves. Thus, self-esteem plays a major role as well. In addition, anxiety has been found as a contributing factor to disordered eating (Steiner & Lock, 1998). Those who suffer from disordered eating tend to have higher rates of anxiety than their counterparts (Hautala et al., 2008). Depressive symptoms have also been found significantly related to disordered eating (Boyes, Fletcher, & Latner, 2007). Those who develop disordered eating behaviors are more likely to experience depressive symptoms.

**Environmental Risk Factors**

Barth (2003) suggests that the college experience presents itself as a prime opportunity for development of an eating disorder. Disordered eating has been linked to coping behavior in of disturbed feelings or thoughts (Fairburn, 1997). Particularly, the process of separation that occurs when someone begins college is sometimes emotionally fatiguing and thus is handled through certain disordered eating behavior (i.e. starvation, excessive exercise, overeating, and/or
purging) (Barth, 2003). Specifically, this separation process can occur when college students leave their home and families for the first time. They must attempt life on their own, apart from the guidance of their parents, siblings and neighborhood supports. Mahler, Pine, & Bergman (1975) states that this stage may include feelings and struggles pertaining to both separation and connection, as this is one of the most significant transitions in an individual’s life.

Levinson (1996) identified the initiation of college and issues of separation as having great potential for confusion and conflict. He further expounded on the idea that this transitional period can excite many emotions and feelings. Having an overwhelming experience with emotions can often provoke engagement of various risky behaviors, which can include eating disorders (Barth, 2003).

Specific activities that individuals are involved in can also contribute to maladaptive thinking patterns and dysfunctional behaviors, as is especially observed among activities emphasizing leanness. Research studies have shown dancers to be at significantly higher risk for developing an eating disorder than peers who are not dancers (Nuemarker, Bettle, Nuemarker, & Bettle, 2000). Female ballet students also report being less satisfied with their weight, as they are more likely to express a constant desire to lose weight despite their low body mass index (Bettle, Bettle, Nuemarker, & Nuemarker, 1998). In comparison to their non-dancing counterparts, greater overall concerns with weight occur with dancers (Bettle, Bettle, Nuemarker, & Nuemarker, 1998). Szmukler, Eisler, Gillies, & Hayward (1985) estimate up to a 7% prevalence rate of eating disorders occurs among ballet dancers. It is generally known that ballet dancing is an activity with an emphasis on thinness (Thomas, Keel, & Heatherton, 2005).
Additionally, there are various sports, which emphasize thinness in American culture (i.e. gymnastics, track, etc.) (Piran, 1999). In many circumstances involving these sports, athletes frequently engage in maladaptive eating behaviors in order to prepare for events pertaining to their athletic activity (Montenegro, 2006). Athletes, in turn are quite susceptible to develop disordered eating. These maladaptive eating behaviors include, restricting food intake, purging, excessively exercising and engaging in other compensatory behaviors regarding their calorie intake.

In addition to the biological components of families, the family environment and familial attitudes toward eating and body image are also important factors related to disordered eating. Parents’ attitudes can have a dramatic impact on the child’s attitudes and potential behavioral involvement (White, 2000). Parental attitudes toward being thin and toward eating, can have a significant impact on both the development and maintenance of eating disorders in their children. White (2000) found parental attitudes and behaviors to be the strongest influential factors for eating disorders. Stice (2002) found children often model the behaviors and attitudes of their parents and thus can adopt maladaptive thoughts and ideas related to food and their body at a young age, provided the parents possess unhealthy attitudes and behaviors related to nutrition and body image.

**Behavioral Risk Factors**

Thirty five percent of those considered to engage in normal dieting will progress into pathological dieting (Shisslak, Cargo, & Estes, 1995). Further, 20-25% of those individuals will then develop either partial or full eating disorders. Much dieting includes restrictive behavior, which is classified as a disordered eating behavior (White, 2000). Raich et al (2008) point out
that dieting is often a precursor of this maladaptive behavior. Unfortunately, involvement in unhealthy eating habits and disordered eating can continuously reinforce itself and thus result in a cycle of behavioral patterns difficult to change and treat.

**Warning Signs**

Most individuals with eating disorders tend to keep them secretive and to themselves due to embarrassment, shame, guilt or fear of ridicule or rejection (ADA, 2006). Thus, detecting individuals with eating disorders oftentimes is quite difficult and challenging for friends and loved ones (McClintock & Evans, 2001). These disorders or maladaptive behaviors are frequently not identified until a significant amount of time has elapsed between current stage and initial occurrence. Additionally, individuals experience disordered eating in varying manners and degrees. Moreover, there are no absolute warning signs and symptoms those dealing with this issue will exhibit, as these disorders can manifest differently. However, research does indicate that most individuals with eating disorders will show warning signs to others (ADA, 2006). Like risk factors, warning signs are clustered in different aspects of a person’s life (i.e. social, behavioral, physical, and psychological.

There are many behavioral warning signs that manifest in those experiencing complication with maladaptive eating behavior and eating disorders. One warning sign is frequently dieting or overeating (ADA, 2006). Research indicates that a sizeable percentage of those who experience eating disorders will take numerous steps to avoid food, drastically reduce their daily caloric intake and/or engage in frequent periods of binge eating followed by purging (ADA, 2006)
Another behavioral warning sign for eating disorders is over-involvement in exercise. Like many other behaviors to compensate for calorie intake, excessive exercise is a maladaptive behavior engaged in with eating disorders. Adkins and Keel (2005) asserted that much exercise tends to be compulsive in nature, rather than excessive, meaning that it was that action of participating in exercise rather than the duration that was correlated with eating disorders. Further, there is much debate over the definition of maladaptive behavior in relation to exercise but a general agreement was that duration of over two hours was excessive.

Often times those who engage in disordered eating behavior have an excessive preoccupation with food (Chavez & Insel, 2007). They frequently discuss and describe rumination pertaining to food. It is likely they prepare food for others but may or may not partake in consumption of the prepared food. These individuals also may show strong appreciation for cooking shows, collecting recipes, and hearing about food, without partaking in eating the foods. Additionally, often times these individuals will engage in rituals and obsessive behavior regarding food (i.e. only eating off a certain plate) (ADA, 2006).

Individuals engaged in disordered eating behavior frequently make excuses not to eat, eat slowly, chew thoroughly, and even “play” with their food (instead of eating it) (ADA, 2006). Williamson and Muller (1999) found one of the most dominant warning signs of disordered eating is a preoccupation with food, eating, body size, and body shape. They further found a cognitive bias related to processing of information pertaining to these identified issues. For obvious reasons, many who engage in maladaptive eating frequently feel and/or express feelings of hunger. This is due to the restrictive and compensatory behavior discussed previously in regard to disordered eating behavior.
Perfectionism is one of the most widely identified risk factors of disordered eating behavior (Bardone-Cone & Cass, 2007; Stice, 2002a). This idea falls in line with society’s pressure to be thin. Individuals with eating disorders often show overachievement at work and educational pursuits. This concept has been specifically defined by Shafran, Cooper, and Fairburn (2002) as ‘the overdependence of self-evaluation on the determined pursuit of personally demanding, self-imposed standards in at least one highly salient domain, despite adverse consequences’ (p. 778). Hewitt, Flett, Besser, Sherry, and McGee (2003) further expounded on the idea of perfectionism and disordered eating and suggested that thinness is society’s idea of perfection and thus maladaptive eating for the goal is established.

Body satisfaction and self-esteem also play a critical role in the development of eating disorders. Such concerns with body satisfaction and self-esteem occur early in life and are often encouraged throughout a lifetime (i.e. media’s drive for a slim physique). Those who experience issues with disordered eating show specific issues with body dissatisfaction. These individuals tend to express a preoccupation with their body size and/or shape. Body dissatisfaction is defined by the expressed lack of satisfaction one has with their body (Gleaves, Williamson, Eberenz, Sebastian, & Barker, 1995). This issue has been identified as a key component in disordered eating. (Shutz & Paxton, 2007).

Brannan and Petrie (2008) conducted a study and found body dissatisfaction accounted for 16% to 26% of the variance between disordered eating symptoms. Body distortion plays a significant role in body satisfaction (King, Touyz, & Charles, 2000). Much of the dissatisfaction expressed by individuals is unrealistic with concerns that are not rooted in an accurate perception of their body shape and/or size (Wharton, Adams, & Hampl, 2008). This issue is also correlated with maladaptive eating behavior. In a study conducted by Conley and Boardman (2007) they
found that women (of normal weight) who overestimated their weight by at least 5% were significantly more likely to engage in disordered eating behavior. A study conducted to explore the short-term results after viewing idealized bodies (i.e. thin female models, muscular male models) found both women and men reported lower body satisfaction after viewing the images. Additionally, Myers and Biocca (1992) found by participants watching 30 minutes of television a woman’s perception of her body can be altered.

The idea of body dissatisfaction can be further expounded upon by examining current media. Western society places much emphasis on being thin. The majority of advertisements involve messages and actors who are attractive and slender (Spettigue & Henderson, 2004). Much social pressure can be linked to how society views attractiveness and effort into attaining that goal. In some foreign countries being obese in considered an attractive physical quality. In these countries the prevalence of eating disturbances is almost non-existent (Forestell, Humphrey, & Stewart, 2004).

A recent study conducted in Fiji pertaining to attitudes of adolescent girls and the prevalence of eating disturbances (Becker, Burwell, Herzog, Hamburg, & Gilman, 2002). Surveys were administered both before they were routinely introduced to Western media and post introduction. The results found, upon viewing these Western attitudes, images, and behaviors; disordered eating habits increased. The researchers concluded that Western media, in and of itself, can have a strong impact on ideas of disordered eating habits.

Finally, body dissatisfaction frequently leads to low self-esteem (Gilbert & Meyer, 2005). Gilbert and Meyer (2005) found that when low self-esteem and body dissatisfaction co-occur, disordered eating can result. Body dissatisfaction is a common predictor/indicator of low self-
esteem. Specifically, self-esteem has been determined to negatively correlate with disordered eating behavior (Vohs, Bardone, Joiner, Abramson, & Heatherton, 1999).

Those who experience issues with disordered eating are often withdrawn (Zerbe, 1995). They often isolate themselves from others and avoid social situations involving food. Much of their maladaptive behavior is engaged in a private manner (Fox, Larkin, & Leung, 2011). A secretive behavior they often engage in is food hoarding (Hilbert & Tuschen-Caffier, 2007). Primarily shown in bulimia nervosa and binge eating disorder, individuals hoard food. This has been identified as a secretive behavior in order to avoid their excessive consumption of high calorie foods to be observed by others.

Binge eating is defined as episodes of eating with feelings of a loss of control over food consumption and unusually large amounts of food are consumed (Fairburn & Harrison, 2003). During a binge a person consumes (on average) between 1000 and 2000 calories. Binge eating is identified in multiple eating disorders (i.e. binge eating disorder, bulimia nervosa, and other issues defined as an EDNOS) (Fairburn & Harrison, 2003).

One of the primary diagnostic factors of bulimia nervosa is compensatory behavior following excessive food intake (Fairburn & Harrison, 2003). These compensatory behaviors commonly include multiple methods of purging (i.e. self-induced vomiting and/or use of laxatives). Purging can also be present in anorexia nervosa. Often times this behavior occurs after food consumption. These individuals will visit the restroom to engage in this purging behavior in a concealed manner.
Connectedness

A lack of connectedness is thought to be an underlying cause of disordered eating behavior. A study by Resnick et al., (1997) reported warm and caring relationships (in family, school, communities) to increase positive behavior and reduce risky behavior. Feelings of connectedness primarily refer to belonging, support, and being cared for by others. Additionally, connectedness includes feelings of importance in various aspects of a person’s life (Resnick et al., 1997). An individual who feels as though they contribute to society and are appreciated has greater feelings of connectedness.

Resnick et al. (1997) found community, family, and schools to be the three main areas of connectedness. Whitlock (2006) emphasizes that those who experience a sense of connectedness are less likely to engage in maladaptive behavior (which could be further assumed to be related to disordered eating behavior). Connectedness is also defined by the various feelings an individual experienced and associated with different situations (i.e. family, community, school, and social) (Resnick et al., 1997). In order for someone to feel connected to different aspects of their life, they needed to feel a sense of belonging and acceptance. This usually occurs through involvement and success in the various areas of functioning. Most research about connectedness, prior to this study, has exclusively evaluated school and/or family relationships. Little research has been conducted including items related to the community. Further, there is limited research explicitly addressing disordered eating and issues of connectedness.

The idea of connectedness began with attachment theory (Bowlby, 1982). Bowlby (1982) suggested that we could only understand behavior when considering the environment in which the behavior developed. He further asserted that through evolution, children depend on their
mother for safety and care (Bowlby, 1979). Attachment theory refers to the attachment a child experiences during the developmental stage of a child and parent. If a child has positive attachment to the parent they are more likely to engage in normal activities and behaviors (Bell & Calkins, 2000). The child cries in order for the mother to acknowledge their needs (Bowlby, 1980). To establish functional attachment, the mother acknowledges the child’s cry for attention and care. In addition to crying, the child would smile as another signal of their needs. The child’s smile will then provoke the mother’s feelings of love and further encourage giving love back to the child. This interaction strengthens the mother/child positive attachment. Functional attachment reduces the risk of the child engaging in maladaptive behaviors (Bowlby, 1979).

Through positive attachment, children are more likely to chose positive behaviors and avoid risky ones. Specifically, attachment with the biological mother appears to provide a strong foundation for development and is a good predictor of future engagement in risky behavior.

Bowlby’s theory of attachment presents the idea that infants and young children require a caring and consistent relationship with the mother or primary care giver (Bowlby, 1951). When a child’s needs are fulfilled, positive growth and development will occur. Bowlby’s theory suggests attachment is an instinctive process to protect the child for survival. During the first year of the child’s life the child will devote most of their attention to their mother or primary care giver. The term attachment is used to illustrate the relationship between mother and child. This relationship demonstrates the dependence the child has on the mother in various areas, such as feeding, nurturing, playing, and other instinctual behaviors. This bond is a part of the method of survival through evolution. Bowlby also emphasizes the importance of other familial figures, such as a father and other members of a child’s family. He offers that all these figures could contribute to care and nurturing of the child. However, Bowlby emphasizes the relationship of
mother and child. This could have been due to the fact that at the time attachment theory was initially presented; children’s primary care provider was the mother. More recently a growing number of fathers play the role of the primary care giver.

Connectedness incorporates more than just the relationship between the mother or primary care giver (Hall-Lande, Eisenberg, Christenson, & Nuemark-Sztainer, 2007). Connectedness also includes any relationship a person develops within their communities, schools, and/or families. Research shows feelings of connectedness tend to decrease the likelihood of an individual engaging in maladaptive behaviors. Connectedness grew from attachment theory to illustrate the process of development and bonding, through a child’s initial interpersonal relationships. As aforementioned, this theory also defined the role of development and future social interaction (Bowlby, 1982).

Another theory that contributes to idea of connectedness is social control theory. This theory was developed by Hirschi (1969). It proposes four main components. These components include involvement in some organizations or relationship (i.e. community, school, or family); feelings of attachment to someone of importance; feelings of commitment to others in their in their community, school, or family; as well as actual belief in the ideas and structure of their community, school, or family. As a whole, these components contribute to feelings of connectedness. This theory illustrates the importance of individuals being involved and feeling control in different areas of their life. It discusses the importance of feeling competent and important.

*Family connectedness.* Family connectedness primarily focuses on the relationship between the child and parent/s (Saccomani, Savoini, Cirrincione, Vercellino, & Favera, 1998). A connected relationship consists of open and caring relationships. These children feel care,
attention, support, and encouragement from their parents and/or family. More specifically, when children and youth engaged in positive relationships with adults they are less likely to engage in risky behavior (Resnick et al., 1997).

Resnick et al (1997) reported that family connectedness also plays an important role in psychological health. DeVore & Ginsburg (2005) found that when individuals feel connected to at least one of their family members, they were less likely to engage in risky behavior. A study conducted by Ackard, Neumark-Sztainer, Story, and Perry (2006) found when participants report uncaring parents, they also experience unhealthy body weight, body dissatisfaction, and low self-esteem. Halle-Lande, Eisenberg, Christenson, & Neumark-Sztainer (2007) observed family connectedness reduced frequency of depression, suicidal ideation, and suicide attempts. A great amount of family connectedness related to emotional connection. Increasing the strength of emotional connections has been found to increase individual ability to cope with stressful events, which is found as reasons some engage in disordered eating behavior (Smith, Boutte, Zigler, & Finn-Stevenson, 2004).

Horesh et al. (1996) found much attention being drawn to the relationship of disordered eating and families. Strong family relationships were one of the strongest indicators of the success of recovery (Saccomani et al., 1998). When individuals experienced a close bond to their family, they feel a greater sense of belonging. In contrast to close families encouraging recovery, the idea weak family relationships discourage recovery is identified. Feelings of disconnect is a strong indicator of developing an eating disorder.

Low family connectedness has been shown to be associated with a high frequency of eating disturbances (Welch, Doll, & Fairburn, 1997). A study by Hodges, Cochrane, & Brewerton, (1998) reports individuals who experienced binge-eating episodes were more likely
to have feelings of being disconnected with their families. They also address maladaptive eating behavior as a means of coping with their feelings of disconnect. A correlation between poor relationships with one or both parents and development of an eating disorder is frequently found (Zerbe, 1995).

**School connectedness.** School connectedness shares similar characteristics to family connectedness, in relation to having open and caring associations. These relationships include interaction with teachers, administrators, fellow students, and other staff at the school (Catalano & Hawkins, 2004). Like family connectedness, school connectedness is identified as a risk reduction factor (Resnick et al., 1997). The definition of school connectedness is a feeling of belonging to an educational environment. School connectedness also refers to the specific relationships between the child and school faculty, staff, and peers (Svavarsdottir, 2008). School is a primary place for the child to fulfill their self-esteem needs. Self-esteem is known to act as a protective barrier in the engagement in maladaptive or risky behavior (Hawkins & Catalano, 1990, Resnick et al, 1997). School connectedness also assists in fulfilling social competency and needs (Resnick et al., 1997).

Children that feel more connected to their school environment are more successful in school and thus their connectedness is increased through their achievement. Svavarsdottir (2008) found feelings of school connectedness increase both physical and psychological function in youth. Hawkins and Catalano (1992) discussed the benefits of reducing risky behaviors when youth were involved with school organizations. Resnick et al. (1997) found those who felt more connected to their schools also felt more comfortable making decisions and coping with stressors. In addition, school connectedness is the most influential factor in reducing the risk of suicide and depression (McNeely, Nonnemaker, & Blum, 2002).
Whitlock (2006) suggests school connectedness could reduce maladaptive behavior through the social nature of the environment at school, feelings of safety, and opportunities to demonstrate success. In order to take full advantage of these opportunities, a person has to be actively involved in the educational environment. Engagement in these areas could also contribute to increased self-esteem. Excelling in these areas often lead to encouraging and positive adult attitudes toward youth (Resnick et al., 1997). School connectedness has the potential to enhance adult support, when a child’s home life neglects to fill their needs for family connectedness.

**Community connectedness.** Lastly, community connectedness refers to the closeness one feels in various areas of their community (Hall-Lande et al., 2007). This area of connectedness has the least amount of research in the professional literature. Because of the limited amount of research on this topic, the researcher in the present study defined specific areas identified in this concept: A sense of being connected with community members, leaders, religious affiliations, and community organizations illustrates community connectedness. Community connectedness possess similar qualities to family and school connectedness however; all areas are based out of the community and not specific to school or family. Specifically, community connectedness includes a person’s engagement in their community, including volunteer, religious, political, and work organizations.

Some relationships in an individual’s life could be an example of environmental factors that would affects eating behavior (Lynch, Heil, Wagner, & Havens, 2008). It is thought that feedback from an individual’s close interpersonal relationships (i.e. family, friends, romantic partners, co-workers, etc.) can impact the likelihood of an individual’s development of an eating disorder (Fairburn & Harrison, 2003). Various relationships in adolescent lives could encourage
the idea being thin is of great importance (Meyer & Russell, 1998). These interpersonal theories lend to the idea of connectedness can contribute to avoidance and recovery of disordered eating behavior. An example of this could be when someone is honest with their friends and family they feel supported and thus attend treatment. On the opposite side of this example, someone could feel a lack of connectedness and in turn avoided treatment due to issues of disconnect (Honey, Clarke, Halse, Kohn, & Madden, 2006).

Overall, individuals who feel connected to their communities have greater mental health. The most influential sociological factors are family and culture, as they pose the largest impact (Berg, 2001; Meyer & Russell, 1998; Zerbe, 1995). Culture also had an impact on the likelihood of developing maladaptive eating patterns. One idea of why disordered eating behavior is so much more prominent in western culture is that of the US being an individualistic society (Wilson & Blackhust, 1999). This can further strengthen the concept of a person not feeling supported and or connected to their community and culture.

Many eating disorders are established through major life changes (Williamson & Mueller, 1999). Since starting college is a major transition and life change for an individual, connectedness is presumed to be a major need at this point. When friends address concerns with others, an individual feels cared for and supported. Their feelings of social strength and connectedness are enhanced (Whitlock, 2006). Because this stage in a person’s life is one of the biggest transitions they will face through their lifetime, it is important they feel supported and connectedness can enhance this support.
**Consequences of Disordered Eating**

Individuals suffering from eating disorders have the highest mortality rate than of any other illness (Sullivan, 1995). Specifically, the mortality rate of those suffering from anorexia nervosa is 12 times higher than any other cause of death for females ages 15-24 in the US. Of those suffering from anorexia nervosa, 20% will die prematurely from various health related complications, including suicide and heart problems.

Effects of eating disorders vary greatly. There are many harmful physical consequences that occur when a person engaged in an eating disorder (Winters, Collett, Brent, & Myers, 2005). Complications such as: teeth erosions, reduced potassium levels, electrolyte imbalance, sterility, osteoporosis, heart attacks, heart irregularities, endocrine abnormalities, ruptured esophagi, seizures, anemia, ovarian failure, and retinopathy can occur (Nobakht & Dezhkam, 2000). Additional consequences include fluid imbalances, menstrual and gastrointestinal dysfunction, cardiomyopathy, premature death, and tooth decay (Kim, Cho, Kim, & Ko, 2009). Some repercussions are irreversible and can remain throughout a lifetime, while others are shown to shorten life expectancy and even cause death. It is estimated that 480,000 people die each year due to issues related to eating disorders (NIMH, 2004). Malnutrition and suicide are the largest contributors to the death rate of this population (Kim et al., 2009).

With anorexia specifically, some negative physical features include heightened sensitivity to cold, gastrointestinal issues (i.e. constipation), dizziness, dehydration, syncope, amenorrhea, and sleep dysfunction (Winters et al., 2005). Specifically, long-term effects of anorexia nervosa include emaciation, and this could possibly stunt an individual’s growth and/or prohibit breast development (Fairburn & Harrison, 2003). Irreversible muscle weakness is also possible.
Additionally, dehydration can occur due to lack of consumption of enough fluids, carbohydrates, and/or fat (Fairburn & Harrison, 2003). Purging and laxative abuse cause symptoms of dehydration, including dizziness and weakness. This often leads to kidney failure, heart failure, brain damage, and even death. Electrolyte imbalances occur with frequent vomiting or starvation. Electrolytes are important for the body to maintain energy and support normal functioning. Purging further negatively affects healthy bones and joints, nerve and muscle impulses, kidney and heart functioning, blood sugar levels, and support of oxygen to cells.

Many who engage in maladaptive eating also consume excess amounts of water to compensate for lack of calorie intake (Fairburn & Harrison, 2003). Consuming too much water has the potential to cause hyponatremia. This is a concern because it can lead to a lack of sodium in the blood (Winters et al., 2005). Hyponatremia can also cause individuals to have fluid on their lungs, brain swelling, nausea, vomiting, confusion, and even death. Lowered body temperature is shown to occur with both restrictive eating and purging behavior (Winters et al., 2005). These issues can often lead to low blood pressure and even hypotension. Complications can cause heart arrhythmias, myocardial infarction, and/or shock.

An obvious physical repercussion is lanugo (Kim et al., 2009). This is when faint soft hair grows on the face, back, and arms. This is a protective mechanism to assist the body in obtaining warmth (during periods of malnutrition and/or starvation). Another visible issue is edema (Kim et al., 2009). This is swelling of soft tissues, which occurs through excess water accumulation. This is most apparent in legs and feet of someone who engages in binge eating disorder or around the abdomen for those who engage in anorexia nervosa or bulimia nervosa.
Muscle atrophy is also found to occur when the body feeds off itself (Fairburn & Harrison, 2003). Specifically, this causes a decrease in muscle for the body to support itself. Impaired neuromuscular function occurs due to the individual’s lack of necessary vitamins and minerals. Even more seriously, paralysis sometimes occurs (Fairburn & Harrison, 2003). This happens when there are low levels of potassium and dehydration of nerve cells. Left untreated this can cause permanent inability to use muscles to support movement.

Vomiting associated with bulimia nervosa causes permanent damage to the esophagus and/or gastroesophageal function (Fairburn & Harrison, 2003). Acid reflux disorders are also found to be common among individuals who engaged in self-induced vomiting. This increases chances for an individual to develop cancer in both the esophagus and voice box. Through induced rupture of stomach acids, gastric rupture and gastrointestinal bleeding also occurs. This is due to erosion and damage through harsh acids used to digest and process food (Fairburn & Harrison, 2003).

Insomnia and other sleep issues are additional problems associated with disordered eating (Fairburn & Harrison, 2003). Many who engage in disordered eating feel fatigued and lethargic for significant amounts of their day. Reduced strength in hair and nails, dry skin and hair, and even hair loss are linked to disordered eating. These complications are due to vitamin and mineral deficiencies, dehydration, stress, and malnutrition (Fairburn & Harrison, 2003). Sometimes these effects are found to be permanent when the person engages in disordered eating for an extended period of time (Kim et al., 2009). Liver failure is also associated with disordered eating, as it played a role in digestion. Starvation and certain diuretics can also increase the likelihood of liver damage or even failure (Fairburn & Harrison, 2003). Health complications
are great with this disorder. It is estimated 5-10% of individuals with anorexia nervosa will die within 10 years of the initiation of their disorder. Further, 18-20% will die after 20 years.

In addition to physical health risks that accompany an eating disorder, there are also mental health risks (Fairburn & Harrison, 2003). Depression and substance misuse are the two most common co-morbid disorders associated with disordered eating (Fairburn & Harrison, 2003). Other psychological affects experienced through the duration of eating disorders are anxiety, irritability, impaired concentration, sexual difficulties, obsessive issues, and suicide (Berger, Weitkamp, & Strauss, 2009). With the progression of this disorder individuals usually become withdrawn and isolated.

**Treatment**

Of all the people who experience complications with eating disorders, only 10% receive treatment (Striegel-Moore et al., 2000). Further, of those who do receive treatment, only 35% receive treatment at a facility for eating disorders (Noordenbos, Oldenhave, Muschter, & Terpstra, 2002). To contribute to this problem, 80% of the females who access treatment for disordered eating fail to receive treatment to the capacity needed. Additionally, many treatment programs are exclusive to women and could mean men are unable to receive appropriate treatment (NIMH, 2004). The NIMH (2004) also states many are often released from treatment earlier than their initial recommended stay. Early discharge greatly increases the patient’s chance at relapse.

Many health care providers believe patients with anorexia nervosa are at risk when their health insurance policies mandate early discharge (Zerbe, 1995). A significant issue in the treatment of eating disorders is cost. Cost of recovery is very expensive. The estimated cost for
an individual in inpatient treatment is between $500 and $2000 a month (Fairburn & Harrison, 2003). Moreover, many insurance providers do not pay for this type of treatment, which leads to costly medical bills for the patient. These issues contribute to the complications associated with disordered eating.

Treatment varies from individual to individual (NIMH, 2004). Some recover after a single episode of maladaptive eating and some never fully recover from complications with disordered eating. Additionally, some transition back and forth between times of abstinence and engaging fully in the dysfunctional eating behavior. Many who experience complications with eating disorders frequently fail to recognize or acknowledge they are ill (NIMH, 2004). Due to this fact, many never seek or resist treatment. NIMH (2004) suggests family members or other individuals who are trusted by the person suffering from complication of disordered eating could increase the likelihood of receiving treatment.

As Mash and Wolfe (2005) identify, eating disorders are a complex issue that includes many facets and factors, including biological, familial, personality, and environment. These factors do not occur exclusively but in conjunction with one another and can exhibit in various manifestations. Sullivan (1995) reports 50% of individuals suffering from eating disorders also meet criteria for depression. Because of the strong association between disordered eating and other psychological pathology, treatment centers that address both needs were important. A multidimensional approach is clearly needed to address all concerns and increase the likelihood of recovery.

There are various forms of treatment a person could engage in for help with disordered eating behavior (NIMH, 2004). One of the oldest and most used methods of treatment is
psychotherapy. This therapy includes both individual and group treatments settings. The main task of this particular therapy is to explore and address underlying issues contributing to the onset of the maladaptive behavior (NIMH, 2004). Goals of group psychotherapy include increasing self-esteem and adopting health means of coping, in order to reduce the maladaptive coping that was occurring (Williamson & Mueller, 1999).

Due to the complex nature of eating disorders, cognitive behavioral therapy can be beneficial to lead the client into a better understanding and coping strategies for the behavior. As discussed earlier, identifying there is a cognitive bias (i.e. Williamson & Muller, 1999) can further progress treatment of eating disorders. Often times those experiencing these maladaptive issues confound helping professionals. Understanding these biases can assist in professional preparation in the treatment of eating disorders.

Nutritional counseling is another a method used in the treatment of eating disorders. This is usually in addition to counseling or some form of therapy or support (Fairburn & Harrison, 2003). These programs help the individual find healthy alternatives to their unhealthy habits. These programs also offer education on harmful effects malnutrition can have, both long and short-term. This method of supplemental support adds to the likelihood of long-term recovery.

There are also groups, such as eating disorders anonymous and over eaters anonymous created for continuous support and assistance (Williamson & Mueller, 1999). These programs offer group members a sponsor (a person they could specifically go to for support who had experienced issues similar to them). In addition to offering meetings to address daily triggers and challenges participants would face in their daily lives.
Residential treatment is also often utilized when a person is in the most difficult and/or challenging areas of their disordered eating behavior (Murry, 2003). Inpatient treatment offers participants a place to live while attempting to overcome their issues with eating disorders. They are placed with other people experiencing similar issues. All patients eat, sleep, and go to treatment together. Most of these programs offer both individual and group therapy and their duration, on average, is about a month.

**Recovery**

As mentioned above, those suffering from eating disorders have the highest mortality rate when compared to any other illness (Sullivan, 1995). NIMH (2004) estimates anorexia nervosa had a 0.56 mortality rate per year. This number is 12 times higher than any other cause of death for females ages 15-24. Twenty percent of those who suffer from anorexia nervosa are reported to die from complication associated with the disorder. This number includes both suicide and heart problems (Sullivan, 1995).

Only 30-40% of those who experience an eating disorder were expected to recover from their illness (Austin et al., 2007). Additionally, one in ten engaging in an eating disorder receives treatment. This means that most experiencing complications with disordered will contain their eating disorders, and, in turn, these issues are not identified by their friends or support system. Like substance use, eating disorders is frequently identified as an addictive disorder (Shomaker & Furman, 2009). This means through treatment, patients are not considered to be fully recovered, but in recovery for the duration of their abstinence.
Summary

The review of literature defined eating disorders as a significant disturbance in eating habits and/or weight control behavior (APA, 2001). Research has identified four main categories of this maladaptive eating behavior: anorexia nervosa, bulimia nervosa, binge eating disorder, and EDNOS. Individuals experiencing issues related to their disordered eating often describe unrealistic ideas of physical shape and size, unhealthy evaluation of self-worth, and constant desire to reduce weight (APA, 2001). Generally, those who experience issues with disordered eating have a negative evaluation of their physical appearance and/or functioning (Gustfsson et al., 2009).

NIMH (2004) reports 70 million people worldwide are affected by eating disorders. A study by Krahn, Kruth, Gomberg, and Drewnowski (2005) found that two thirds of college women engaged in strict dieting and are at risk for developing an eating disorder. This study also found some eating disorders reach their height around college age (18-24). Men are a population that has often been neglected in the evaluation of disordered eating behavior (Sptizer et al, 1993). However, disordered eating in males could represent around 20% of all eating disorders. Carlat, Canargo, and Herzog (1997) find males may report less maladaptive eating behavior and perhaps the disorders could manifest themselves differently in the male population.

There are many risk factors associated with disordered eating (Berry, & Howe, 2000). There are also many warning signs associated with disordered eating behavior. Many of the risk factors and precursors of disordered eating behavior can be linked to issues with a lack of connectedness in various areas of an individual’s life (Resnick et al., 1997). Connectedness is important during developmental stages and throughout life as a foundation for coping.
Connectedness relates to how close or attached a person feels to various areas of their life (Resnick et al., 1997). Due to the fact family connectedness plays such a large role in an individual’s life, it is assumed community and school connections do as well (Whitlock, 2006). Connectedness is often affected in college students (Williamson & Mueller, 1999) largely due to the fact that this is a transitional period and many may feel a lack of connectedness to various areas of their life they had previously felt connected to (i.e. family and community).

Overall, there is a great amount of research on the negative affects disordered eating has on individuals. Fifty percent of Americans reported knowing someone experiencing complications with disordered eating (Fairburn & Harrison, 2003). Interpersonal relationships are a significant channel to recovery. Due to the fact many people know someone with these issues, friends and family could be a significant resource to gain support and assistance. This review of the literature further established connectedness as being a key component in the initiation and maintenance of disordered eating behavior.

There are many consequences to eating disorders (NIMH, 2004). These include both psychological and physical repercussions. These effects can be life-long and even result in death. Specifically, individuals with eating disorders have the highest mortality rate when compared to individuals with any other illness (Sullivan, 1995). Recovery from eating disorders is extremely challenging and difficult (Austin et al., 2007). It is estimated only 30-40% of those with an eating disorder would reach recovery. The review of the literature demonstrated the importance of this study and illustrated challenges and struggles faced for those with an eating disorder.
The literature review also encourages the idea that preventative care of eating disorders is necessary. Through a review of the concepts of connectedness, it is obvious why peer roles and relationships can play such a significant role in the prevention and treatment of eating disorders. Three primary aspects of connectedness (family, community, and school) have been identified as influencing and protective factors of disordered eating behavior. These factors are important throughout a lifetime.

The goals and structure of treatment for eating disorders can also be used in the prevention of the maladaptive behavior. Specifically, the goals initiated in psychotherapy can also be addressed prior to the onset of an eating disorder if identified early enough by peers. This also ties in with feelings of connectedness. When a person feels connected to others who surround them they can discuss problems and issues they are facing. Additionally, friends and family can assist in cognitive biases regarding various maladaptive thoughts and behaviors. Accepting attitudes toward body type are more likely to encourage an individual to engage in other health aspects of personal behavior (i.e. eating healthy) (Gustafsson et al., 2009). Croll et al. (2002) further elaborates on this issue and suggests that those with high self-evaluation and emotional well-being are less susceptible to society’s imposition of thinness.

Health professionals should seek to educate students and members of their community on how to recognize and address disordered eating. They should also address issues related to the importance of connectedness and ensuring others feel cared for and connected. Education is another strong component in the prevention of eating disorders. As nutrition counseling can be used to treat an eating disorder, perhaps having a significant knowledge base of nutrition can also be a protective factor of eating disorders.
Chapter 3

Methods

The purpose of this study was to examine university students’ perceived importance of knowledge of eating disorders, overall confidence in appropriately intervening with a friend who has an eating disorder and whether their perceived importance of knowledge and confidence levels differed based on sex, current involvement in disordered eating and extent of social connections. This study sought to fill current gaps in the literature regarding disordered eating. This information is important to strengthen future educational efforts related to the identification and acknowledgement of eating disorders with friends and family.

Participants

A convenience sample of students from the University of Cincinnati served as the participants in this study. Based on a total population of 30,417 undergraduate students, a sample of 347 was needed to have a confidence level of 95% with a confidence interval of 5%. Participants were students currently enrolled in a sample of 26 fitness and introductory level health courses at the University of Cincinnati main campus during the 2010 spring quarter. All students were between 18 and 37 years of age. Participation was voluntary and no incentives were offered.

Instrument Design

A comprehensive review of the literature was conducted to examine eating disorder risk factors, warning signs, behaviors, and common misconceptions. The literature review also sought to identify issues related to community, school, and family connectedness. Databases
utilized during this literature review included the following: CINAHL Plus with Full Text, ERIC, MEDLINE, Psyc INFO, and PsycBOOKS. Search terms included: college, university, student, connectedness, school connectedness, family connectedness, community connectedness, eating disorder risk factors, eating disorder warning signs, eating disorder facts, eating disorder myths, eating disorders, disordered eating, eating disorder assessments, eating disorder behavior, confidence, knowledge and self-efficacy.

Based on this review of the professional literature, previous survey instruments, and discussions with various professionals who specialize in eating disorders, a 2-page, 82-item survey (Appendix A) was developed to examine students’ perceptions and knowledge regarding eating disorders. This survey was utilized to examine all research questions and hypotheses.

Four subscales were developed to measure the four dependent variables: 1) Knowledge of eating disorders; 2) Current involvement in disordered eating behavior; 3) Perceived confidence in addressing disordered eating in others; and 4) Perceived in being knowledgeable about addressing issues of disordered eating. Three independent variables were assessed in hypothesis testing: 1) Sex; 2) Current involvement in disordered eating; and 3) Extent of social connections.

Instrumentation

A questionnaire was utilized to gather information for the study. An information sheet was placed on top of the survey and was modeled off of a template offered from the Institutional Review Board at the University of Cincinnati and presented in Appendix A. This information sheet provided participants with the title of the study; a brief overall introduction; information about the researchers; the purpose of the research study; participants to be involved in the study; the time to complete the survey; potential risks, benefits, rewards, and compensation of participation; how the data will be kept confidential; participants’ legal rights; contact
information for any questions regarding the study; and a statement emphasizing the voluntary
nature of the study.

The survey is presented in Appendix B. Section one assessed participants’ perceived
confidence in addressing eating disorders in friends (5 items). Participants were requested to rate
how strongly they agree or disagree with five statements via a 5-point Likert-type scale (1 =
Strongly disagree; 5 = Strongly agree).

Section two included one item, which asked participants to rate how strongly they agree
or disagree eating disorders are a major problem on college campuses. Participants used a 5-
point Likert-type scale to respond (1 = Strongly disagree; 5 = Strongly disagree).

Section three assessed participants’ perceived importance in knowing about warning
signs, risk factors, and intervention steps for eating disorders (4 items). Participants were asked
to rate how strongly they agree or disagree with four statements via a 5-point Likert-type scale (1
= Strongly disagree; 5 = Strongly agree).

Section four assessed participants’ knowledge regarding the risk factors for an eating
disorders. Participants were asked to check all of the boxes that they thought increased the
chances for developing an eating disorder (13 options). Through the literature review 10 risk
factors for developing an eating disorder were identified and added to the survey (female, family
history, anxiety, previously dieted, recent life change, depression, dance/actress, athlete in a sport
that emphasizes leanness, critical family, perfectionist). Three foil options (incorrect responses)
were also presented (being poor, being single, being an only child). The scoring for this section
was based on how many correct responses the participant endorsed, each offering one point for
the correct response, with a total of 0-13 possible points possible.
Section five assessed participants’ knowledge of the warning signs of an eating disorder. Participants were asked to check all of the boxes that they thought were warning signs for an eating disorder (22 options). Through the literature review, 19 warning signs were identified for disordered eating and included on the survey (abnormal weight loss; excessive exercise; peculiar patterns of handling food; reduction in food intake; purging; continuous feelings of hunger; use of laxatives; avoiding food; using restrooms after meals; hoarding high calorie food; preoccupation with body or weight; distorted body image; absence or abnormal menstrual cycle; intense fear of gaining weight; obsessed with calories, food, and/or nutrition; secretive behavior; excessive food intake; continuous dieting). Three foil options (receiving poor grades, developing food allergies, loss of motivation) were also presented. This section was scored giving one point for every correct response. The possible range of scores on this section was 0 to 22.

Section six assessed participants’ knowledge regarding eating disorder myths and facts. This section offered nine statements and asked participants to either circle “true” (if the statement was correct) or “false” (if the statement was incorrect). Three of the presented statements were true (Disordered eating can cause heart problems, Disordered eating can cause fine hair to grow all over your body, and Eating disorders affect greater than 5% of the population) while six were false (You have to be underweight to have an eating disorder, Only teenage girls and young women are affected by eating disorders, People with eating disorders are vain, Eating disorders are not fatal, Most people talk about their disordered eating habits, Disordered eating is easy to cure). Like the previous sections, participants received one point for every correct response for scores between 0 and 9.

Section seven requested participants to report how often they engaged in seven different types of disordered eating via a 5-point scale (1 = never (0% of the time); 2 = rarely (1% to 24%
of the time; 3 = sometimes (25% to 75% of the time); 4 = most times (76% to 99% of the time); 5 = always (100% of the time). The following behavioral questions were asked: How often do you exercise? How often do you engage in binge eating? How often do you engage in restrictive eating? How often do you use diuretics? How often do you purge? How often do you use laxatives? How often do you worry about weight gain? These questions specifically assessed the frequency of involvement in disordered eating. Participants received a score of five for each item they rated as “Always,” four for each item they rated as “Most times,” three for each item they rated as “Sometimes,” two for each item they rated as “Rarely,” and one for each item they rated as “Never.” Scores range from 7-35. The higher the score, the more involved the individual was in engaging in disordered eating.

Section eight assessed the extent of social connections among participants. This section specifically examined participants’ involvement and perceptions regarding family, school and community connections. Participants were presented 15 statements on their involvement and perceptions regarding family, school and community connectedness. The statements offered an option of responding either true or false and included five statements related to each category (community, school, and family). These statements were scored by attributing one point to each endorsed statement (true) and further separating the scores into three categories [community (I am involved in an athletic activity outside of campus, I consider myself to have a lot of friends in my community, I am involved in a religious organization, I volunteer in my community, I feel connected to my community), school (I am involved in a campus organization, I am involved in a campus athletic activity, I consider myself to have a lot of friends at my college, I feel successful at school, I like college), and family (I am close to my family, I talk to members of my family about important issues, I consider my family to be supportive, I engage in activities
with my family (other than holidays), I enjoy spending time with my family). These scores were established in order to examine the relationships between various areas of connectedness and participants’ engagement in disordered eating behavior. Scoring of this section included participants receiving a score of 1 for every item endorsed as true and a 0 for every item participants endorsed as false, with an overall 0-5 for each domain. An overall score of connectedness was also computed and ranged from 0-15.

The final section of the survey assessed demographic and background characteristics of participants. This section included seven items: Age, sex, grade/year in school (freshman, sophomore, junior, senior, or other), race (American Indian, African American, Asian, Hawaiian/Pacific Islander, Hispanic/Latino, White/Caucasian, Multi-racial, or other), grade point average (on a 4.0 scale), academic major (the participant was asked to write in their academic major), and current employment status (part-time, full-time, or unemployed).

**Instrument Testing**

Validity and reliability of this survey were established using a variety of tests. A panel of experts was used to establish face and content validity. The panel consisted of an expert in survey design and research from the University of Cincinnati, an expert in mental health, and two health education professors from the University of Cincinnati.

The researcher sent each expert a cover letter attached to the survey to explain the purpose of the study and why the expert had been selected to participate in the review of this instrument. This information was sent via email as a Microsoft Word document. The experts were asked to critique the survey and determine if the questions were clear, understandable, and whether items appeared to measure what they were intended to measure. Experts were asked to
provide any questions, corrections, or other feedback as to how the instrument should be revised. The researcher requested the suggestions be returned within two weeks via email using the track changes feature in Microsoft Word. The panel confirmed the instrument measured what it was supposed to measure and suggested minor revisions. The authors of this study incorporated the experts’ comments and suggestions into the final instrument.

Test-retest was used to ensure stability reliability. This test assessed the degree of association between survey items at two different points in time. A convenience sample of 30 students was used for the test-retest. The students were both male and female members of a general health class and represented various grade levels, majors, and race/ethnicities. The survey was first administered to the convenience sample and then administered to the same sample again one week later. Pearson correlation coefficients were computed for parametric items while Kendall’s tau-b coefficients were computed for nonparametric sections. Each yielded test-retest coefficients > .80, thus demonstrating reliability for the survey. Internal consistency reliability was established for parametric subscales and yielded Cronbach alphas > .80 across all subscales.

**Procedures**

The study proposal, survey instrument, cover letters, and informal and formal consent forms were approved by the researcher’s thesis committee and submitted to the University of Cincinnati Institutional Review Board (IRB). The IRB approved the study prior to study implementation.

The primary researcher randomly selected instructors of fitness and introductory health courses from the University’s list of course offerings for the 2010 spring quarter. All classes
selected were introductory level and general requirement classes in order to recruit a representative sample of the university. The researcher emailed instructors requesting permission to distribute the survey in their spring 2010 courses. The researcher attached a cover letter explaining the purpose of the study along with the survey. Those who agreed were asked to respond with appropriate dates and times of the classes and number of students in each class. Twenty-three instructors were asked to participate and twelve agreed to participate. Surveys were distributed for each class during class time in May and June of 2010.

Students in a total of 32 classes were surveyed. The classes included six sections of Yoga, six sections of Group Fitness, six sections of Physical Conditioning, two sections of Weight Lifting, four sections of Racquetball, one section of Human Sexuality, one section of Personal Health Behavior, two sections of Stress Management, two sections of Introduction to Public/Community Health, one section of Health Behavior, and one sections of Introduction to Epidemiology. Students present in the classes on the day of survey administration were requested to complete the survey. The survey was first introduced at the beginning of each class. The primary investigator described the purpose of the study to the students and described the confidential nature of the study and their responses could not be connected to them in any way. Students were assured that their participation was completely voluntary, and by completing the survey they granted consent to have their responses used in the study. All students received a survey with a cover letter restating the purpose of the study, the voluntary nature of the study, and that their participation granted their permission for their responses to be used in the study. The survey took approximately five to ten minutes to complete.

The primary investigator preserved anonymity of the surveys by instructing participants to refrain from putting their names or any other identifying information on the survey. This was
to guarantee participants could not be linked to individual participants. Participants were instructed to place surveys facedown in an envelope that was offered at the front of each classroom. The researcher counted each set of surveys in order to keep accurate totals of completed surveys. The researcher then sealed each envelope after all surveys were collected for each class. Surveys were stored in a locked personal file cabinet in the researcher’s locked personal office. All surveys were shredded following data analysis.

**Data Analysis**

All data was analyzed using the Statistical Package for the Social Science (SPSS Version 16). Descriptive statistics (frequencies, means, standard deviations, ranges) were used to describe the demographics and background information. A series of multivariate analyses of variance (MANOVAs) were computed to determine college students’ confidence in appropriately intervening with a friend who has an eating disorder, the importance college students feel regarding having knowledge of disordered eating, college students’ knowledge on disordered eating, and college students’ current involvement in disordered eating. These four factors were analyzed in relation to participant’s sex, current involvement in disordered eating, and extent of social connections. The alpha level used for this study was established a priori at .05 for determining significance.
Chapter 4

Results and Discussion

The purpose of this study was to examine university students’ perceived importance of knowledge of eating disorders, overall confidence in appropriately intervening with a friend who has an eating disorder and whether their perceived importance of knowledge and confidence levels differed based on sex, current involvement in disordered eating and extent of social connections. This study sought to fill current gaps in the literature regarding disordered eating. This information is important to strengthen future educational efforts related to the identification and acknowledgement of eating disorders with friends and family.

Participation

Students (n = 428) enrolled in: Six sections of Yoga, six sections of Group Fitness, six sections of Physical Conditioning, two sections of Weight Lifting, four sections of Racquetball, one section of Human Sexuality, one section of Personal Health Behavior, two sections of Stress Management, two sections of Introduction to Public/Community Health, one section of Health Behavior, and one sections of Introduction to Epidemiology during the 2010 spring quarter at a Midwestern University served as participants in this study. A total of 432 students were administered the survey with 428 completing the survey, resulting in a response rate of 99%.

Demographics and Background Characteristics

Most participants were female (59.1%) and Caucasian (78.3%) (Table 4.1). Grade levels included freshman (15.7%), sophomores (21%), juniors (13.4%), seniors (35.5%), and other (5.1%). Ages ranged from 17 to 37 ($M = 21.44, SD = 2.63$). Participants’ reported grade point
Table 4.1  Demographic and Background Characteristics of Participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>$n$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>166</td>
<td>38.8</td>
</tr>
<tr>
<td>Female</td>
<td>253</td>
<td>59.1</td>
</tr>
<tr>
<td>Grade</td>
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<td></td>
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<tr>
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</tr>
<tr>
<td>Sophomore</td>
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<td>21</td>
</tr>
<tr>
<td>Junior</td>
<td>90</td>
<td>21</td>
</tr>
<tr>
<td>Senior</td>
<td>151</td>
<td>35.5</td>
</tr>
<tr>
<td>Ethnicity</td>
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<td></td>
</tr>
<tr>
<td>African American</td>
<td>42</td>
<td>9.8</td>
</tr>
<tr>
<td>Asian</td>
<td>21</td>
<td>4.9</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>5</td>
<td>1.2</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>335</td>
<td>78.3</td>
</tr>
<tr>
<td>Multi-Racial</td>
<td>10</td>
<td>2.3</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>.9</td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0-3.5</td>
<td>182</td>
<td>42.5</td>
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<td>3.0-3.49</td>
<td>164</td>
<td>38.3</td>
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<td>2.5-2.99</td>
<td>53</td>
<td>12.4</td>
</tr>
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<td>2.0-2.49</td>
<td>11</td>
<td>2.6</td>
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<tr>
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<td>.2</td>
</tr>
<tr>
<td>Major</td>
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<tr>
<td>Non Health Education</td>
<td>336</td>
<td>78.5</td>
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<tr>
<td>Health Education</td>
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<td>13.8</td>
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<td>Employment Status</td>
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<td>Full-time</td>
<td>79</td>
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<td>Part-time</td>
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<td>Unemployed</td>
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<td>18</td>
<td>24</td>
<td>5.6</td>
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<td>75</td>
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<td>1.4</td>
</tr>
<tr>
<td>&gt;25</td>
<td>23</td>
<td>5.5</td>
</tr>
</tbody>
</table>

$N = 428$; Percents based on valid percents; Missing value excluded
average ranged from 1.0 to 4.0 \((M = 3.3, SD = 0.45)\). Majors were characterized into three different categories: Non Health Education (78.5%), Health Education (13.8%), and Psychology (4%). The majority of participants were employed part time (51.9%).

**Confidence Addressing Disordered Eating with Friends**

Participants were asked to report how strongly they agreed or disagreed with questions pertaining to their confidence identifying, addressing, and obtaining information regarding disordered eating. Participants were offered five statements to rate: Strongly agree, agree, neutral, disagree, and strongly disagree and scores for each statement ranged from 1 to 5 (strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, strongly agree = 5)). Results are shown in Table 4.2. Participants reported a mean of 3.82 \((SD = .898)\) with respect to their confidence in identifying a friend with a eating disorder, a mean of 3.43 \((SD = 1.002)\) for participant’s confidence in knowing what to do if they think a friend has an eating disorder, a mean of 3.79 \((SD = .928)\) for confidence in being able to talk to a friend about their eating disorder, a mean of 3.79 \((SD = .898)\) for confidence in taking appropriate steps to help a friend with an eating disorder, a mean of 3.79 \((SD = .963)\) in confidence in obtaining information on campus about eating disorders.

**Perceived Importance of Being Knowledgeable Regarding Eating Disorders**

Participants were asked to answer questions related to their thoughts on the importance of being knowledgeable regarding eating disorders. Participants were offered five statements to rate: Strongly agree, agree, neutral, disagree, and strongly disagree and scores for each statement ranged from 1-5 (strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, strongly agree = 5). Results are shown in Table 4.3. Participants reported a mean of 3.37 \((SD = .891)\) regarding that
Table 4.2  Confidence in Addressing Disordered Eating with Friends

<table>
<thead>
<tr>
<th>I feel confident that I…</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>That I can recognize a friend who has an eating disorder.</td>
<td>3.82</td>
<td>.898</td>
</tr>
<tr>
<td>That I know what to do if I think a friend has an eating disorder.</td>
<td>3.43</td>
<td>1.002</td>
</tr>
<tr>
<td>That I can talk to a friend about their eating disorder.</td>
<td>3.79</td>
<td>.928</td>
</tr>
<tr>
<td>In taking appropriate steps to help a friend that has an eating disorder.</td>
<td>3.79</td>
<td>.898</td>
</tr>
<tr>
<td>That I can obtain information on campus about eating disorders.</td>
<td>3.79</td>
<td>.963</td>
</tr>
</tbody>
</table>

N=428; Missing value excluded.

Means based on 5-point scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)
Table 4.3 Importance of Being Knowledgeable Regarding Eating Disorders

<table>
<thead>
<tr>
<th>I think…</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating disorders are a major problem on college campuses</td>
<td>3.37</td>
<td>.891</td>
</tr>
<tr>
<td>It is important to know the warning signs for eating disorders.</td>
<td>4.36</td>
<td>.636</td>
</tr>
<tr>
<td>It is important to know the risk factors for eating disorders.</td>
<td>4.44</td>
<td>.607</td>
</tr>
<tr>
<td>It is important to know the steps to take when someone has an eating disorder.</td>
<td>4.42</td>
<td>.636</td>
</tr>
<tr>
<td>It is important to help an individual with an eating disorder.</td>
<td>4.59</td>
<td>.572</td>
</tr>
</tbody>
</table>

N=428; Missing value excluded.
Means based on 5-point scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)
eating disorders are a major problem on college campuses, a mean of 4.36 ($SD = .636$) for the importance participants placed on knowing the warning signs for eating disorders, a mean of 4.44 ($SD = .607$) for the importance participants placed on knowing the risk factors for eating disorders, a mean of 4.42 ($SD = .636$) for the importance of knowing the steps to take when someone has an eating disorder, and a mean of 4.59 ($SD = .572$) for the importance of helping a friend with an eating disorder.

**Risk Factors**

The third section on the survey asked participants to check all that applied regarding eating disorder from a list of 14 potential risk factors of developing an eating disorder. The top five risk factors cited by participants included: depression (89.3%), having anxiety (77.8%), being female (76.6%), being a perfectionist (71.7%), and having a family history of eating disorders (71.3%) (Table 4.4). The least reported risk factors included: having a family that is critical of decisions and ideas (50.5%), being single (34.1%), having ever dieted (32.2%), being poor (19.9%), and being an only child (10.0%). Of these risk factors, being single, being poor, and being an only child were not true risk factors but presented as foils.

**Warning Signs**

The fourth section on the survey asked participants to check all that applied regarding eating disorder from a list of 21 potential warning signs of developing an eating disorder. The top five warning signs cited by participants included: abnormal weight loss (91.1%), purging (88.8%), intense fear of gaining weight (86.9%), avoiding food (85.3%), distorted body image (85.3%), and use of laxatives (72.9%) (Table 4.5). The least cited warning signs included: hoarding high calorie foods (53.5%), continuous feelings of hunger (41.8%), loss of motivation (38.3%), and developing food allergies (19.4%), and receiving poor grades (18.0%). Of these
<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being an only child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked*</td>
<td>385</td>
<td>90.0</td>
</tr>
<tr>
<td>Checked</td>
<td>43</td>
<td>10.0</td>
</tr>
<tr>
<td>Depression</td>
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<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>46</td>
<td>10.7</td>
</tr>
<tr>
<td>Checked*</td>
<td>382</td>
<td>89.3</td>
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<tr>
<td>Being Poor</td>
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<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>Checked</td>
<td>85</td>
<td>19.9</td>
</tr>
<tr>
<td>Having anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>95</td>
<td>22.2</td>
</tr>
<tr>
<td>Checked*</td>
<td>333</td>
<td>77.8</td>
</tr>
<tr>
<td>Being female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>100</td>
<td>23.4</td>
</tr>
<tr>
<td>Checked*</td>
<td>328</td>
<td>76.6</td>
</tr>
<tr>
<td>Being a perfectionist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>121</td>
<td>28.3</td>
</tr>
<tr>
<td>Checked*</td>
<td>307</td>
<td>71.7</td>
</tr>
<tr>
<td>Having a family history of eating disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>123</td>
<td>28.7</td>
</tr>
<tr>
<td>Checked*</td>
<td>305</td>
<td>71.3</td>
</tr>
<tr>
<td>Dancer/Actress(or)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>138</td>
<td>32.2</td>
</tr>
<tr>
<td>Checked*</td>
<td>290</td>
<td>67.8</td>
</tr>
<tr>
<td>Athlete in a sport that emphasized leanness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>153</td>
<td>35.7</td>
</tr>
<tr>
<td>Checked*</td>
<td>275</td>
<td>64.3</td>
</tr>
<tr>
<td>Being single</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked*</td>
<td>282</td>
<td>65.9</td>
</tr>
<tr>
<td>Checked</td>
<td>146</td>
<td>34.1</td>
</tr>
<tr>
<td>Having a family that is critical of decisions and ideas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>212</td>
<td>49.5</td>
</tr>
<tr>
<td>Checked*</td>
<td>216</td>
<td>50.5</td>
</tr>
<tr>
<td>Recent life change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>161</td>
<td>37.6</td>
</tr>
<tr>
<td>Checked*</td>
<td>267</td>
<td>62.4</td>
</tr>
<tr>
<td>Have ever dieted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>290</td>
<td>67.8</td>
</tr>
<tr>
<td>Checked*</td>
<td>138</td>
<td>32.2</td>
</tr>
</tbody>
</table>

N = 428; Percents refer to valid percents; Missing values excluded; * indicates correct response
Table 4.5 Participants’ Knowledge of Warning Signs for Disordered Eating

<table>
<thead>
<tr>
<th>Activity</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal weight loss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>38</td>
<td>8.9</td>
</tr>
<tr>
<td>Checked*</td>
<td>390</td>
<td>91.1</td>
</tr>
<tr>
<td>Purging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>48</td>
<td>11.2</td>
</tr>
<tr>
<td>Checked*</td>
<td>380</td>
<td>88.8</td>
</tr>
<tr>
<td>Intense fear of gaining weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>56</td>
<td>13.1</td>
</tr>
<tr>
<td>Checked*</td>
<td>372</td>
<td>86.9</td>
</tr>
<tr>
<td>Distorted body image</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>63</td>
<td>14.7</td>
</tr>
<tr>
<td>Checked*</td>
<td>365</td>
<td>85.3</td>
</tr>
<tr>
<td>Avoiding food</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>63</td>
<td>14.7</td>
</tr>
<tr>
<td>Checked*</td>
<td>365</td>
<td>85.3</td>
</tr>
<tr>
<td>Receiving poor grades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked*</td>
<td>351</td>
<td>82.0</td>
</tr>
<tr>
<td>Checked</td>
<td>77</td>
<td>18.0</td>
</tr>
<tr>
<td>Developing food allergies</td>
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<td></td>
</tr>
<tr>
<td>Not checked*</td>
<td>345</td>
<td>80.6</td>
</tr>
<tr>
<td>Checked</td>
<td>83</td>
<td>19.4</td>
</tr>
<tr>
<td>Obsessed with calories, food, and/or other nutrition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>110</td>
<td>25.7</td>
</tr>
<tr>
<td>Checked*</td>
<td>318</td>
<td>74.3</td>
</tr>
<tr>
<td>Use of laxatives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>116</td>
<td>27.1</td>
</tr>
<tr>
<td>Checked*</td>
<td>312</td>
<td>72.9</td>
</tr>
<tr>
<td>Reduction in food intake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>118</td>
<td>27.6</td>
</tr>
<tr>
<td>Checked*</td>
<td>310</td>
<td>72.4</td>
</tr>
<tr>
<td>Excessive exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>132</td>
<td>30.8</td>
</tr>
<tr>
<td>Checked*</td>
<td>296</td>
<td>69.2</td>
</tr>
<tr>
<td>Preoccupation with body or weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not checked</td>
<td>123</td>
<td>28.7</td>
</tr>
<tr>
<td>Checked*</td>
<td>305</td>
<td>71.3</td>
</tr>
<tr>
<td>Secretive behavior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior</td>
<td>Not checked</td>
<td>Checked*</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------</td>
<td>----------</td>
</tr>
<tr>
<td>Using the restrooms after meals</td>
<td></td>
<td>144</td>
</tr>
<tr>
<td></td>
<td></td>
<td>288</td>
</tr>
<tr>
<td></td>
<td></td>
<td>32.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>67.3</td>
</tr>
<tr>
<td>Peculiar patterns when handling food</td>
<td></td>
<td>152</td>
</tr>
<tr>
<td></td>
<td></td>
<td>276</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>64.5</td>
</tr>
<tr>
<td>Continuous dieting</td>
<td></td>
<td>154</td>
</tr>
<tr>
<td></td>
<td></td>
<td>274</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>64.0</td>
</tr>
<tr>
<td>Absence or abnormal menstrual cycle</td>
<td></td>
<td>155</td>
</tr>
<tr>
<td></td>
<td></td>
<td>272</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>63.6</td>
</tr>
<tr>
<td>Loss of motivation</td>
<td></td>
<td>264</td>
</tr>
<tr>
<td></td>
<td></td>
<td>164</td>
</tr>
<tr>
<td></td>
<td></td>
<td>61.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>38.3</td>
</tr>
<tr>
<td>Excessive food intake</td>
<td></td>
<td>176</td>
</tr>
<tr>
<td></td>
<td></td>
<td>252</td>
</tr>
<tr>
<td></td>
<td></td>
<td>41.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>58.9</td>
</tr>
<tr>
<td>Hoarding high calorie foods</td>
<td></td>
<td>199</td>
</tr>
<tr>
<td></td>
<td></td>
<td>229</td>
</tr>
<tr>
<td></td>
<td></td>
<td>46.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>53.5</td>
</tr>
<tr>
<td>Continuous feelings of hunger</td>
<td></td>
<td>249</td>
</tr>
<tr>
<td></td>
<td></td>
<td>179</td>
</tr>
<tr>
<td></td>
<td></td>
<td>58.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>41.8</td>
</tr>
</tbody>
</table>

N = 428; Percents refer to valid percents; Missing values excluded
risk factors, loss of motivation, developing food allergies, and receiving poor grades were not true warning signs but presented as foils.

**Eating Disorder Myths and Facts**

The fifth section of the survey asked participants to identify myths and facts of disordered eating. Participants were asked to choose true or false for each of the nine statements presented. The majority of participants reported that it was false that an individual would have to be underweight to have an eating disorder (96.7%), only teenage girls and young women are affected by eating disorders (96.5%), people with eating disorders are vain (89.7%), that eating disorders are not fatal (94.2%), that most people talk about their disordered eating habits (92.5%), and that disordered eating is easy to cure (90.7%) (Table 4.6). Participants reported true for the statement that disordered eating can cause heart problems (90.4%), fine hair to grow all over your body (56.8%), and that eating disorders affect greater than 5% of the population (86.4%).

**Current Involvement in Disordered Eating Behavior**

Participants were asked about their current disordered eating behavior. Seven questions were asked and participants had the option of selecting always, most times, sometimes, rarely, and never. Observing the mode for each of these ordinal responses, participants reported most often that they exercised sometimes (45.6%), engaged in binge eating rarely (40.4%), engaged in restrictive eating rarely (32.9%), used diuretics never (82.9%), purged never (84.3%), used laxatives never (86.4%), and worried about gaining weight sometimes (30.1%) (Table 4.7).
Table 4.6 Knowledge of Eating Disorder Myths and Facts

<table>
<thead>
<tr>
<th>Myth</th>
<th>True</th>
<th>%</th>
<th>False*</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>You have to be underweight to have an eating disorder.</td>
<td>6</td>
<td>1.4</td>
<td>414</td>
<td>96.7</td>
</tr>
<tr>
<td>Only teenage girls and young women are affected by eating disorders.</td>
<td>6</td>
<td>1.4</td>
<td>413</td>
<td>96.5</td>
</tr>
<tr>
<td>Eating disorders are not fatal.</td>
<td>17</td>
<td>4</td>
<td>403</td>
<td>94.2</td>
</tr>
<tr>
<td>Most people talk about their disordered eating habits.</td>
<td>23</td>
<td>5.4</td>
<td>396</td>
<td>92.5</td>
</tr>
<tr>
<td>Disordered eating is easy to cure.</td>
<td>29</td>
<td>6.8</td>
<td>388</td>
<td>90.7</td>
</tr>
<tr>
<td>Disordered eating can cause heart problems.</td>
<td>387</td>
<td>90.4</td>
<td>33</td>
<td>7.7</td>
</tr>
<tr>
<td>People with eating disorders are vain.</td>
<td>31</td>
<td>7.2</td>
<td>384</td>
<td>89.7</td>
</tr>
<tr>
<td>Eating disorders affect greater than 5% of the population.</td>
<td>370</td>
<td>86.4</td>
<td>45</td>
<td>10.5</td>
</tr>
<tr>
<td>Disordered eating can cause fine hair to grow all over your body.</td>
<td>243</td>
<td>56.8</td>
<td>164</td>
<td>38.3</td>
</tr>
</tbody>
</table>

N = 428; Percents refer to valid percents; Missing values excluded; * indicates correct response
Table 4.7 Current Involvement in Disordered Eating Behavior

<table>
<thead>
<tr>
<th>How often do you…</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>5</td>
<td>1.2</td>
</tr>
<tr>
<td>Rarely</td>
<td>55</td>
<td>12.9</td>
</tr>
<tr>
<td>Sometimes</td>
<td>195</td>
<td>45.6</td>
</tr>
<tr>
<td>Most times</td>
<td>131</td>
<td>30.6</td>
</tr>
<tr>
<td>Always</td>
<td>31</td>
<td>7.2</td>
</tr>
<tr>
<td>Engage in binge eating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>157</td>
<td>36.7</td>
</tr>
<tr>
<td>Rarely</td>
<td>173</td>
<td>40.4</td>
</tr>
<tr>
<td>Sometimes</td>
<td>73</td>
<td>17.1</td>
</tr>
<tr>
<td>Most times</td>
<td>11</td>
<td>2.6</td>
</tr>
<tr>
<td>Always</td>
<td>2</td>
<td>.5</td>
</tr>
<tr>
<td>Engage in restrictive eating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>134</td>
<td>31.3</td>
</tr>
<tr>
<td>Rarely</td>
<td>141</td>
<td>32.9</td>
</tr>
<tr>
<td>Sometimes</td>
<td>101</td>
<td>23.6</td>
</tr>
<tr>
<td>Most times</td>
<td>41</td>
<td>9.6</td>
</tr>
<tr>
<td>Always</td>
<td>1</td>
<td>.2</td>
</tr>
<tr>
<td>Use diuretics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>355</td>
<td>82.9</td>
</tr>
<tr>
<td>Rarely</td>
<td>36</td>
<td>8.4</td>
</tr>
<tr>
<td>Sometimes</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Most times</td>
<td>10</td>
<td>2.3</td>
</tr>
<tr>
<td>Always</td>
<td>3</td>
<td>.7</td>
</tr>
<tr>
<td>Purge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>365</td>
<td>84.3</td>
</tr>
<tr>
<td>Rarely</td>
<td>31</td>
<td>7.2</td>
</tr>
<tr>
<td>Sometimes</td>
<td>15</td>
<td>3.5</td>
</tr>
<tr>
<td>Most times</td>
<td>7</td>
<td>1.6</td>
</tr>
<tr>
<td>Always</td>
<td>1</td>
<td>.2</td>
</tr>
<tr>
<td>Use laxatives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>370</td>
<td>86.4</td>
</tr>
<tr>
<td>Rarely</td>
<td>31</td>
<td>7.2</td>
</tr>
<tr>
<td>Sometimes</td>
<td>9</td>
<td>2.1</td>
</tr>
<tr>
<td>Most times</td>
<td>3</td>
<td>.7</td>
</tr>
<tr>
<td>Always</td>
<td>3</td>
<td>.7</td>
</tr>
<tr>
<td>Worry about gaining weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>88</td>
<td>20.6</td>
</tr>
<tr>
<td>Rarely</td>
<td>91</td>
<td>21.3</td>
</tr>
<tr>
<td>Sometimes</td>
<td>129</td>
<td>30.1</td>
</tr>
<tr>
<td>Most times</td>
<td>63</td>
<td>14.7</td>
</tr>
<tr>
<td>Always</td>
<td>48</td>
<td>11.2</td>
</tr>
</tbody>
</table>

N=428; Percents based on valid percents; Missing value excluded
Social Connectedness

Participants were asked to select yes or no for the 15 questions related to social connectedness. The statements that participants most frequently responded “yes” to included: “I enjoy spending time with my family” (94.6%), “I consider my family to be supportive” (93.0%), “I am close my family” (92.3%), “I engage in activities with my family (other than holidays)” (90.9%), and “I like college” (90.0%) (Table 4.8). The statements least frequently to have participant “yes” responses included: “I volunteer in my community” (66.1%), “I am involved in a campus organization” (57.2%), “I am involved in athletic activities outside of campus” (57.2%), “I am involved in a religious organization” (43.2%), and “I am involved in a campus athletic activity” (38.1%)

Hypothesis Testing

Null hypothesis 1. There will be no significant difference in perceived confidence of college students in appropriately intervening with a friend who has an eating disorder based on sex.

A multivariate analysis of covariance (MANCOVA) was conducted to determine whether there was a difference in students’ perceived confidence in appropriately intervening with a friend who has an eating disorder based on sex. Results showed there was a significant difference of perceived confidence of college students in appropriately intervening with a friend who has an eating disorder based on the participant being male or female $F(4, 408) = 4.813, p < .001$. Therefore, the null hypothesis was rejected. It was concluded that sex had an effect on the confidence participants had in appropriately intervening with a friend.
Table 4.8 Social Connectedness of Participants

<table>
<thead>
<tr>
<th>Statement</th>
<th>$n$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I enjoy spending time with my family.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>405</td>
<td>94.6</td>
</tr>
<tr>
<td>False</td>
<td>12</td>
<td>2.8</td>
</tr>
<tr>
<td>I consider my family to be supportive.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>398</td>
<td>93.0</td>
</tr>
<tr>
<td>False</td>
<td>20</td>
<td>4.7</td>
</tr>
<tr>
<td>I am close to my family.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>395</td>
<td>92.3</td>
</tr>
<tr>
<td>False</td>
<td>25</td>
<td>5.8</td>
</tr>
<tr>
<td>I engage in activities with my family (other than holidays).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>389</td>
<td>90.9</td>
</tr>
<tr>
<td>False</td>
<td>30</td>
<td>7.0</td>
</tr>
<tr>
<td>I enjoy/enjoyed school.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>385</td>
<td>90.0</td>
</tr>
<tr>
<td>False</td>
<td>33</td>
<td>7.7</td>
</tr>
<tr>
<td>I feel/felt successful in school.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>377</td>
<td>88.1</td>
</tr>
<tr>
<td>False</td>
<td>40</td>
<td>9.3</td>
</tr>
<tr>
<td>I talk to members of my family about important issues.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>368</td>
<td>86.0</td>
</tr>
<tr>
<td>False</td>
<td>50</td>
<td>11.7</td>
</tr>
<tr>
<td>I consider myself to have a lot of friends in my community</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>357</td>
<td>38.4</td>
</tr>
<tr>
<td>False</td>
<td>62</td>
<td>14.5</td>
</tr>
<tr>
<td>I feel connected to my community.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>331</td>
<td>77.3</td>
</tr>
<tr>
<td>False</td>
<td>87</td>
<td>20.3</td>
</tr>
<tr>
<td>I consider myself to have a lot friends in school.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>320</td>
<td>74.8</td>
</tr>
<tr>
<td>False</td>
<td>98</td>
<td>22.9</td>
</tr>
<tr>
<td>I volunteer in my community.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>283</td>
<td>66.1</td>
</tr>
<tr>
<td>False</td>
<td>135</td>
<td>31.5</td>
</tr>
</tbody>
</table>
I am involved in an athletic activity outside of campus.
| True  | 245 | 57.2 |
| False | 174 | 40.9 |

I am involved in a community organization.
| True  | 245 | 57.2 |
| False | 174 | 40.7 |

I am involved in a religious organization.
| True  | 185 | 43.2 |
| False | 235 | 54.9 |

I am involved in a campus athletic activity.
| True  | 163 | 38.1 |
| False | 254 | 59.3 |

N = 428; Percents refer to valid percents; Missing values excluded; * indicates correct
Null hypothesis 2. There will be no significant difference in perceived confidence of college students in appropriately intervening with a friend who has an eating disorder based on current involvement in disordered eating.

A composite disordered eating score was computed based on the seven questions evaluating current disordered eating behavior. The disordered eating score was subsequently dichotomized into high versus low categories based on a median split. A MANOVA was performed to determine whether participants’ perceived confidence differed based on current involvement in disordered eating. Results did not show a significant difference in participants’ rating of confidence in appropriately intervening with a friend who has an eating disorder based on current involvement in disordered eating $F(5, 408) = 1.084, p = .369$. Therefore, the null hypothesis was not rejected.

Null hypothesis 3. There will be no significant difference in perceived confidence of college students in appropriately intervening with a friend who has an eating disorder based on extent of social connections.

A composite social connections score was computed based on the 15 questions asked to assess participants’ social connections. The social connection score was subsequently dichotomized into high and low categories based on a median split. A MANOVA was performed to determine whether participants’ perceived confidence differed based on social connections. Results showed a significant difference in participants’ rating of confidence in appropriately intervening with a friend who has an eating disorder based on the extent of social connections $F(5, 408) = 3.352, p = .006$. Those with a higher level of social connections reported
higher confidence addressing disordered eating with their friends. Therefore, the null hypothesis was rejected.

**Null hypothesis 4.** There will be no significant difference in how important college students feel it is to be knowledgeable regarding eating disorders based on their sex.

Five questions were asked regarding participants’ perceived importance of being knowledgeable about eating disorders. A MANOVA was conducted to determine whether participants’ perceived importance of being knowledgeable about disordered eating differed based on sex. Results showed a significant difference in participants’ perceived importance of being knowledgeable regarding disordered eating based on sex $F(5, 408) = 3.406, p = .009$. Females were more likely than males to feel that being knowledgeable about eating disorders was important. Therefore, the null hypothesis was rejected.

**Null hypothesis 5.** There will be no significant difference in how important college students feel it is to be knowledgeable regarding eating disorders based on their current involvement in disordered eating.

A MANOVA was performed to determine whether participants’ perceived importance of being knowledgeable about disordered eating differed based on current involvement in disordered eating. Results failed to show a significant difference in participants’ perceived importance in being knowledgeable about eating disorders based on current involvement in disordered eating $F(5, 408) = .310, p = .871$] Therefore, the null hypothesis was not rejected.

**Null hypothesis 6.** There will be no significant difference in how important college students feel it is to be knowledgeable regarding eating disorders based on the extent of their social connections.
A MANOVA was performed to determine whether participants’ perceived importance in being knowledgeable about eating disorders differed based on the extent of their social connections. Results showed no significant difference in participants’ perceived importance of being knowledgeable about eating disorders based on the extent of their social connections $F(5, 408) = 1.555, p = .185$. Therefore, the null hypothesis was not rejected.

**Null hypothesis 7.** There will be no significant difference in how knowledgeable college students are regarding eating disorders based on sex.

A composite score was created which included how many correct responses a participant gave regarding the 13 items presented regarding risk factors, 22 items presented regarding warning signs, and nine myth or fact items offered. An analysis of variance (ANOVA) was performed to determine whether actual knowledge of disordered eating differed based on sex. Results showed there was a difference in knowledge of disordered eating based on sex, with females demonstrating more knowledge than males of the subject area $F(1, 416) = 62.29, p < .001$. Therefore, the null hypothesis was rejected.

**Null hypothesis 8.** There will be no significant difference in how knowledgeable college students are regarding eating disorders based on current involvement in disordered eating.

An ANOVA was performed to determine whether participants currently engaging in disordered eating were more knowledgeable of eating disorders when compared with those who did not report currently engaging in disordered eating behavior. Results showed there was no significant difference in knowledge based on current involvement in disordered eating $F(1, 417) = 2.729, p = .099$. Therefore, the null hypothesis was not rejected.
Null hypothesis 9. There will be no significant difference in how knowledgeable college students are regarding eating disorders based on the extent of their social connections.

An ANOVA was performed to determine whether there was a difference in knowledge of eating disorders based on extent of social connections. Results showed there was no significant difference of current knowledge of eating disorders based on extent of social connections $F(1, 416) = .580, p = .447$. Therefore the null hypothesis was not rejected.

Null hypothesis 10. There will be no significant difference in college students’ current involvement of disordered eating based on sex. A Chi square analysis was performed to determine whether current involvement in disordered eating differed based on sex. Results indicated that there was no significant difference between males (42.8%) and females (45.6%) in current involvement in disordered eating, $\chi^2(\text{df} = 1) = .332, p = .564$. Therefore, the null hypothesis was not rejected.

Null hypothesis 11. There will be no significant difference in college students’ current involvement in disordered eating based on extent of social connections. A Chi square analysis was performed to determine whether current involvement in disordered eating differed based on extent of social connections. Results indicated that there was no significant difference between those with a high extent of social connections (43.0%) and those with a low extent of social connections (47.0%) in current involvement in disordered eating, $\chi^2(\text{df} = 1) = .650, p = .420$. Therefore, the null hypothesis was not rejected.
Chapter 5

Discussion

Eating disorders are a major health concern in society today (Fairburn & Harrsion, 2003). Approximately 24 million Americans and 70 million individuals worldwide are affected by eating disorders (NIMH, 2004). In 1999, about 8 million females were estimated to be experiencing issues with anorexia nervosa or bulimia nervosa (Wilson & Blackhurst, 1999). The National Institute of Mental Health (NIMH) (2004) has reported that one in five women experience complications with disordered eating.

Additionally, NIMH (2004) estimates that 0.5 to 3.7 percent of females have experienced complications with anorexia nervosa and 1.1 to 4.2 percent of females have experienced issues with bulimia nervosa during their lifetime. Moreover, an estimated two to five percent of Americans have engaged in binge-eating disorder in a six-month period (NIMH, 2004). Half of girls aged 11 to 13 reported viewing themselves as overweight. Further, 80% of 13 year olds reported having attempted to lose weight at one point in their life. Additionally, 15% of females in the US exhibited attitudes and behaviors of disordered eating but had not been diagnosed (NIMH, 2004). Within the adolescent population, anorexia is the 3rd most prevalent chronic illness. Most (95%) individuals who experience complications with disordered eating are between the ages of 12 and 25 (NIMH, 2004).

As noted above, eating disorders are an extremely prevalent health issue in the US (Fairburn & Harrison, 2003). The DSM IV-TR (APA, 2001) has reported a prevalence rate in the US of .05-1% of the population for anorexia nervosa and 1-3% of the population of bulimia nervosa. In addition, as many as 75% of women consider themselves to be too “fat” (APA,
Zerbe (1995) reported that 80% of women dieted before the age of 18, and further noted that most women experience negative feelings related to their body image.

Disordered eating is prevalent in college campuses. The prevalence of eating disorders is significantly higher among female college students than those in the general population (Bishop, Bauer, & Baker, 1998). Six percent of college women meet the criteria for a diagnosis of either anorexia nervosa or bulimia nervosa. Moreover, 25 to 40 percent of college women display disordered eating behaviors and attitudes (Bishop, Bauer, & Baker, 1998; Tsai, Hoerr, & Song, 1998). The most common disordered eating behaviors reported by college females are regular binge-eating, daily eating, and purging (Schwitzer, Rodriguez, Thomas, & Salimi, 2001). A study by Krahn, Kurth, Gomberg, and Drewnowski (2005) found two thirds of college women were engaging in strict diets and a sizeable percentage were at risk for developing an eating disorder. Specifically, bulimia nervosa reaches its height around college age (18-24 years of age). Significant life changes occur when one begins college and this may place them at elevated risk for developing an eating disorder. Twenty-five percent of college-aged women report binging and purging as a means of weight management (NIMH, 2004).

Following a comprehensive review of the literature, no published study was found regarding college students’ attitudes and confidence addressing disordered eating in friends. Therefore, the purpose of this study was to examine university students’ perceived importance of knowledge of eating disorders, overall confidence in appropriately intervening with a friend who has an eating disorder and whether their perceived importance of knowledge and confidence levels differed based on sex, current involvement in disordered eating and extent of social connections. This study sought to fill current gaps in the literature regarding disordered eating. This information is important to strengthen future educational efforts related to the identification
and acknowledgement of eating disorders with friends and family, in concern with developing appropriate intervention strategies with college students.

Chapter one discussed the research questions, hypothesis, delimitations, limitations, assumptions, and operational definitions. Chapter two provided a comprehensive review of the literature. Chapter three discussed the participants, instrumentation, procedures and data analysis. Chapter four provided the results of the study. This chapter offers the conclusions, discusses the findings, and provides recommendations for the field and future research.

Conclusions

A total of 419 college students were surveyed regarding their confidence, perceived importance and knowledge addressing disordered eating in their friends, ability to identify risk factors and warning signs of eating disorders, and their overall involvement in current disordered eating behavior. Students were enrolled in general fitness health classes during the spring quarter at a Midwestern university. Two-thirds of participants were white (78.3%), over half were female (59.1%), and over one third were seniors (35.4%).

When examining student’s confidence addressing disordered eating with friends, participants in this study reported relatively high confidence regarding this issue. Specifically, participants’ confidence in identifying a friend with an eating disorder was evident. However, they were less confident about knowing what to do if a friend did have an eating disorder. Moreover, despite their reduced confidence of knowing what to do, participants felt they could talk to a friend about this issue and taking the appropriate steps to help a friend that has an eating disorder, and being able to obtain information regarding this subject.
The present study also found that participants felt that eating disorders were a relatively moderate concern on college campuses. As such, they endorsed the importance of being able to identify warning signs and risk factors for eating disorders. Participants also felt that it is important to help a friend who has an eating disorder as well as to know the appropriate steps to take with a friend who has an eating disorder.

The most commonly identified risk factors for eating disorders (noted by 70% to 100% of participants) included depression, anxiety, being female, and being a perfectionist. The risk factors noted by just a moderate percentage of participants (40% to 69%) were having a recent life change, being a dancer/actress(or), athlete in a sport that emphasizes leanness, having a family history of eating disorders, and having a family that is critical of decisions and ideas. In contrast the risk factor the majority of participants failed to recognize was having ever dieted.

Regarding warning signs, the majority of participants accurately (noted by 70% to 100% of participants) identified abnormal weight loss; purging; intense fear of gaining weight; avoiding food; distorted body image; obsessed with calories, food, and/or other nutrition; reduction in food intake, and preoccupation with body or weight as warning signs for eating disorders. A moderate percentage of participants (40% to 69%) reported hoarding high calorie foods, absence or abnormal menstrual cycle, secretive behavior, excessive food intake, excessive exercise, peculiar patterns handling food, continuous feelings of hunger, continuous dieting, and using the restrooms after meals as warning signs.

Participants were fairly accurate when identifying myths and facts of disordered eating behavior. They most accurately identified myth was that “one does not have to be over weight to have an eating disorder,” followed by “only teenage girls and young women are affected by
eating disorders,” and “eating disorders can be fatal.” To a lesser extent, participants correctly identified the following statements as myths: “most people do not talk about their eating disorders” and “eating disorders are easy to cure.” Further, most participants knew that eating disorders can cause heart problems. About 10% stated that they felt “people with eating disorders are vain.” Lastly, the concept participants were most uncertain about was the issue of growing fine hair all over the body when engaging in certain maladaptive eating habits.

The next section of the instrument identified participants’ current involvement in disordered eating behavior. Most (83.4%) reported that they at least “sometimes” exercised (83.4%). Further, greater than half (56%) reported that they at least “sometimes” worried about their weight. More than 60% reported binging and 66.3% reported purging at least “rarely.” The most seldom maladaptive behaviors reported as “never” were using diuretics (82.9%), purging (84.3%), and use of laxatives (86.4%).

**Discussion**

Disordered eating behavior is a significant problem in the United States. The present study found that of the college students surveyed, over half reported engaging in maladaptive eating behavior. The National Eating Disorder Association (NEDA) (2006) found similar findings to the current study. Of the participants in their study, 80.9% reported dieting, and 74.7% avoided or skipped meals. Over 55% said they knew someone engaging in an eating disorder, 19.6% admit to having an eating disorder at some point in their life, 44.4% knew someone who exercised for more than 2 hours a day for most days of the week, 38.8% knew someone who purged by vomiting, and 26% knew someone who uses laxatives to lose weight. As such, Kurth et al. (1995) found 91% of women surveyed on college campuses had attempted
to control their weight through dieting. Of those, 22% stated they had dieted “often” or “always.”

Further, Shisslak, Cargo, and Estes (1995) identified that 35% of “normal dieters” progress to pathological dieting and 20-25% of those individuals with advance to partial or full-syndrome eating disorders.

Previous studies have failed to address overall disordered eating behavior and attitudes in college campuses. This area is important because of the prevalence and consequences of these behaviors. As identified in the literature review, eating disorders have the highest mortality rate as compared to any other illness (Sullivan, 1995). Specifically, the mortality rate of those suffering from anorexia nervosa is 12 times higher than that of any other cause of death for females ages 15-24 in the US. Of those with anorexia nervosa, 20% will die prematurely from various other health-related complications, including suicide and heart problems.

Perhaps the prevalence of eating disorders could be decreased via quality education that includes information on disordered eating, potential harmful consequences, warning signs and risk factors and how to appropriately intervene with a friend who has an eating disorder. As such, this education should occur well before their college years, in order to combat these issues before they progress into full eating disorders. The present research study adds to the literature by providing more information on university students’ perceived confidence and knowledge in addressing eating disorders in friends.

Overall, students expressed moderate confidence regarding addressing disordered eating in friends. This aligns with previous research by NEDA (2005) which found 57.6% of participants reported having taken the initiative to speak with a friend who has struggled with disordered eating. It appears that many college students feel capable of recognizing when friends
are in need of help. Further, they also demonstrate desire to take initiative when it comes to addressing these issues. This reinforces the importance of college students being properly informed about this issue in order to appropriately intervene. Social support and addressing these issues in friends is of critical importance because of its known beneficial effects, as perception of social support has been shown to be a positive predictor of health outcomes (Norris & Kaniasty, 1996). Social support tends to assist individuals in coping with adversity in addition to increasing personal well-being (Schaefer et al., 1981). Specifically, those who experience issues with bulimia nervosa tend to report feelings of social isolation and poor social functioning (Yager, Rorty, & Rossotto, 1995). Moreover, a negative correlation between increased levels of social functioning and bulimic symptomology has been identified in the research (Bluin et al, 1995). Tiller et al. (1997) found that those with eating disorders had significantly lower perceived support from friends and families than did those not engaging in disordered eating.

One interesting finding of this study was that females felt significantly more confident than males in addressing this issue. No previous studies were found that had specifically examined males’ attitudes in addressing disordered eating in others, which further demonstrates the importance of this study. Male students educated regarding warning signs and appropriate intervention steps regarding eating disorders and should be encouraged to speak to friends who they feel may be experiencing disordered eating. Perhaps their lower level of confidence is due to the fact that they are not as informed as females about disordered eating since they do not engage in the behavior as frequently as do females. Additionally, Belle (1987) stated that gender differences are apparent in both interpersonal relationships and behavior. He further asserted that males’ socialization messages learned from society encourage males to abandon expression
of feelings while emphasizing autonomy, self-reliance, and independence. In contrast, females cultivate more care and concern, in addition to their intimate nature (Olson & Shultx, 1994).

In the college setting males and females are often in intimate and romantic relationships. Males will frequently be in situations to identify warning signs and risk factors and thus intervene regarding disordered eating behavior. Moreover, specific educational intervention programs should seek to reduce the stigma associated with males expressing and dealing with their feelings (Blier & Blier-Wilson, 1989), as it encourages positive and supportive relationships with their peers.

Interestingly, the present study found that perceived confidence in addressing eating disorders in friends did not differ significantly based on current involvement in disordered eating behavior. Those who were currently involved in disordered eating behavior did not express higher levels of confidence in addressing eating disorders than did their counterparts. Past research has not explored this issue. One assumption of why this may have occurred is due to the students’ overall high level of confidence in addressing disordered eating. The majority of participants felt confident in addressing eating disorders with their peers and thus the room for variation may have been too small to detect significant differences. Additional research in this area is warranted.

Another domain explored in the present study was the potential effect of social connections on eating disorders. Results indicated that those who had more social connections felt significantly more confident in addressing eating disorders in friends. Previous research has not explored this issue exclusively, though general knowledge on social support may help to explain this outcome. Those with more social connections interact more with others. In turn, they
may have more opportunities to address a number of issues with friends and in turn feel more comfortable discussing issues with their friends. The notion that those who are socially connected with others may be more likely to discuss problems with their friends is important for future intervention pursuits. More research on this topic is needed. Being able to appropriately intervene with friends in need should begin with proper education. Additionally, those who are not as socially connected should be encouraged to discuss important issues with their friends and peers, as a means to reduce the prevalence of disordered eating behavior.

The present study also explored how important college students felt it was to be knowledgeable regarding eating disorders. The overall consensus demonstrated that students felt this was an important area with which to be informed. Not surprisingly, previous studies have shown over 50% of individuals knowing someone with an eating disorder (NADA, 1995). Since students feel that this issue is of such importance, it appears logical that educational modules on eating disorders would be well received by college student. Interpersonal relationship can play a strong role in the establishment and elimination of maladaptive eating behavior (Wilfley, Pike, & Striegel-Moore, 1997). Research has shown that perceived peer pressure to be thin can greatly increase the likelihood of developing or further encouraging eating disorders (Tantleff-Dunn & Gokee, 2004). Perhaps if students had more knowledge about these issues, they would be more inclined to appropriately address disordered eating with their friends. In contrast, those who reported having stronger social connections were less likely to engage in certain disordered eating behavior (Tiller et al., 1997). Moreover, those who identified strong social connections were more successful in treatment. Students should be encouraged to avoid conveying negative statements and pressures about body shape and size.
Results of the present study specifically indicated that females viewed the issue of eating disorders as more important than did males. This could be due to the fact that eating disorders are more prevalent among females (NADA, 2005). This could also imply that females are more cognizant of this issue or more concerned with risky behavior in general. Dawson, Schneider, Fletcher, and Bryden (2007) found that males were more likely to engage in risky behavior, which demonstrated they may be less concerned or perhaps less aware of certain precarious actions. Compared to females, males have also been shown to attend less to health issues and health concerns (Denton, Prus, & Walters, 2004). This could be a factor in why males felt knowledge of disordered eating to be less important. Perhaps male students should be encouraged and supported to seek information regarding health issues. It could be the case that as they become more informed of various health ramifications of disordered eating, they may find the issue to be of greater significance. Additionally, males should be informed of how prevalent the issue is on college campuses to demonstrate its seriousness.

Further, the study did not find a significant difference in perceived importance of having knowledge regarding disordered eating based on current involvement in disordered eating behavior. Those who were currently engaging maladaptive eating did not feel that it was more important to be informed about disordered eating behavior. Perhaps this is because they already feel informed since they partake in this practice. Though these individuals feel informed about the issue, often times those engaging in disordered eating behavior perceive the illness in a different manner than it is actually manifesting (Fox, Larkin, & Leung, 2011). Unfortunately, many experiencing disordered eating frequently view their eating behaviors as more adaptive and fail to acknowledge the repercussions associated.
Schmidt and Treasure (2006) identified eating disorders as ‘ego-syntonic’ and elaborated on this by stating that these individuals tend to fail to recognize their own mental health difficulties. They may justify the maladaptive eating behaviors as an appropriate strategy to achieve a desired slim body shape. Guilt and anger has also been associated specifically with bulimia nervosa (Corstorphine, Waller, Ohanian, & Baker, 2006). As such, it could be that those experiencing complications with binging and purging may be opposed to discussing issues related to their disorder. Fox, Larkin, and Leung (2011) stated that the slim physique maintained with anorexia nervosa could lead individuals to feelings of accomplishment and uniqueness, thus discouraging the desire for recovery.

College students’ knowledge of eating disorders was also explored. It is important for friends to be able to correctly identify and help others in need. Additionally, it was found that females were significantly more knowledgeable than males regarding eating disorders. This could be due to the higher prevalence in eating disorders among women (NEDA, 2005). These findings support previous research that has shown females to be more knowledgeable than males in regards to eating disorders (Greenberg & Schoen, 2008). Additionally, studies have found disordered eating may manifest somewhat differently among males than among females (Boerner, Spillane, Anderson, and Smith, 2004). This would make the warning signs and risk factors less obvious. Females may also feel societal pressures, which may result in a higher drive for them to be slender and lean, whereas males commonly desire a muscular upper body (Greenberg & Schoen, 2008). Since being muscular is an indicator of health and fitness and health, they may not identify it as a problem. Under this assumption, disordered eating may not provoke interest in some males.
Another finding was that knowledge did not differ significantly based on current involvement of eating disorders or social connections. No published research was found that had specifically examined social connections and knowledge of eating disorders. However, previous research has been found on health and social learning (Stephens, 2008). This research supports the idea that social connections can contribute to more knowledge of eating disorders. Further, this concept could educate and lead to an overall reduction in disordered eating. House, Landis and Umberson (1988) found social support to play a significant role in health status.

The results of this study showed current involvement in disordered eating did not differ based on sex. This finding conflicts with those from previous research studies regarding disordered eating and sex (Boernwe, Spillane, Anderson, & Smith, 2004; Boyes, Fletcher, & Latner, 2007; Carlat, Canargo, & Herzog, 1997). This could have been due to some items presented on the instrument to evaluate disordered eating behavior. The item, “How often do you exercise?” may not properly evaluate disordered eating behavior, as exercising can be an adaptive behavior bearing it is within an appropriate length of time. Further, males reported higher levels of exercise behavior which could explain the lack of a significant difference in disordered eating based on sex. Additionally, the item “How often do you engage in binge eating?” may have been subject to interpretation, as the term “binge” is frequently used in daily discussion of eating a great amount of food (but not the extent defined as disordered eating). These issues could have contributed to some of the discrepancies between this study and others.

Previous research has been limited in the focus of this study. First, prevention programs related to intervention in college campuses have been few. However, evidence supports that involvement in disordered eating is often a precursor to a fully diagnosable eating disorder pathology (Shisslak, Crago, & Estes, 1995). Further, evidence supports that a shorter duration of
illness is associated with more successful treatment outcomes (Schoemaker, 1997). Accordingly, early detection and support would be extremely beneficial in the goal of reducing disordered eating pathology on college campuses (Becker et al., 2004).

Recommendations

Recommendations for Practice

Research indicates that early detection of disordered eating is of vital importance. Like any risky behavior, disordered eating is more difficult to treat the longer the individual engages in that behavior. By informing college students about the warning signs and risk factors, as well as educating on appropriate intervention techniques, rates of disordered eating may be reduced. This study demonstrated that students were interested in the subject and found it to be important. Unfortunately, many individuals feel uncomfortable talking about this issue and seeking help. Perhaps taking steps to increase the public acknowledgement of this issue on college campus could help to ensure that students with eating disorders receive the help they need.

There are many recommendations for future practice in the area of disordered eating in college students. First, specific interventions designed to target college students have yet to be widely implemented and evaluated. Perhaps this topic could be integrated into introductory level health and psychology classes, as most students are required to take these classes. This endeavor could educate a large number of college students, while also encouraging positive physical and psychological health. These modules could incorporate an overview of the issues and discuss the importance of intervening with friends. Moreover, prevalence rates, physical repercussions, and treatment outcome should be discussed to encourage perceived importance and susceptibility.
Stice and Ragan (2002) identified the fact that prevention and educational programs are limited in the college setting. In addition, they found such program to have limited impact. As such, they suggested that this could be due to the limited intensity and short duration of the programs. Secondary prevention is often implemented in college settings, though it has been previously limited in the area of disordered eating behavior (Becker et al., 2004). Because many college students do not access treatment on their own related to their maladaptive behavior, friends can be a means of encouragement and education.

This study emphasized the importance college students feel regarding being knowledgeable about disordered eating behavior. Education and guidance in classes would benefit the majority of the college population. This can assist in the general knowledge of eating disorders and inform students of the appropriate steps to take in addition to where they can obtain information for both themselves and friends. Though college students’ knowledge of disordered eating was relatively high in the present study, there was ample room to enhance and support their confidence in helping a friend with an eating disorder.

Additionally, though the present study found college students identified having knowledge of disordered eating as being important, they expressed limited confidence discussing this issue with their friends. Participants’ scores regarding perceived confidence addressing disordered eating in their friends demonstrated an uncertainty with their ability to appropriately intervene. As such, programs should be developed and implemented as a means to enhance individuals’ confidence to address this issue with peers. Perhaps role-play and mock interventions would be appropriate in conveying this skill. These activities could also increase self-efficacy and confidence pertaining to social intervention with friends.
An educational program geared toward educating all college students is needed, as disordered eating does not limit itself to an exclusive population, as expressed in the literature review. In order to target the desired population an educational module would have to be designed to encompass as many students as possible, and preferably at the beginning of their college career. Perhaps including it in introductory classes, often required to fulfill general education courses (i.e. Introduction to Psychology, Introduction to Sociology, Introduction to Health Promotion), would be appropriate. These educational modules could relate disordered eating to the subject of the class and could address all needed facets of the behavior. Additionally, athletes could also be a targeted population. At the college level there are many activities required for all athletes to attend and these educational models could be a required activity. Further, dormitories could also be a productive and large environment to present a seminar on disordered eating and prevention.

As discussed in both the literature review and discussion of this paper, most people know or have known someone who has engaged in disordered eating behavior (NEDA, 2005). In turn, friends can be a great resource to encourage treatment. NEDA (2005) specifically identifies friends take initiative to discuss disordered eating with their peers. Often times, external support is needed to cultivate better judgment and strengthen breadth of knowledge. It is important to give students the means of effective intervention with their friends in order to encourage a reduction in these maladaptive behaviors.

The present study’s finding suggest that educational programs should be designed to include and perhaps target males especially regarding disordered eating facts and appropriate steps to take with friends experiencing this issue. Males were less informed than females and did not regard being knowledgeable on this issue as important. No published studies were found that
had evaluated or described preventative measures or efforts that were specifically geared toward the education of males in regards to eating disorders. A focus of a program should be to increase males’ confidence in addressing disordered eating in others.

**Recommendations for Future Research**

This study students felt disordered eating was only a moderate concern on college campuses. More research is needed to identify why their perception of prevalence to be limited. Further, studies could include questions to expound on the current study and intervening with friends (i.e. How likely would you be in addressing disordered eating in friends? Have you ever addressed disordered eating with friends?).

More research is needed regarding preventative factors of disordered eating (Gustasson et al., 2009). This is an area that could be addressed specifically among college students in order to implement effective educational strategies. More research is needed about the college population concerning disordered eating behavior because of its high prevalence (Bishop, Bauer, & Baker, 1998). Qualitative research studies could be initiated in order to expound upon thoughts and ideas regarding disordered eating at this transitional period of life.

Disordered eating behavior can also be explored as a coping mechanism for lack of social connections. Further, the relationship between social connections and eating disorders should be more thoroughly explored. The current research has demonstrated the importance of social interactions in both the prevention and initiation of disordered eating behavior. The importance students place on various items pertaining to social connections should also be explored.

Differences in males and females should also be specifically addressed. Research is needed to explain reasons why males view disordered eating knowledge as less important as do
females. Additionally, research should explore why males possess lower confidence levels than females in addressing disordered eating in friends. Risk factors and warning signs associated with issues that males experience with body dissatisfaction should also be included in research.

Future efforts to educate college students about disordered eating should also include both a pre education evaluation to assess current ideas and perceptions about addressing disordered eating in friends and overall knowledge of the issue. This should be followed by a post evaluation to assess to impact of the educational module. This information could then be used to design and implement future programs to combat this issue.
References


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Appendix A

Information Sheet
Title of Study: Disordered Eating in College Students: Connectedness, Identification, Addressing the Issue

Introduction: You are being asked to take part in a research study. Please read this paper carefully and ask questions about anything that you do not understand. You are invited to complete an anonymous survey as part of a research study on eating disorders among college students. The questions ask about college students’ involvement in and perceptions of eating disorders among college students. Questions in the survey also address involvement in one’s community, school, and family relations.

Who is doing this research study? The person in charge of this research study is Ashlee Hoffman of the University of Cincinnati Department of Health Promotion and Education. The faculty advisor for this study is Keith King and he is also at the University of Cincinnati Department of Health Promotion and Education.

What is the purpose of this research study? The purpose of this research study is to evaluate different knowledge, attitudes, and ideas about disordered eating among college students. It also seeks to explore different areas of involvement within school, family, and community.

Who will be in this research study? About 500 people will take part in this study. You may participate in this study if you are undergraduate at the University of Cincinnati and ages 18 through 24.

What will you be asked to do in this research study, and how long will it take? You will be asked to complete a short survey. It will take about 10-15 minutes to complete. The research will take place in various undergraduate courses at the University of Cincinnati.

Are there any risks to being in this research study? There are no expected risks completing the survey. There may be some risk of discomfort with questions that ask about health behaviors such as disordered eating. You may skip questions that you do not wish to answer. Because the survey is anonymous, your identity and your answers cannot be connected.

Are there any benefits from being in this research study? There are no direct benefits from completing this survey. Your participation may, however, help us to develop and enhance existing educational programs aimed at eating disorders and college students.

Will you have to pay anything to be in this research study? You will not receive any payment for your participation in this research study.

What will you get because of being in this research study? As a participant you will receive the satisfaction of knowing you contributed some aspect of health education research.

Do you have choices about taking part in this research study? If you do not want to take part in this research study you may turn in the survey without completing it or discontinue the survey at any time without penalty.

How will your research information be kept confidential? Information about you will be kept private by the primary investigator (Ashlee Hoffman) and will be held in a lacked cabinet. However, this study is confidential and anonymous, your identity and your answers cannot be connected in any way. Your information will be kept in a locked file cabinet for one year. After that, Ashlee Hoffman will shred it. Agents of the University of Cincinnati may inspect study records for audit or quality assurance purposes.

What are your legal rights in this research study? Nothing in this consent form waives any legal rights you may have. This consent form also does not release the investigator, the institution, or its agents from liability for negligence.

What if you have questions about this research study? If you have any questions or concerns about this research study, you should contact Ashlee Hoffman at (618) 530-4474. Or, you may contact Keith King at (513) 556-3859. The UC Institutional Review Board – Social and Behavioral Sciences (IRB-S) reviews all non-medical research projects that involve human participants to be sure the rights and welfare of participants are protected. If you have questions about your rights as a participant or complaints about the study, you may contact the Chairperson of the UC IRB-S at (513) 558-2086. Or, you may call the UC Research Compliance Hotline at (800) 889-1547, or write to the IRB-S, 300 University Hall, ML 0567, 51 Goodman Drive, Cincinnati, OH 45221-0567, or email the IRB office at irb@ucmail.uc.edu.

Do you HAVE to take part in this research study? No one has to be in this research study. Refusing to take part will NOT cause any penalty or loss of benefits that you would otherwise have. You may start and then change your mind and stop at any time. To stop being in the study, you should tell Ashlee Hoffman.

BY TURNING IN YOUR COMPLETED SURVEY YOU INDICATE YOUR CONSENT FOR YOUR ANSWERS TO BE USED IN THIS RESEARCH STUDY.

PLEASE KEEP THIS INFORMATION SHEET FOR YOUR REFERENCE.
Appendix B

Survey Instrument
COLLEGE STUDENT SURVEY

Date:____________________ Quarter/Term:____________

DIRECTIONS: The survey is voluntary. Do not write your name on this survey. Please answer each question honestly and as accurately as possible. All of your responses will be kept confidential. By completing this survey, you grant your consent to participate in this program.

<table>
<thead>
<tr>
<th>Please check how strongly you agree or disagree with each statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel confident that I can recognize a friend who has an eating disorder.</td>
<td></td>
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<tr>
<td>I feel confident that I know what to do if I think a friend has an eating disorder.</td>
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<tr>
<td>I feel confident I can talk to a friend about their eating disorder.</td>
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<tr>
<td>I feel confident in taking appropriate steps to help a friend that has an eating disorder.</td>
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<tr>
<td>I feel confident that I can obtain information on campus about eating disorders.</td>
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<tr>
<td>I think eating disorders are a major problem on college campuses.</td>
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<tr>
<td>I think it is important to know the warning signs for eating disorders.</td>
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<tr>
<td>I think it is important to know the risk factors for eating disorders.</td>
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<tr>
<td>I think it is important to know the steps to take when someone has an eating disorder.</td>
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<tr>
<td>I think it is important to help an individual with an eating disorder.</td>
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</tbody>
</table>

Check the boxes that you think increase the chances for developing an eating disorder.

- Being female
- Having a family history of eating disorders
- Having anxiety
- Being an only child
- Have ever dieted
- Recent life change
- Depression
- Being poor
- Athlete in a sport that emphasizes leanness
- Dancer/Actress(or)
- Having a family that is critical of decisions and ideas
- Being single
- Being a perfectionist
- Athlete in a sport that emphasizes leanness
- Being single
- Being a perfectionist

Check the boxes that you think are warning signs of an eating disorder.

- Abnormal weight loss
- Excessive exercise
- Peculiar patterns of handling food
- Receiving poor grades
- Reduction in food intake
- Purging
- Continuous feelings of hunger
- Use of laxatives
- Avoiding food
- Using the restrooms after meals
- Developing food allergies
- Hoarding high-calorie food
- Preoccupation with body or weight
- Distorted body image
- Absence or abnormal menstrual cycle
- Intense fear of gaining weight
- Obsessed with calories, food, and/or nutrition
- Secretive behavior
- Excessive food intake
- Loss of motivation
- Continuous dieting
EATING DISORDER MYTHS & FACTS
Please circle either True or False for each of the following statements.

1. You have to be underweight to have an eating disorder.  True    False
2. Only teenage girls and young women are affected by eating disorders.  True    False
3. People with eating disorders are vain.  True    False
4. Eating disorders are not fatal.  True    False
5. Most people talk about their disordered eating habits.  True    False
6. Disordered eating can cause heart problems.  True    False
7. Disordered eating can cause fine hair to grow all over your body.  True    False
8. Eating disorders affect greater than 5% of the US population.  True    False
9. Disordered eating is easy to cure.  True    False

<table>
<thead>
<tr>
<th>Please check how often you do each of the following.</th>
<th>Always (100% of the time)</th>
<th>Most times (75%-99% of the time)</th>
<th>Sometimes (25%-75% of the time)</th>
<th>Rarely (1%-24% of the time)</th>
<th>Never (0% of the time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you exercise?</td>
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<tr>
<td>How often do you engage in binge eating?</td>
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<tr>
<td>How often do you engage in restrictive eating?</td>
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<tr>
<td>How often do you use diuretics?</td>
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<td>How often do you purge?</td>
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<tr>
<td>How often do you use laxatives?</td>
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<tr>
<td>How often do you worry about gaining weight?</td>
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</tr>
</tbody>
</table>

I am involved in a campus organization. True    False
I am close to my family. True    False
I am involved in athletic activity outside of campus. True    False
I am involved in a campus athletic activity. True    False
I consider myself to have a lot of friends in my community. True    False
I consider my family to be supportive. True    False
I consider myself to have a lot of friends at my college. True    False
I talk to members of my family about important issues. True    False
I feel successful in school. True    False
I am involved in a religious organization. True    False
I engage in activities with my family (other than holidays). True    False
I volunteer in my community. True    False
I like college. True    False
I feel connected to my community. True    False
I enjoy spending time with my family. True    False

What is your age? _____years old

1. What is your sex? Male    Female
2. Your year in college? _____Freshman _____Sophomore _____Junior _____Senior _____Other
   _____Hawaiian-Pacific Islander _____Hispanic/Latino _____White/Caucasian
   _____Multi-Racial _____Other (please specify) _____
4. What is your GPA? _____ (on a 4.0 scale)
5. What is your major? _____
6. What is your employment status? _____Full-time _____Part-time _____Unemployed

THANK YOU FOR YOUR HELP ☺