Risk Factors for the Presence of Body Dissatisfaction in Collegiate Male Athletes

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Abstract

The goal of this study was to examine possible risk factors for the development of eating pathology in male athletes who attend a small liberal arts college. This study expanded on Reinking and Alexander (2005), who examined female collegiate athletes and non-athletes and found that female athletes did not report higher levels of eating pathology than non-athletes. The participants in the current study were athletes and non-athletes; participants answered questions on different measures pertaining to eating pathology, depression, stress and anxiety. Height, weight and body fat measurements were also taken. It was predicted that male athletes that scored high on the DASS (Depression Anxiety Stress Scale) would also score high on the EDI (Eating Disorder Inventory); male athletes will show higher rates of eating pathology than non-athletes; and that BMI (Body Mass Index) will mediate rates of eating pathology in athletes. None of the hypotheses were supported by the data, but non-athletes actually scored higher on the DASS and EDI and the model was significant in predicting EDI scores in non-athletes.
Risk Factors for the Presence of Body Dissatisfaction in Collegiate Male Athletes

Research over the past twenty years has shown that there are a wide range of harmful consequences associated with eating pathology among men and women college-aged students. Eating pathology according to Stice (2002) is defined as binge eating, purging and/or restriction, which are associated with significant psychosocial impairment, medical complications, and comorbid psychopathology. In women, some of the risk factors for eating pathology include, but are not limited to, depressive symptoms (Ferriter et al., 2010), low self-esteem, body dissatisfaction (Krane, Stiles-Shipley, Waldron, & Michalenok, 2001), athlete status (Armstrong & Oomen-Early, 2009) and risky behaviors to change body size and body shape (Olivardia, Pope, Borowiecki, & Cohane, 2004). Research has shown that in men, possible risk factors that are associated with eating pathology are depressive symptoms (Duggan & McCreary, 2004), body dissatisfaction (Olivardia et al., 2004), and drive for muscularity (Duggan & McCreary, 2004).

The majority of the research examining the risk factors for eating pathology focuses more on women than men, perhaps more so because women are more likely to develop eating pathology than men (Koenig and Wasserman, 1995). Furthermore, more research has been conducted in female athletes than male athletes and as mentioned above, athletic status is a known risk factor in females athletes. Thus, the question is, might athletic status be a risk factor in the development of eating pathology is men?

Depression

One of the most common psychiatric disorders that is prevalent on college campuses are depressive disorders (Gonzalez, Reynolds, & Skewes, 2011). These depressive disorders are characterized by a depressed mood, lack of pleasure in most activities, changes in sleep and
eating patterns and difficulty thinking and/or concentrating (American Psychiatric Association, 2000). Some examples of depressive disorders include major depressive disorder, dysthymic disorder and depressive disorder not otherwise specified (NOS; American Psychiatric Association, 2000).

Research has shown that there are significant gender differences in rates of depression in a college aged sample (i.e. Storch, Storch, Killiany, & Roberti, 2005; Koenig & Wasserman, 1995). Nolen-Hoeksema’s research regarding gender differences in depression found that there is a 2:1 female-to-male ratio for the prevalence of depression (1987). Adolescent research has also shown that girls are more likely to experience depressive symptoms than boys (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). Depression has been shown to carry over from adolescence to adulthood (Johnson, Crosby, Engel, Mitchell, Powers, Wittrock, & Wonderlich 2002). Koenig and Wasserman (1995) found that women were more likely to report higher levels of negative body image than men. The researchers concluded that one of the main reasons why women may experience higher levels of depression than men is due to women having higher levels of body dissatisfaction than men (Koening & Wasserman, 1995).

Although rates of depression and body dissatisfaction are less common in men than women, one might expect a similar pattern of comorbidity in men.

**Comorbidity of Depression and Eating Disorders**

Research has shown that depressive disorders are highly correlated with eating disorders and eating pathology (Santos, Richards & Bleckley, 2007; VanBoven & Espelage, 2006; Johnson, Cohen, Kotler, Kasen, & Brook, 2002). Eating disorders are characterized by disturbances in eating behavior such as restricting the intake of food, binge eating, vomiting, use
of diuretics and excessive exercise (American Psychiatric Association, 2000). There are two
types of diagnosable eating disorders characterized in the DSM-IV-TR; anorexia nervosa (AN)
and bulimia nervosa (BN). To be diagnosed with AN, one has to refuse to maintain body weight
for age and height; have an intense fear of gaining weight; have a disturbance in body weight or
shape; and the presence of amenorrhea in females (American Psychiatric Association, 2000).

To be diagnosed with BN, one has to have recurrent episodes of bingeing; recurrent
compensatory behavior; bingeing and compensatory behavior at least twice a week for three
months; self-evaluation is unduly influenced by body shape and weight; and the disturbance does
not occur exclusively during episodes of AN (American Psychiatric Association, 2000).

Both of these disorders are believed to begin in middle to late adolescence with AN
occurring much earlier than BN, usually meeting full criteria in early adulthood (Johnson et al.,
2002). Eating disorders during adolescence have been known to begin with negative self-
evaluation, body dissatisfaction, the ideal to be thin and the perceived pressure to be thin (Stice
& Bearman, 2001). Many researchers who study eating disorders in adolescents notice a cycle of
negative evaluations of oneself and the onset of eating disorders (Stice & Bearman, 2001; Stice,
Hayward, Cameron, Killen, & Taylor, 2000).

Eating pathology can be defined as exhibiting sub-clinical levels of symptomology for
BN or AN (Ferriter et al., 2010). Eating pathology could be defined as not meeting the full
criteria to be diagnosed with BN or AN, such as only meeting two of the criterion for BN or AN.
Research has shown that eating pathology is highly correlated with depressive symptoms
(Ferriter et al., 2010). One might argue that eating pathology is a precursor to eating disorders,
specifically to BN or AN. Thus, it is worth examining the relationship between eating pathology
and mood disturbance in men, given that little research has been done here.
The majority of the research in this area of psychology revolves mainly around women, because women are more often diagnosed with clinical eating disorders as well as depressive disorders than men are. According to the DSM IV-TR, 90% of diagnosed cases of anorexia nervosa and bulimia nervosa are found in females (American Psychiatric Association, 2000). The ratio of females to males for depression is 2:1 (Nolen-Hoeksema, 1987) and as mentioned above the ratio of females to males diagnosed with eating disorders is 9:1 (American Psychiatric Association, 2000). Another commonality between eating disorders and depression is that they both involve negative self (Koenig & Wasserman, 1995).

There have been a large number of studies that examined the comorbidity of depression and eating pathology in women (e.g., Gutzwiller, Oliver, & Katz, 2003; Schwarze, Oliver, & Handal, 2003; VanBoven & Espelage, 2006). In a study done by Gutzwiler et al., (2003) the researchers examined eating dysfunctions and depression in women. Using an ANOVA, the researchers found a correlation between eating pathology behavior and depressive symptoms in undergraduate women. The researchers also found that those who scored higher on an eating pathology scale also scored higher on a depression inventory (Gutzwiler et al., 2003). Similar results were found in another study that examined binge eating disorder (BED).

Research examining depression and eating pathology in men is less abundant than research examining women, mainly due to the fact that men are less likely to report depression or they deal with depression using other behaviors (i.e., substance abuse; Fava, Abraham, Alpert, Nierenberg, Pava & Rosenbaum, 1996). Although research is scarce in this area, there has been some research done examining comorbidity of depression and eating pathology in men. Cooper (2006) concluded that negative beliefs about one’s self and underlying assumptions about one’s body image and eating behavior can have an impact on whether one experiences depressive
symptoms. Another study done by Chuick, Greenfeld, Greenberg, Shepard, Cochran & Haley (2009) saw that men express depression similar to females, but men also express depression in atypical ways, such as substance abuse and irritability. This is significant because this shows that depression does occur together with other behavioral pathologies, such as substance abuse, in men. As seen in females, males who experience body dissatisfaction can also experience depressive symptoms and could develop an eating disorder/eating pathology (Olivardi et al., 2004). In this study, male participants reported that being more muscular is more important than being fat, which was associated with depressive symptoms related to having smaller muscles (Olivardi et al., 2004). The researchers concluded that there is a relationship between body dissatisfaction, depression, eating pathology and use of performance enhancing drugs in men. In other words, men who experience depression and body dissatisfaction are more likely to have eating pathology and/or use performance enhancing drugs.

Another factor that could influence the onset of eating pathology that is comorbid with depression is a disruptive appetite that is associated with depression. One of the symptoms of depression is a disturbance in eating behavior which can be typical or atypical. Typical would be defined as less than normal consumption of food and atypical would be a more than normal consumption of food. In other words, depression could trigger the eating pathology with the disturbance in eating behavior that is associated with depression. Race and ethnicity have been shown to be important factors for the development of body dissatisfaction and eating pathology in men (Ricciardelli, McCabe, Williams, & Thompson, 2007). Ricciardelli et al. (2007), using a meta-analysis found that black males are more likely to engage in extreme weight loss strategies compared to white males and also engage in more binge eating than whites.
Comorbidity of Anxiety with Depression and Eating Pathology

Research has shown that anxiety has been found to be highly comorbid with depression (Gorman, 1996/1997) and also comorbid with eating pathology (Fornari, Kaplan, Sandberg, Matthews, Skolinck & Katz, 1992). In recent years, researchers have found that anxiety and depression are highly comorbid with one another in clinical populations (Wetzler & Katz, 1989). In a meta-analysis, Wetzler and Katz (1989) examined patients with anxiety separate from patients with depression and found that 50% of all patients reported having symptomology of the other disorder. This rate of comorbidity has been attributed to the criteria and symptoms of the disorders. According to Gorman (1996/1997) anxiety and depression has been shown to have similar symptomology, which at times makes it harder to separate the two when diagnosing and treating patients. Having both anxiety and depression increases treatment time and leaves patients with lower response to treatment compared to a patient who is only diagnosed with one of these disorders (Gorman, 1996/1997). According to the DSM-IV-TR, reported rates of comorbid major depressive disorder vary from 10% to 65% in patients diagnosed with panic disorder (American Psychiatric Association, 2000). In the majority of clinical cases, the onset of depression occurs contiguously or after the onset of Panic Disorder.

Similar results have been found in non-clinical samples. Research examining non-clinical samples has shown that anxiety and depression are commonly self-reported together and are highly correlated (Crawford & Henry, 2003). In this study, the researchers examined a large non-clinical sample using the DASS (Depression Anxiety Stress Scale; see Appendix B). The researchers found that scores on the anxiety subscale and depression subscale were highly correlated with one another (r = .75; Crawford & Henry, 2003).
Anxiety and depression both have been shown to be associated with eating pathology. In a clinical population, research has shown that patients with AN and BN also present with symptoms of depressive and anxiety disorders (Fornari et al., 1992). In this study, the researchers examined clinical diagnoses of AN and BN and the presence of anxiety and depressive disorders (Fornari et al., 1992). The researchers found that in anorexic patients, a diagnosis of a depressive disorder was significantly higher than a diagnosis of an anxiety disorder, but in all other groups there was no significance (Fornari et al., 1992). The researchers concluded that anxiety and depression may play a mediating role in the development of eating disorders (Fornari et al., 1992). Research in a non-clinical sample examining racial differences as predictors for eating pathology found that in white women, depression was a predictor for eating pathology (more specifically binge eating behavior), but in black women, anxiety was a predictor for eating pathology (Ivezaj et al., 2010). Ivezaj et al. (2010) also found the men reported significantly more binge eating behavior than women, which is contradictory to most of the research examining eating pathology and gender differences.

**Athletes**

Most research on college campuses examines the typical college student (Storch, et al., 2005), which does not take into account factors that make athletes different from the normal college student (i.e., added stress, time management). This begs the question: to what extent is the collegiate athlete like the typical college student? There has been some research examining the differences between collegiate athletes and non-athletes regarding the factors (depression, low self-esteem, body dissatisfaction) that exacerbate eating pathology (Armstrong & Oomen-Early, 2009, Holm-Denoma, Scaringi, Gordon, Van Orden, & Joiner Jr., 2009).
**Athletes and Depression**

Research has shown that college athletes have lower levels of depression on average than non-athletes (Storch, et al., 2005; Armstrong & Oomen-Early, 2009). Armstrong and Oomen-Early (2009) suggested that due to the nature of sports teams, athletes may be at a lower risk for depression because they have a social network and team support. The researchers also hypothesized that the psychosocial outcomes of participating in sports (team support, winning) may increase athletes’ resistance to depression.

According to Storch et al., 2005, there are significant differences in reporting depressive symptoms in female compared to male athletes. The researchers found that female athletes reported higher levels of depressive symptoms than male athletes, as well as male and female non-athletes (Storch et al., 2005). This does not support the findings from Armstrong and Oomen-Oomen-Early (2009), who suggest that athletes were less likely to experience depression due to team support and a social network. Storch et al. (2005), offered some explanations as to why female athletes may experience more depression than male athletes and non-athletes. One explanation that the authors suggest is that female athletes may be exposed to more stressors in their career than male athletes (Storch et al., 2005). Another explanation is that female athletes may misinterpret the effects of stressful situations or negative feedback differently than non-athletes and male athletes (Storch et al., 2005). It is unclear what the causes are for depression in male athletes.

**Athletes and Anxiety/Stress**

Other factors that have been associated with eating pathology in athletes are anxiety and stress. Some of the research examining eating pathology in athletes has examined the roles of anxiety and stress as predictors for the presence of eating pathology (Holm-Denoma et al., 2009).
Again, the majority of research in this area has mainly focused on females due to the females increased prevalence in this population. It has been suggested that athletes face a different set of pressures than non-athletes, particularly comments made by coaches and social pressures from participation in athletics. Research examining sport-specific anxiety found that women who report higher levels of anxiety also report higher levels of eating pathology (Holm-Denoma et al., 2009). Overall, the researchers concluded that participation in sports as well as anxiety associated with those sports are both significant predictors of eating pathology in women (Holm-Denoma et al., 2009). Similar results were also found in a Storch et al. (2005) study, examining self-reported psychopathology in athletes and non-athletes. The researchers found that female athletes reported higher levels of depression and social anxiety than male athletes and male and female non-athletes (Storch et al., 2005). The researchers concluded that female athletes may be exposed to a greater number of stressors, internalize their athletic experience and find it difficult to join other peer group’s compared to male athletes (Storch et al., 2005). Research has also examined social physique anxiety in female athletes (Krane et al., 2001). Social physique anxiety is the concern that others are negatively evaluating one's body or physical appearance (Krane et al., 2001). According to the researchers, body dissatisfaction and drive for thinness were significant predictors for social physique anxiety in female athletes and exercisers (Krane et al., 2001).

Stress is another factor that has been associated with higher levels of eating pathology in athletes (Holm-Denoma et al., 2009). Stress according to Hudd et al. (2000) can be divided into two categories: life events, which is the extent to which the accumulation of many events create a stressful impact; and chronic strain, which results in role overload (i.e., balancing academics and social life). In the study conducted by Hudd et al. (2000), the researchers found that a
significant number of athletes reported high levels of stress, which supports the notion that athletes experience high levels of chronic strain stress. Hudd et al. (2000) also found that the majority of participants reported poor eating habits (i.e. not eating breakfast, consumption of junk food and soda). The researchers concluded that those who report high levels of stress also report poor eating habits especially a poor diet (Hudd et al., 2000). The results of this study were also supported by a study conducted by Wilson and Pritchard (2005). In this study, the researchers examined athlete status and the effects that it had on sources of stress. The researchers found that athletes were more stressed than non-athletes, especially when it came to their significant others family, having a lot of responsibilities, not getting enough sleep, and heavy demands from extracurricular activities (Wilson & Pritchard, 2005). These researchers also found that athletic status served as a buffer to body dissatisfaction and social stresses (i.e. getting ripped off, social isolation, being ignored; Wilson & Pritchard, 2005).

Athletes and Eating Disorders/Eating Pathology

Research has shown that participating in collegiate athletics may be a risk factor for the development of disordered eating or eating pathology (i.e. Hausenblas, & Carron, 1999; Johnson et al., 2004; Schwarz, Gairrett, Aruguete, & Gold, 2005, Greenleaf, Petrie, Carter, & Reel, 2009). In a study conducted by Johnson et al., (2004), the data suggested that participation in highly competitive athletics may be a risk factor for developing eating pathology. Specifically, the researchers found that white female athletes were at a higher risk for developing eating pathology than black female athletes as well as black and white men (Johnson et al., 2004).

In another study, the researchers found that over 25% of the female athletes surveyed had eating pathology or eating disorders based on self-reported measures (Greenleaf et al., 2009). Greenleaf et al., suggested that even though their results were consistent with previous research,
more female athletes may actually be experiencing eating pathology (2009). In another study conducted by Hausenblas and McNally (2004), researchers found that in track athletes, women were more likely to report the presence of eating pathology significantly more often than men. Furthermore, Hausenblas and Carron’s (1999) meta-analysis study found that athletes reported more eating pathology than participants in the comparison group. The researchers also found that female athletes reported higher levels of bulimia and anorexia than control groups, as well as the observation that younger athletes were more likely to have eating pathology than older athletes (Hausenblas & Carron, 1999).

Similar results were found in male athletes as well. Hausenblas and Carron (1999) reported that male athletes reported more bulimic symptomology (i.e., binging and purging) than control groups as well as a higher drive for thinness than control groups. The researchers also concluded that the difference in self-report for eating pathology between male athletes and their control groups were greater than those found in female athletes compared to their comparison groups (Hausenblas & Carron, 1999). They suggested that this difference between male and female athletes may be due to the unique demands that are required from these athletes which are not seen in control groups.

Research conducted by Holm-Denoma et al. (2009), found that athletes reported higher levels of eating pathology than those who did not participate in varsity athletics. The researchers found that non-exercisers had lower levels of drive for thinness, body dissatisfaction and bulimic symptoms compared to those that exercised regularly or participated in varsity athletics (Holm-Denoma et al., 2009). These authors suggested that these results may have implications for coaches and athletic departments who need to consider the likelihood of eating pathology and eating disorders in female varsity athletes. They offered an explanation as to why female athletes
may develop eating pathology more so than non-athletes. Holm-Denoma et al. (2009) stated that these athletes may develop eating pathology while participating in athletics due to the pressures of performance and competition. Alternatively, those females who are at a high risk for eating pathology may join athletics.

Krane et al. (2001), found that even though the majority of female athletes were considered to be “healthy,” there were still a large number of participants that scored high on the subscales of the EDI (Eating Disorders Inventory) for bulimia, drive for thinness, and body dissatisfaction. Krane et al. (2001), suggested that instead of using eating behavior as a way to watch their weight, some of the participants resorted to working out excessively to stay thin.

Research done by Reinking and Alexander (2005) suggests that although athletes as a whole may not report higher levels of eating pathology, certain groups of athletes, especially those that participate in “lean” sports such as those that emphasize aesthetic value and leanness (ex. dance, diving or gymnastics) are at higher risk for developing eating pathology. Some of the reasons as to why these athletes are at a higher risk for the presence of eating pathology are coach and peer pressures, weight standards, performance demands and judging (Reinking & Alexander, 2005). Reinking and Alexander (2005) also suggested that for those who compete in “non-lean” sports, the benefits of participating in athletics outweigh the pressures of competition. Those conclusions are not the same for those who compete in “lean” sports because there is an evaluative aspect for leanness and aesthetics that isn’t seen in “non-lean” sports (Reinking & Alexander, 2005). Similar results were found in a study conducted by Schwarz, et al. (2005). The researchers found that there wasn’t a significant overall difference in rates of eating pathology between athletes and non-athletes, but there was a significant difference in the type of sport that the participant participated in (Schwarz et al., 2005). The difference in sports was
defined as judged sports (such as diving and gymnastics) compared to refereed sports (such as basketball or volleyball; Schwarz et al., 2005).

**BMI and Athletes**

One final factor that has been associated with depression and eating pathology in athletes is body mass index (BMI; Schwarz et al., 2005). Body mass index is a ratio of height to body weight. BMI has been used in previous studies to examine whether body dissatisfaction differences related to body size (Schwarz et al., 2005; Holm-Denoma et al., 2009). In the study conducted by Holm-Denoma et al. (2009), the researchers used BMI to control for possible differences between the athlete groups. Similar methods were used in a study conducted by Santos et al. (2007), where BMI was identified as a predictor variable for depression and eating pathology. The researchers found that BMI was significantly correlated with depressive symptoms in females (Santos et al., 2007).

**Hypotheses**

The current study will examine potential risk factors for the presence of eating pathology in male athletes, including athletic status, current levels of depression, anxiety, and stress. We predict that male athletes who score high on the DASS (Depression Anxiety Stress Scale) will have higher rates of body dissatisfaction (EDI) compared to non-athletes. Further analyses will examine the relationship between athlete status, BMI and body dissatisfaction. We predict that male athletes will show higher rates of eating pathology and that BMI will mediate rates of eating pathology in male athletes.
Methods

Participants

The participants for this study were male collegiate students representing a sample of convenience at a DIII college. The participants were recruited using the Marietta College on-line participant pool. Additional athletes were recruited using cooperation from head coaches. A total of 30 undergraduate men consented to participate; 15 were collegiate athletes (mean age = 19.13 ± .8 years) and 15 were not athletes of a collegiate sports (mean age = 19.93 ± 1.9 years). Each participant was given an hour of research credit for any psychology course that requires research credit, as well as entered into a drawing for a $50 gift card. Participants were treated in accordance with the “Ethical Principles of Psychologists and Code of Conduct” (American Psychological Association, 2002).

This study was fully approved by the Marietta College Human Subjects Committee. Consent was obtained from all participants prior to the study and all responses were kept anonymous.

Measures

The researcher used a demographics sheet that was designed specifically for this study (see Appendix A). The demographics sheet will be used for general information such as age, gender, year in school, height and weight (BMI), participation in varsity athletics (and if in-season, pre-season or post-season) and grade point average. The demographics sheet will also contain a space to record body fat composition.

The researcher used the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995; see Appendix B). The DASS is a 42 item forced choice self-report measure used to assess the negative emotional states of depression, anxiety, and stress. The DASS is comprised of 3
separate measures intermixed into one measure, one of each for depression, anxiety and stress. The participants were asked to rate themselves on a 4 point scale of how often they have experienced each state over the past week. Gamma coefficients that represent the loading of each scale on the overall factor (total score) are .71 for depression, .86 for anxiety, and .88 for stress (Lovibond & Lovibond, 1995). According to Brown, Chorpita, Korotitsch, & Barlow (1997), reliability of the three scales is considered adequate and test-retest reliability is likewise considered adequate with .71 for depression, .79 for anxiety and .81 for stress.

The researcher also used the Eating Disorders Inventory (EDI; Garner, Olmsted & Polivy, 1983; see Appendix C). The EDI is a 6-point forced choice self-report measure that is used to assess the participant’s attitudes and behaviors towards eating. There are 64 items on this measure with 8 subscales (only 1 of which the researchers used; body dissatisfaction). The coefficient alpha will be used for each scale to compare it to the previous estimates of internal reliability. The coefficient alpha for the body dissatisfaction subscale is $\alpha = .80$ (Garner, Olmsted & Polivy, 1983). The EDI was used in this study to determine if the participants exhibit behaviors and feelings towards drive for thinness and body dissatisfaction.

The researcher calculated body mass index (BMI) of the participants in the study. Height and weight of the participants was input to this formula: $\text{BMI} = \frac{\text{Weight (lbs)}}{\text{Height (in)}^2} \times 703$. A participant was considered underweight if their BMI is less than 18.5, they were considered average weight if their BMI is between 18.5 – 24.9, overweight if their BMI is between 25 – 29.9, and obese if their BMI is greater than 30. The researcher also used body fat calipers to determine the percent of body fat, determined by sampling at three locations: the back of the arm, the front of the arm and the side of the waist. The average of these three scores was
the body fat composition score. The researcher used BMI and body fat composition as factors for the linear regression model.

**Procedures**

Participants were informed that they are participating in a study that pertains to eating behaviors and emotions in college students. Before the study begins, the researcher obtained consent from all participants using a consent form. Participants were also told that all of their answers will be kept anonymous from anyone but the researcher and his assistant. The demographics questionnaire was always presented first in order to gain the trust of the participants. Participants were encouraged to answer all questions as truthfully as possible and complete all of the questionnaires. The booklets of questionnaires were completed in a group setting with enough room between participants so that all answers remained confidential. The study took approximately 45 minutes to complete. Once all of the participants have completed the surveys, the participants were then weighed and their heights recorded. Body fat composition was recorded using body fat calipers. All participants will be debriefed following the conclusion of the study via e-mail.

Once the study has been completed, the researcher input all of the participants’ responses into a coded excel spreadsheet so that all of the participants’ identities remain anonymous.

**Results**

**Preliminary Analyses**

Means and standard deviations for the EDI and DASS are contained in Table 1. The correlations among the independent variables are in Table 2. According to Garner and Olmstead (1984), EDI subscales above 16.4 are indicative of a clinical disorder. The EDI means for athletes and non-athletes are below clinical levels, suggesting that the participants in this study
are satisfied with their bodies. Some participants did score above this threshold: 3 (20%) for body dissatisfaction in athletes and 6 (40%) in non-athletes.

**Primary Analyses**

To examine the relationships among the DASS subscales, BMI, and body fat percentages, a series of linear stepwise regression analyses were computed. The first multiple regression analysis examined if the current levels of depression, anxiety and stress (measured by the DASS), BMI and body fat were good predictors of scores on the EDI in men. The researcher examined the overall model, not including athletic status as a factor. Results showed that current levels of depression, anxiety and stress, BMI, and body fat significantly predicted all participants’ scores on the EDI. The results of the regression indicated the five predictors explained 27.31% of the variance ($R^2 = .49, F(1, 28) = 27.17, p > .001$) with depression accounting for all of the variance ($\beta = .70, p > .001$).

Further regression analyses examined if participating in varsity sport influenced the ability of the model to predict EDI scores. Separate analyses were conducted for the athletes and non-athletes. Repeating the model above, using current levels of depression, anxiety and stress, BMI and body fat, the researchers conducted regression analyses for each of the groups. For athletes, the regression equation was significant; the results of the regression indicated that the five predictor variables explained 20.77% of the variance ($R^2 = .43, F(1,13) = 9.81, p = .008$) with the depression scale accounting for all of the variance ($\beta = .65, p = .008$). The regression analysis for non-athletes was significant; the results of the regression indicated that the five predictor variables explained 31.99% of the variance ($R^2 = .56, F(1,13) = 16.70, p = .001$) with the depression scale accounting for all of the variance ($\beta = .75, p = .001$).
A separate regression analysis was performed to examine if BMI is a good predictor of scores on the body dissatisfaction subscale of the EDI. Separate analyses were conducted for athletes and non-athletes. The regression equation was not significant for athletes \( (R^2 = .02, F(1,13) = .27, p = .614) \) or non-athletes \( (R^2 = .19, F(1,13) = 2.95, p = .110) \). Subsequent regression analyses were conducted to examine if total body fat (%) is a better predictor than BMI of scores on the body dissatisfaction scale of the EDI. Separate analyses were conducted for athletes and non-athletes. The regression equation was not significant for athletes \( (R^2 = .004, F(1,13) = .06, p = .813) \). The regression equation for non-athletes on the other hand was significant \( (R^2 = .32, F(1,13) = 6.12, p = .028) \); total body fat predicts body dissatisfaction in non-athletes.

**Discussion**

This study examined athletic status, current levels of depression, anxiety, stress, BMI and total body fat in male athletes. Generally, the results show that these men were healthy according to the low average scores on the body dissatisfaction subscale of the EDI, mean body fat and BMI scores. Further analyses revealed that depression alone was the strongest predictor of EDI scores for both athletes and non-athletes. Anxiety and stress scores along with total body percentage and BMI were not significant predictors of EDI scores for athletes or non-athletes.

The primary hypothesis of this study was supported: high scores on subscales of the DASS were significantly correlated with high scores on the EDI for athletes, and they were a good predictor of eating pathology. More importantly, the depression subscale of the DASS significantly predicted EDI scores in male athletes. Furthermore, the results showed that athletic status was not a significant predictor of EDI scores. In concordance with our findings, Storch et
al. (2005), found that there was not a significant difference in self-reported depression scores between male athletes and male non-athletes.

However, the rates of physical activity of the non-athletes were not examined in this sample and therefore not known. It might be the case that our non-athletes were physically active, even if they were not participating in varsity sports. Perhaps participating in any physical activity, especially varsity athletics is a protective factor in that exercise is an outlet for stress and anxiety, but perhaps it does not protect against depression. Even though there wasn’t a significant difference between body dissatisfaction scores on the EDI subscale between groups, athletes had fewer scores that would be considered clinically significant compared to non-athletes. This could mean that athletes are more satisfied with their body shape and size compared to non-athletes. This would be consistent with the findings of Armstrong and Oomen-Early (2009), who reported similar results in women.

Contrary to expectations, for non-athletes, scores on the depression subscale were significant predictors of EDI scores. These findings contradict the original hypothesis, but are similar to those found in other studies examining depression and athletic status (Storch et al., 2005). A possible explanation for these findings is that individuals who are depressed often feel dissatisfied with many different areas of their lives and this could possibly be one of them.

The results of this study also contradict findings that athletic status could be a risk factor for eating pathology (i.e. Hausenblas, & Carron, 1999; Schwarz et al., 2005; Reinking & Alexander, 2005). More specifically, in male athletes, Hausenblas and Carron (1999), found that males that participate in varsity athletics are more likely to experience bulimic symptomology compared to male non-athletes. Similar results were also found by Holm-Denoma et al. (2009), where athletes reported higher levels of eating pathology than those who did not participate in
Eating and Athletes

varsity athletics. The researchers also found that non-exercisers had lower levels of drive for thinness, body dissatisfaction and bulimic symptoms compared to those that exercised regularly or participated in varsity athletics (Holm-Denoma et al., 2009). The differences in findings could be due to the types of sports they athletes participated in. Past research has examined lean sports (i.e. wrestling, gymnastics; Reinking & Alexander, (2005), whose athletes are at a higher risk for the presence of eating pathology. In this study we mainly examined athletes from track and field (n = 8) which are considered to be non-lean athletes.

Conversely, the results of the current study do not support previous findings in female athletes. Armstrong and Oomen-Early (2009) found that in women, depression scores were higher in female athletes and non-athletes. Armstrong and Oomen-Early (2009) suggested that by participating in athletics, the social support and peer relationships made help reduce the levels of depression. This may be the case for females, but as the results of this study show, there was not a significant different in depression scores between male athletes and male non-athletes.

Research has shown that depression, together with stress and anxiety, are highly correlated with one another (Sanderson, DiNardo, & Rapee, 1990). There have been mixed results when it comes to stress and athletes. Some studies have shown that participating in varsity athletics can increase stress levels (i.e., Pritchard, Wilson & Yamnitz, 2004) and some studies have found that participating in athletics serve as a buffer to stress (i.e., Hudd et al., 2000). In the present study, athletes reported lower levels of stress compared to non-athletes, which supports the explanation that Hudd et al. (2000) offered: athletics acts as a buffer against stress. The results of this study mirror results found by Wilson & Pritchard (2005), wherein non-athletes reported higher levels of stress in many different areas (academic, financial, and social) compared to athletes. The researchers offered the explanation that participating in varsity
athletics in college serves as a buffer against stress (Wilson & Pritchard, 2005). The research in the current study supports this idea.

The hypothesis that male athletes will report higher levels of eating pathology measured by the EDI was not supported. The results showed that there was not a significant difference in the mean EDI scores between the athletes and non-athletes. There hasn't been a lot of research conducted examining eating pathology in men, but a meta-analysis conducted by Hausenblas and Carron (1999) found that male athletes are more likely to report more bulimic symptomology than non-athletes as well as report a higher drive for thinness. The results of this study did not support the findings by Hausenblas and Carron (1999). There have been many studies examining EDI scores in female athletes and non-athletes. The results of this study are similar to what Reinking & Alexander (2005) found in their study examining disordered-eating behavior in female athletes and non-athletes. The researchers found that there wasn't a significant difference between 9 of the 11 subscales of the EDI for athletes compared to non-athletes. Reinking & Alexander (2005) also found that female athletes are at higher risk for eating pathology than male athletes, but a lot of the literature examining these differences between males and females and athletes and non-athletes are inconclusive.

The final hypothesis that BMI will mediate levels of eating pathology in males was not supported. The results showed that BMI was a poor predictor of EDI scores in both male athletes and non-athletes. In the literature, significant differences in BMI between athletes and non-athletes have been inconclusive. In a female sample, Armstrong and Oomen-Early (2009) found that non-athletes had higher mean BMI scores than athletes. This differs from Holm-Denoma et al. (2009) study, which found no significant differences between female athletes and non-athletes in mean BMI scores. Holm-Denoma et al. (2009) also used BMI to control for possible
differences between varsity athletes, club athletes, exercisers and non-exercisers. According to Schwarz et al. (2005), BMI has been associated with depression and eating pathology. BMI was also used as a predictor variable for depression and eating pathology in a study conducted by Santos et al. (2007). The researchers found that there was a significant relationship between BMI and depression scores (Santos et al., 2007). An explanation for why BMI was a poor predictor for EDI scores in the current study is that body mass index is a measure of body fat that is based solely on height and weight. Male athletes tend to be heavier on average than non-athletes mostly because they have more muscle mass. Therefore, BMI is a poor measurement for obesity and in its place should be actual body fat measurements using skin fold calipers. In the current study, the researchers used body fat measurements and found that depression scores were not significantly determined by body fat for athletes, but it was for non-athletes.

Limitations

The current study has some limitations that could affect the validity of our results. First, there are limitations regarding the EDI questionnaire that was used. The researchers only had access to the EDI-1 when the EDI-3 is currently available to be purchased. The scoring method used in the current study could have affected the validity of the results.

A second limitation of the study is the sample size that was used. The researcher only had 30 participants for the study and n = 15 for each group. The ideal minimum sample size for each group is 30, so the lack of participants in the study may decrease the validity of the study as well as the generalizability of the study.

Another limitation to the study might be the sample used. The study was conducted at a small Midwestern liberal arts college where the majority of students are predominately
Caucasian; thus, the sample is more homogenous than a sample from a larger university. The generalizability of the study using a more diverse sample is needed for a larger generalizability.

A possible fourth limitation is the variety of athletes used in the study. Because the researcher mainly relied on the online participant pool for participants, the access to athletes was limited. The majority ($n = 8$) of athletes that participated in the study participated in track and field. A more representative sample from the male athlete population would have been more ideal. Additionally, the sport itself may influence eating pathology and body dissatisfaction in male athletes.

Another possible limitation of the study is the season of sport that the participants play. The researcher collected data in the spring semester when baseball, track and field, tennis and crew are the sports which are in-season. All other athletes were in post season. Collecting data across the fall semester and spring semester would be ideal to make sure all participants are in-season to prevent confounding variables of season.

Future directions of research in the area should focus on differences between athletes, exercisers, and those who do not routinely exercise. This would examine a wider range of behavior instead of classifying participants as either athletes or non-athletes. Perhaps routinely exercising may provide similar buffers to stress, anxiety and depression in exercisers as it does for athletes. Future research should also address a more culturally diverse sample. Ideally, a more culturally diverse sample would allow for greater generalizability.
References


Table 1

Means and Standard Deviations for the EDI, DASS, BMI and Body Fat Percentages

<table>
<thead>
<tr>
<th>Measures</th>
<th>All Participants (n=30)</th>
<th>Athletes (n=15)</th>
<th>Non-athletes (n=15)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Dissatisfaction</td>
<td>12.47 (6.42)</td>
<td>11.4 (4.91)</td>
<td>13.53 (7.67)</td>
<td>0.37</td>
</tr>
<tr>
<td>EDI</td>
<td>90.97 (37.67)</td>
<td>85.4 (26.5)</td>
<td>96.53 (46.59)</td>
<td>0.43</td>
</tr>
<tr>
<td>DASS Depression</td>
<td>4.87 (6.27)</td>
<td>4.53 (5.99)</td>
<td>5.2 (6.74)</td>
<td>0.78</td>
</tr>
<tr>
<td>DASS Anxiety</td>
<td>5.8 (4.45)</td>
<td>5.67 (5.2)</td>
<td>5.93 (3.73)</td>
<td>0.87</td>
</tr>
<tr>
<td>DASS Stress</td>
<td>9.1 (6.82)</td>
<td>7.67 (6.88)</td>
<td>10.53 (6.68)</td>
<td>0.26</td>
</tr>
<tr>
<td>BMI</td>
<td>28.75 (6.1)</td>
<td>28.64 (5.14)</td>
<td>28.85 (7.11)</td>
<td>0.93</td>
</tr>
<tr>
<td>Body Fat (%)</td>
<td>20.82 (7.33)</td>
<td>19.69 (6.28)</td>
<td>21.96 (8.32)</td>
<td>0.41</td>
</tr>
</tbody>
</table>
Table 2

*Intercorrelations of Independent Variables for Athletes and Non-Athletes*

<table>
<thead>
<tr>
<th></th>
<th>EDI</th>
<th>BMI</th>
<th>Body Fat</th>
<th>Stress Scale</th>
<th>Anxiety Scale</th>
<th>Depression Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>0.051</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Fat</td>
<td>0.158</td>
<td>0.802***</td>
<td></td>
<td></td>
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<tr>
<td>Stress Scale</td>
<td>0.437**</td>
<td>-0.029</td>
<td>0.01</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Anxiety Scale</td>
<td>0.381*</td>
<td>-0.107</td>
<td>-0.242</td>
<td>0.611***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression Scale</td>
<td>0.702***</td>
<td>0.057</td>
<td>0.089</td>
<td>0.677***</td>
<td>0.420**</td>
<td></td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p≤.001
Figure 1. Mean Scores on the DASS Subscales for Athletes and Non Athletes

- Depression: Athletes 4.53 vs. Non-Athletes 5.2
- Anxiety: Athletes 5.67 vs. Non-Athletes 5.93
- Stress: Athletes 7.67 vs. Non-Athletes 10.53

* no significant differences
Figure 2. Mean BMI and Body Fat Percentages for Athletes and Non-Athletes
Figure 1. Mean Scores on the DASS Subscales for Athletes and Non-Athletes

Figure 2. Mean BMI and Body Fat Percentages for Athletes and Non-Athletes
Appendices
## Appendix A

Age: __________________________

<table>
<thead>
<tr>
<th>Sex</th>
<th>Male</th>
<th>Female</th>
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</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Senior</td>
<td>5th Year</td>
<td>Graduate</td>
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</table>

<table>
<thead>
<tr>
<th>Athlete</th>
<th>Yes</th>
<th>No</th>
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</thead>
</table>

If yes: What sport? __________________________

If yes: In-season Pre-season Post-season

Cumulative GPA: _________________

Height: _______ ft _______ in

Weight: _________________ lbs

Body fat composition: _________________ back of arm

_______________ hip/waist

_______________ front of arm
Please read each statement and circle a number 0, 1, 2 or 3 that indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

*The rating scale is as follows:*

0  Did not apply to me at all  
1  Applied to me to some degree, or some of the time  
2  Applied to me to a considerable degree, or a good part of time  
3  Applied to me very much, or most of the time  

<table>
<thead>
<tr>
<th>Statement</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  I found myself getting upset by quite trivial things</td>
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<tr>
<td>2  I was aware of dryness of my mouth</td>
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<tr>
<td>3  I couldn't seem to experience any positive feeling at all</td>
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<tr>
<td>4  I experienced breathing difficulty (eg, excessively rapid breathing,</td>
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<tr>
<td>breathlessness in the absence of physical exertion)</td>
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<tr>
<td>5  I just couldn't seem to get going</td>
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<tr>
<td>6  I tended to over-react to situations</td>
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<tr>
<td>7  I had a feeling of shakiness (eg, legs going to give way)</td>
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<tr>
<td>8  I found it difficult to relax</td>
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<tr>
<td>9  I found myself in situations that made me so anxious I was most</td>
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<tr>
<td>relieved when they ended</td>
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<tr>
<td>10 I felt that I had nothing to look forward to</td>
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<tr>
<td>11 I found myself getting upset rather easily</td>
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<tr>
<td>12 I felt that I was using a lot of nervous energy</td>
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<tr>
<td>13 I felt sad and depressed</td>
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<tr>
<td>14 I found myself getting impatient when I was delayed in any way</td>
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<tr>
<td>(eg, elevators, traffic lights, being kept waiting)</td>
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<tr>
<td>15 I had a feeling of faintness</td>
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<td></td>
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<tr>
<td>16 I felt that I had lost interest in just about everything</td>
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<tr>
<td>17 I felt I wasn't worth much as a person</td>
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<tr>
<td>18 I felt that I was rather touchy</td>
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<tr>
<td>19 I perspired noticeably (eg, hands sweaty) in the absence of high</td>
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<tr>
<td>temperatures or physical exertion</td>
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<tr>
<td>20 I felt scared without any good reason</td>
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<tr>
<td>21 I felt that life wasn't worthwhile</td>
<td></td>
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</tbody>
</table>
### Reminder of rating scale:

0  Did not apply to me at all  
1  Applied to me to some degree, or some of the time  
2  Applied to me to a considerable degree, or a good part of time  
3  Applied to me very much, or most of the time

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>I found it hard to wind down</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>23</td>
<td>I had difficulty in swallowing</td>
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<tr>
<td>24</td>
<td>I couldn't seem to get any enjoyment out of the things I did</td>
<td></td>
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<tr>
<td>25</td>
<td>I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)</td>
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<tr>
<td>26</td>
<td>I felt down-hearted and blue</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>27</td>
<td>I found that I was very irritable</td>
<td></td>
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<tr>
<td>28</td>
<td>I felt I was close to panic</td>
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<tr>
<td>29</td>
<td>I found it hard to calm down after something upset me</td>
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<tr>
<td>30</td>
<td>I feared that I would be &quot;thrown&quot; by some trivial but unfamiliar task</td>
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<tr>
<td>31</td>
<td>I was unable to become enthusiastic about anything</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>32</td>
<td>I found it difficult to tolerate interruptions to what I was doing</td>
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<tr>
<td>33</td>
<td>I was in a state of nervous tension</td>
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<tr>
<td>34</td>
<td>I felt I was pretty worthless</td>
<td></td>
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</tr>
<tr>
<td>35</td>
<td>I was intolerant of anything that kept me from getting on with what I was doing</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>36</td>
<td>I felt terrified</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>37</td>
<td>I could see nothing in the future to be hopeful about</td>
<td></td>
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<tr>
<td>38</td>
<td>I felt that life was meaningless</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>I found myself getting agitated</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>40</td>
<td>I was worried about situations in which I might panic and make a fool of myself</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>41</td>
<td>I experienced trembling (eg, in the hands)</td>
<td></td>
<td></td>
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<tr>
<td>42</td>
<td>I found it difficult to work up the initiative to do things</td>
<td></td>
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</tbody>
</table>
Appendix C

INSTRUCTIONS

This is a scale which measures a variety of attitudes, feelings and behaviors. Some of the items relate to food and eating. Others ask you about your feelings about yourself. THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS. RESULTS ARE COMPLETELY CONFIDENTIAL. Read each question and fill in the circle under the column which applies best to you. Please answer each question very carefully. Thank you.

1. I eat sweets and carbohydrates without feeling nervous.
2. I think that my stomach is too big.
3. I wish that I could return to the security of childhood.
4. I eat when I am upset.
5. I stuff myself with food.
6. I wish that I could be younger.
7. I think about dieting.
8. I get frightened when my feelings are too strong.
9. I think that my thighs are too large.
10. I feel ineffective as a person.
11. I feel extremely guilty after overeating.
12. I think that my stomach is just the right size.
13. Only outstanding performance is good enough in my family.
14. The happiest time in life is when you are a child.
15. I am open about my feelings.
16. I am terrified of gaining weight.
17. I trust others.
18. I feel alone in the world.
19. I feel satisfied with the shape of my body.
20. I feel generally in control of things in my life.
21. I get confused about what emotion I am feeling.
22. I would rather be an adult than a child.
23. I can communicate with others easily.
24. I wish I were someone else.
25. I exaggerate or magnify the importance of weight.
26. I can clearly identify what emotion I am feeling.
27. I feel inadequate.
28. I have gone on eating binges where I have felt that I could not stop.
29. As a child, I tried very hard to avoid disappointing my parents and teachers.
30. I have close relationships.

Always  Usually  Often  Sometimes  Rarely  Never
| 31. I like the shape of my buttocks.               |         |         |         |         |         |         |         |         |
| 32. I am preoccupied with the desire to be thinner. |         |         |         |         |         |         |         |         |
| 33. I don’t know what’s going on inside me.       |         |         |         |         |         |         |         |         |
| 34. I have trouble expressing my emotions to others. |         |         |         |         |         |         |         |         |
| 35. The demands of adulthood are too great.       |         |         |         |         |         |         |         |         |
| 36. I hate being less than best at things.        |         |         |         |         |         |         |         |         |
| 37. I feel secure about myself.                   |         |         |         |         |         |         |         |         |
| 38. I thing about binging (over-eating).          |         |         |         |         |         |         |         |         |
| 39. I feel happy that I am not a child anymore.   |         |         |         |         |         |         |         |         |
| 40. I get confused as to whether or not I am hungry. |         |         |         |         |         |         |         |         |
| 41. I have a low opinion of myself.               |         |         |         |         |         |         |         |         |
| 42. I feel that I can achieve my standards.       |         |         |         |         |         |         |         |         |
| 43. My parents have expected excellence of me.    |         |         |         |         |         |         |         |         |
| 44. I worry that my feelings will get out of control. |         |         |         |         |         |         |         |         |
| 45. I think that my hips are too big.             |         |         |         |         |         |         |         |         |
| 46. I eat moderately in front of others and stuff myself when they’re gone |         |         |         |         |         |         |         |         |
| 47. I feel bloated after eating a normal meal.    |         |         |         |         |         |         |         |         |
| 48. I feel that people are happiest when they are children. |         |         |         |         |         |         |         |         |
| 49. If I gain a pound, I worry that I will keep gaining. |         |         |         |         |         |         |         |         |
| 50. I feel that I am a worthwhile person.          |         |         |         |         |         |         |         |         |
| 51. When I am upset, I don’t know if I am sad, frightened, or angry. |         |         |         |         |         |         |         |         |
| 52. I feel that I must do things perfectly, or not do them at all... |         |         |         |         |         |         |         |         |
| 53. I have the thought of trying to vomit in order to lose weight. |         |         |         |         |         |         |         |         |
| 54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close). |         |         |         |         |         |         |         |         |
| 55. I think that my thighs are just the right size. |         |         |         |         |         |         |         |         |
| 56. I feel empty inside (emotionally).            |         |         |         |         |         |         |         |         |
| 57. I can talk about personal thoughts or feelings. |         |         |         |         |         |         |         |         |
| 58. The best years of your life are when you become an adult. |         |         |         |         |         |         |         |         |
| 59. I think that my buttocks are too large.       |         |         |         |         |         |         |         |         |
| 60. I have feelings that I can’t quite identify.  |         |         |         |         |         |         |         |         |
| 61. I eat or drink in secrecy.                    |         |         |         |         |         |         |         |         |
| 62. I think that my hips are just the right size. |         |         |         |         |         |         |         |         |
| 63. I have extremely high goals.                 |         |         |         |         |         |         |         |         |
| 64. When I am upset, I worry that I will start eating. |         |         |         |         |         |         |         |         |
Appendix D
Consent Form- Health Related Behavior of College Students

Please read:
This study is conducted by Derek Carpenter in the Department of Psychology, Masters Program, at Marietta College. The goal of this study is to survey students’ behaviors and beliefs on a wide range of factors that have been shown to affect the overall health in college students. There are no correct answers to these questions. I’m just interested in your behaviors and beliefs. The questionnaires take approximately 1 hour to complete and you will receive 1 hour of research participation credit. The results of this study will be used for scientific purposes that will help me complete my thesis. It is important research and I ask that you take your time answering each question and give me your honest answers to the questions. Please note that if you leave questions blank or rush through the questionnaires, then we can NOT use your responses.

Please read the following instructions:
Your participation in this study is completely voluntary and you have the right to withdraw from the study at any time without penalty. All of the information collected will be confidential and your answers to the questions will not be identified with you in any way. Information collected will be grouped together and used for scientific purposes. I will be happy to share the final results of the study with you after the data is analyzed.

If you do NOT wish to participate in the study, please DO NOT PROCEED!

If YOU DO wish to participate in the study, please read and sign the statement below. Thank you for your time and consideration.

I understand my consent to participate is voluntary. I understand I can withdraw my participation and not complete the questionnaire at any time. I have had any questions about the study answered to my satisfaction at this time. I hereby consent to participation in the study.

Name (print): ____________________________________________________

Signature: _____________________________________________

Date: ___________________________________

This study has been reviewed and approved by the Marietta College Human Subjects Committee. If you have questions or concerns about the study you can contact me the experimenter at: Derek Carpenter, ddc001@marietta.edu or Dr. Ali Doerflinger, MC psychology dept. Mills Hall, phone ext. 4975 or email: ali.doerflinger@marietta.edu. Or you may contact the chair of the college human subjects committee with concerns: (Dr. Mary Barnas, barnasm@marietta.edu).
Appendix E

Online sign-up description of study

This study is conducted by Derek Carpenter in the Department of Psychology, Masters Program, at Marietta College. The goal of this study is to survey students’ behaviors and beliefs on a wide range of factors that have been shown to affect the overall health in college students. The researcher is just interested in your behaviors and beliefs. The results of this study will be used for scientific purposes that will help me complete my thesis. Participants will receive one hour of course credit.