Eating Disorders: A Study of Prevalence and University Type

Emily C. Riggins

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Clay E. Peters, Ed.D.
Chair of Thesis

_____
Frederick Volk, Ph.D.
Committee Member

_____
David A. Croteau, Ph.D.
Committee Member

_____
Marilyn Gadomski, Ph.D.
Assistant Honors Director

_____
Date

Abstract

Disordered eating has become an increasing problem, especially in western culture. A study was conducted to determine a possible relationship between disordered eating among college students and type of university. Previous studies allude to the possibility of private evangelical colleges yielding more eating disorders than private non-evangelical and public colleges. College students at two east coast universities were compared on the Eating Attitudes Test and a demographic questionnaire. The research indicated that prevalence of eating disorders is not significantly different between private evangelical institutions and private non-evangelical institutions. The findings show some background, prevalence, causes, and theoretical explanation of eating disorders.

Eating Disorders:

A Study of University Type and Prevalence

In the past few decades Americans have become increasingly preoccupied with body image and a desire to be thin. Television, magazines, movies, celebrities, and Internet all relay a message that women and girls should be tall, be large busted, have small waists, and be overly thin. Males are sent messages that they should have large muscles and as little fat as possible. Adolescents and adults alike are bombarded with advertisements advocating rapid weight loss even for those who are clinically at a healthy weight (Vandereycken, 2006). These persistent images and messages create body dissatisfaction and a drive for thinness in many individuals (Milkie, 1999; Tiggemann, Gardiner, & Slater, 2000; Wertheim, Paxton, Schutz, & Muir, 1997). According to a CBS news report diet pills, weight loss programs, and other shape control diets have become so popular that Americans spend 35 billion dollars a year on these products (Alfonsi, 2006). Sadly, many of these diet products and programs do not yield desired results and are expensive, influencing desperate individuals to engage in poor eating habits and possibly to develop disorders such as anorexia nervosa or bulimia nervosa.

Causes

Multiple studies have been conducted on correlations concerning eating disorders. Many of these have found familial problems and issues of control to be central problems related to anorexia and bulimia. Anorexia nervosa is "characterized by self starvation, individuals voluntarily eat so little and exercise

so much that they risk dying because their vital organs are deprived of the nourishment they need to function" (Berger, 2005, p. 424). Instead of (or sometimes alongside of) proper nutrition and exercise, some feel so desperate to change their appearance that they fall captive to this disease. It is a tendency for individuals with this disorder to gain a sense of accomplishment the more they are able to restrict their diet and increase their exercise. Bulimia nervosa "involves compulsive binge eating, in which thousands of calories may be consumed within an hour or two, followed by purging through either vomiting or inducing diarrhea by taking massive doses of laxatives" (Berger, 2005, p. 426 and Berger, 2005). This is just as dangerous as anorexia nervosa because of the severe heart and stomach problems it can cause.

In a Cumhuriyet University study, researchers found that females scored higher more frequently on the Eating Attitudes Test (EAT) and that both genders displayed low self-esteem, history of sexual or physical abuse, and family communication problems (Kugu, Akyuz, Dogan, Ersan & Izgic, 2006). There is no indication that context is an issue within this study; students at the university were said to have come from various backgrounds.

Stress and perceptions about self-image such as ineffectiveness, weight dissatisfaction, and attractiveness are also factors found to be associated with eating disorders. In a study of college freshman, researchers found no increase in disordered eating behaviors among students already struggling with bulimia nervosa, however, the number of students displaying eating disorders increased

from the beginning of the year to the end (Striegel-Moore, Frensch, Rodin, & Silberstein, 1989). "High perceived stress, an increased sense of ineffectiveness, and an increase in negative feelings about weight were associated with a worsening of disordered eating symptoms during the freshman year" (Striegel-Moore et. al, 1989 p. 508). Most females in this study did not gain more weight, but felt more ineffective propelling "more negative emotions about their weight" (Striegel-Moore et. al, 1989, p. 508). Though these women did not experience significant weight gain, stress can cause one to lose or to gain weight depending on body chemistry and an individual's coping mechanisms (American Academy of Family Physicians, 2006).

Another explored cause is fear of loss of control over eating and other aspects of life. Individuals feeling as if they are losing control will often resort to restricting their diets and food intake in order to gain a sense of control. Researchers of an ongoing cross-sectional study of freshman and disordered eating at a few universities in western America reported, "The data suggest that fear of loss of control over eating is an important part of diagnostic criteria for bulimia nervosa, while fear of being fat is less apt to differentiate between bulimic and nonbulimic women" (Pyle, Halvorson, Mitchell, & Neuman, 1991, p. 667). Researchers also stated that among the three studies they conducted, that as time increased the rejection of bulimia from society increased although the number of women with symptoms of bulimia stayed relatively similar. The authors concluded that this may be because of an increasing popularity or acceptance of

this disorder as a chosen lifestyle by society (Pyle et al., 1991). As mentioned earlier, weight and shape control has become widely accepted and embraced in American culture, diminishing the negative stigma eating disorders once had.

Emotional problems were found to be the main cause of disordered eating in a study conducted among college and high school students. The study surveyed a large university, small commuter university, and public high schools on their awareness and knowledge about symptoms, definitions, and causes of eating disorders. The participants responded that the main causes for eating disorders are emotional problems 83% of the time (students demonstrated correct definitions of the disorder) (Smith, Mann, Pruitt, & Thelen, 1986).

Prevalence

In a survey conducted by the National Eating Disorders Association involving 1,002 students on private and public college campuses across America, twenty percent of the students polled responded that they, at some point in their lives, have had an eating disorder. Fifty-five percent of students polled claimed to know at least one individual who struggled with an eating disorder and seventy-five percent admitted to skipping or avoiding meals while dieting (National Eating Disorders Association, 2006).

Outside of the United States, eating disorders seem to be just as prevalent. A study with New Zealand university students found that out of those who correctly filled out the EAT close to 7% (71 out of the 951 students sampled) were found to have a score above the cutoff level (30 or higher) (Kugu et al.,

2006). For the EAT, a score of less than 20 indicates less likelihood of an eating disorder, 20 to 29 indicates that the individual is likely to develop an eating disorder, 30 or higher is indicative of a present eating disorder (Garner & Garfinkel, 1979). Within the 7% scoring above 30, twenty-one individuals (2.20% of total sample) were found to have eating disorders according to the Structured Clinical Interview for DSM-IV axis I Disorders (SCID-I) (Kugu et. al, 2006).

Many studies have focused specifically on anorexia nervosa or bulimia nervosa, but in doing so may have potentially ignored the poor habits and attitudes regarding food intake, weight, and body image that appear most commonly among the college population (Zuckerman, Colby, Ware, & Lazerson, 1986). The college years, especially freshman year, is an infamous time period for weight gain for females. As mentioned earlier, with the increasing weight gain of the American population, there also comes a heightened awareness of body image and the drive to be thinner (Milkie, 1999; Tiggemann et al., 2000; Wertheim et al., 1997). According to a study conducted by Stanford University, the average age for onset of bulimia is between 14 and 21 years of age in both clinical and non-clinical populations. This study sought to determine differences between public and private high schools and eating disorder prevalence (Lesar, Arnow, Stice, & Agras, 2000). A public university is an institution that receives funding from the federal government, whereas a private university is an institution that does not receive funding from the government. According to the study, private schools exhibited students with more pressure from parents and peers to perform

than public schools. A positive relationship was discovered between the frequency of eating disorders and private schools (2000).

Theoretical Explanations for Development of Eating Disorders

Social Cognitive Theory

Albert Bandura's social cognitive theory seems to explain the development of eating disorders. "People can learn by observing the behaviors of others, as well as by observing the outcomes of those behaviors" (Ormrod, 2004 p. 125). In the case of eating disorders, individuals observe the behavior of live celebrity models. People from Hollywood, as well as models, are usually underweight and considered attractive by American culture. Average citizens' dieting behaviors are vicariously reinforced each time that a celebrity is praised for an underweight or surgically enhanced body. Many times normal individuals go on extreme diets involving purges lasting two to three days because they believe that if they can look like the movie stars do, then they will also gain popularity and be well-liked.

Also, third party members reinforce disordered eating when an anorexic or bulimic is told that they look great after losing weight. Americans rarely complement weight gain even when an individual who is underweight puts on a few needed pounds, but society is very quick to complement weight loss when it is not needed. Frequently punishment (direct or vicarious) is given to those slightly larger than average. Cruel comments, unsightly looks, and over dramatized portrayals are made toward these individuals to motivate them to lose weight. As mentioned earlier, the media constantly keeps attention focused on

weight loss. Live models in the form of friends or family who demonstrate successful weight loss by bingeing, purging, vomiting, or taking diet pills also may reinforce negative behaviors. Research has found that the existence of eating disorders is positively related to knowing friends with eating disorders (Edwards-Hewitt & Gray, 1993).

Maladaptive Cognitions

Another theoretical explanation for the development of eating disorders is maladaptive cognitions. When individuals adopt altered cognitions and beliefs that shape, weight, and physique are representative of their self-worth, then destructive eating attitudes often take control. The ability to control these parts of their lives along with obtaining perfection is idealized and sought after so that they might increase their personal value. When individuals with disordered eating successfully lose weight and master self-control in the form of dieting, then the disease serves as a reinforcement for such destructive behaviors. Control is directly related to eating disorders in that those with anorexia and bulimia have a sense of less control over their lives than those without eating disorders (Jones & Edelmann, 1988). This lost sense of control may come from over-controlling parents, other family members, presence of another disorder (such as depression), peers, and other rules imposed on their lives.

Reflections on Previous Studies

As discussed above, more people are becoming overweight and many of them obese. With the rise in obesity, American pop culture has become

increasingly infatuated with the image of a thin, physically fit body for men and women. Celebrities who achieve this image become more popular, as the media depicts them as being the perfect standard example for all people. Though multiple studies have shown that women in their upper twenties to mid-thirties develop eating disorders most frequently, the multiple stressors associated with college coursework, in addition to a new independence (especially after leaving control-oriented parents), provide an environment susceptible to the development of eating disorders. Also, the prevalence of eating disorders seems to vary between different categories of universities (private, public, religiously affiliated). As many studies have been conducted on the development of eating disorders during the teenage years and middle adulthood, far fewer have been conducted on the young adulthood age group. In the study mentioned earlier conducted by Stanford University, researchers found that those in private high schools were more at risk for developing eating disorders than those in public high schools (Lesar et al., 2000). Possible reasons for these findings are that private schools have students of parents with higher expectations, coursework may be more strenuous, and school policy and rules differ from the public system (usually more strict). This study seeks to compare the prevalence of eating disorders in private universities with an evangelical doctrinal statement (containing information congruent with the definition of doctrinal basis in the Journal of the Evangelical Theological Society, 2005) to private universities without this type of statement of purpose (those without the inclusion of a congruent definition). A

university that would identify itself as evangelical is an institution that has a statement of purpose or mission statement congruent with the statement:

> The Bible alone, and the Bible in its entirety, is the Word of God written and is therefore inerrant in the autographs. God is a Trinity, Father, Son, and Holy Spirit, each an uncreated person, one in essence, equal in power and glory (Journal of the Evangelical Theological Society, 2005 inside cover).

Students at these universities are also expected to follow a handbook, consisting of Christian-based rules of conduct for interaction between students attending the evangelical university and others both on and off-campus.

Research Focus

Research Questions

1. Is there a significant difference between the EAT scores of private evangelical schools and the scores of a private secular school?
2. Is there a significant difference between student males and student females for EAT scores at the college level?
3. Do eating disorders develop because too much control (exerted by others) exists in an individual's life?
4. Do university rules/policies have an effect on the development of eating disorders?

Anticipated Findings

It is expected that there is a significant difference between EAT scores of private evangelical universities and scores of private secular universities. University rules and policies may be related to the development of eating disorders; higher exertion of control over students will most likely yield more eating disorders. It is anticipated that females will yield higher susceptibility and prevalence of eating disorders because of the American culture pressures for women to be thin. It is also anticipated that eating disorders develop because of too much control exerted by others on an individual's life. It seems that according to previous studies, anorexia and bulimia are often reactions to lack of control over one's life. It is expected that a higher prevalence of eating disorders among private evangelical universities exists because a higher exertion of control is present than in private secular and public universities.

Method 1

A pilot study was conducted to determine if further research was warranted, and it aided in the revision and reconstruction of a more intensive study.

Subjects 1

Participants for this study were 48 individuals chosen from two colleges (University A and University B) in central Virginia (one private evangelical and one private non-evangelical) and one private non-evangelical college (University C) in northern Virginia. Participants were undergraduate students enrolled in at

least one psychology course at one of these institutions. Students from University A and University C were offered course credit for their participation in this study. Both samples have had at least one entry-level psychology course in addition to at least the one upper-level course they are currently enrolled in.

The University A sample originally consisted of twenty-four students. Four students did not fill out the survey completely or circled more than one answer for the same question. Twenty students (14 female and 6 male) ranging from age 19-28 with a mean age of 20.65 were involved in this study. The University C original sample consisted of twenty-one students. Two students did not fill out the survey completely or circled more than one answer for the same question. Nineteen students (15 female and 4 male) ranging in age from 18-23 with a mean age of 19.47 were involved in the current study. The University B sample originally consisted of 8 students and each completed the surveys properly.

Materials 1:Eating Attitudes Test-26 (26-item version).

The Eating Attitudes Test-26 (EAT-26) is a survey originally designed by Garner and Garfinkel (2002) and is used as a diagnostic tool for both bulimia nervosa and anorexia nervosa in both clinical and non-clinical populations. It consists of two parts; the first portion of the survey contains 26 items of ordinal response (Always, Usually, Often, Sometimes, Rarely, and Never) and the second portion contains 5 items with nominal response (true/false) and a free response question (weight and height). The EAT-26 has been used in several studies posted in academic, peer-reviewed journals and is shown valid in multiple studies.

Procedures 1

Participants were informed that they were participating in a study about eating disorders. Paper/pencil versions of the EAT-26 were distributed at Univeristy A to an upper level psychology class and also to an introductory psychology class at University B and University C. Participants were asked to complete the EAT-26 questions as honestly and as accurately as possible. Subjects were affirmed that their identity would remain anonymous.

Results 1

Completed surveys were collected and results were entered into an electronic version of the same test (Garner & Garfinkel, 2006) for scoring. Total scores were obtained as well as scores for the following subscales: a) dieting subscale, b) food preoccupation subscale, and c) self-control subscale. Scores for the University A sample had a range of 30 (1-31), including two individuals with significantly high scores, indicating high likelihood for an existing eating disorder. Most scores were in the healthy range (0-18), with only one in the moderately unhealthy range (19-24). Total scores were put into SPSS for Windows 14.0 and ANOVAs and a Paired *t*-test were conducted for comparative analyses.

A one-way ANOVA was performed to determine the relationship or possible significant difference between the college attended and EAT-26 scores. Variance within groups was more than between groups, producing a probability equaling 0.227. Fisher's post hoc comparisons were performed finding that mean EAT-26 scores were highest among University A students, closely followed by

University B students. Subjects at University C produced the lowest mean scores (Figure 1). Again, these comparisons did not yield statistically significant results but were conducted in order to calculate differences.

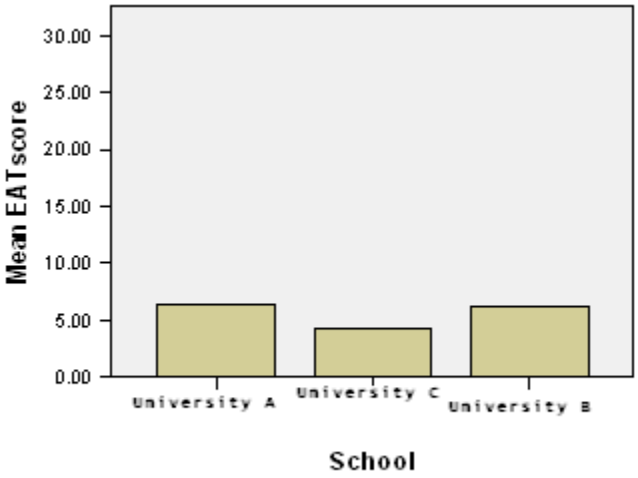

Figure 1. Effects of school attended on EAT-26 scores

A two-way ANOVA was performed to determine if there was an interaction between gender and age affecting EAT-26 scores. Though the probability of gender affecting EAT-26 scores was not statistically significant, females were found to have higher scores than males. Age was not a significant variable in this study, fluctuating from year to year (Figure 2).

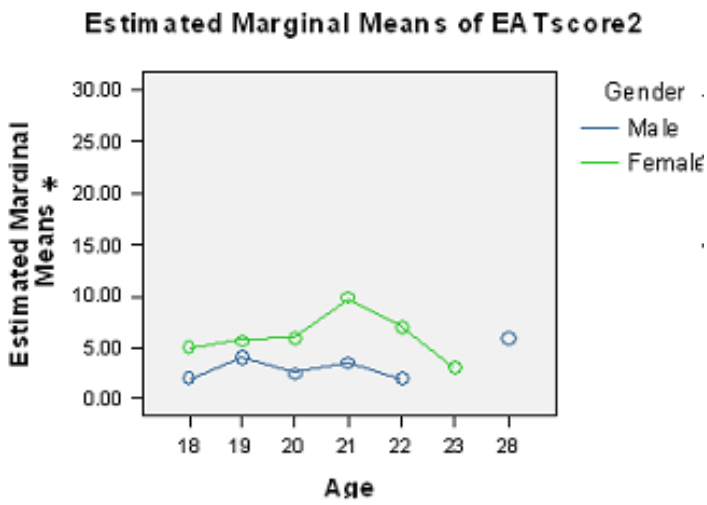

Figure 2. The Effects of Age and Gender on EAT-26 Scores

* EAT-26 Scores

Because differences were seen mainly between college locations, a *t*-test was performed to determine if this variable was significant. A probability of 0.055 was calculated (Figure 3 and Table 1). Subscale scores for each type of university were also compiled to get mean scores for each (Table 2).

Table 1.

Paired t-test Correlations Between EAT-26 Score and Location

Pair	N	Correlation	Sig.
Central VA/ Northern VA	48	.2.33	.110

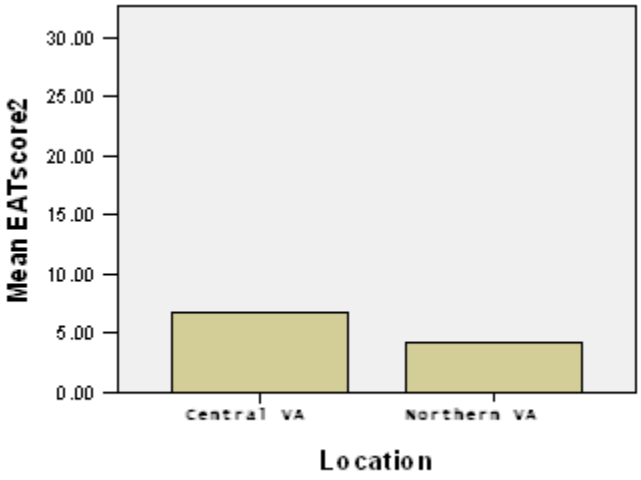

Figure 3. Effect of location on EAT-26 scores

Table 2.

Mean subscale scores for EAT-26

	Women			Men		
	LU	SU	LC	LU	SU	LC
Dieting	4.6	2.1	3.2	1.7	1.6	1.8
Food Preoccupancy	1.2	1.3	1.4	2.9	2.4	2.1
Self-control	2.5	2.1	1.9	2.3	2.6	2.1

* LU: University A, SU: University B, LC: University C

Discussion 2

In this study, gender was found to be close to significance. Females displayed more disordered eating characteristics than did males; however, every female did not score higher than each male. Region (Location) seemed to be a factor and was added to the original list of variables, statistically analyzed, and found to be the closest to statistically significant among all explored variables.

Students in Lynchburg scored higher on the EAT-26 than students located in Winchester.

Expected findings were that private evangelical universities such as University A would yield scores with higher susceptibility and features of eating disorders, Universities B and C would yield lower and similar scores, and that gender would have a significant effect on eating attitudes. Though University A did yield higher scores, only two students (both female) exhibited high risk for disordered eating, making results insignificant. University B also yielded higher scores (close to University A mean scores) than University C. Hypotheses that University A would yield highest scores were made because the university has many more restrictive university social policies than do Universities B and C.

Limitations

Validity is questioned with the results because the sample size was rather small and a convenience sample, possibly not a good representation of the college populations. The EAT-26 survey has been tested for validity and found accurate in its original form (Kugu, 2006); however, validity in this study is subject to inaccuracy because it was scored electronically and was a shortened version of the original. Though this study did not find any statistically significant variables, it should probably be conducted again with a larger, more representative sample before ruling out the variables' effects.

Method 2

Subjects 2

Participants were 319 students from a private, evangelical university (University A) located in the southeastern United States and students from a private, non-evangelical university (University B) located in the southeastern United States. Students had an age range of 18-58 with a mean age of 21.22. The universities are similar in that they draw students from similar regions and are both religiously affiliated; however, University A has a much larger student body than University B. All students at each university were offered the opportunity to take part in this study.

Materials 2

Demographics. Participants were asked to indicate age, gender, country of origin, ethnicity, length of time spent in the United States, athletic participation, residence, exercise habits, and yearly household income.

Eating Attitudes Test (40 –item version). The Eating Attitudes Test (EAT) 40-item, original version is a questionnaire consisting of 40 items regarding eating habits, attitudes, and feelings. The test was originally designed to be used as a diagnostic tool for both bulimia nervosa and anorexia nervosa in both clinical and non-clinical populations. Validity studies has been shown to be high (r= 0.87; p<0.001). The test has the optional answers Always, Usually, Often, Sometimes, Rarely, and Never. Three points are given for each question with the most symptomatic response, two points are given for each second most symptomatic

response, and one point for each third most symptomatic response. A score of 19 and below indicates a low potential risk for developing an eating disorder. A score of 20 and above indicates moderate potential risk for developing an eating disorder and scores of 30 and above are indicative of a present eating disorder (Garner & Garfinkel, 1979).

EAT Supplemental. Six questions were added to the EAT-26 (the revised 26 item version) and have been included in this study. The questions involve bingeing, vomiting, use of laxatives and diuretics, suicide, height and weight, and previous diagnosis of an eating disorder.

Interview Questions. Only the top three scores from each university will be given these interview questions. The questions pertain to family history and background, eating and exercise habits, review of the EAT questionnaire, campus policies, and personal control issues.

Procedures 2

Subjects from a private, evangelical university and students from a private, non-evangelical university were sent an email about the study. Participants were informed that they were participating in a study about eating disorders through the email. An online link to the survey was included. Participants were asked to complete the EAT and to answer a few demographic questions as honestly and as accurately as possible. Subjects were affirmed that their identity would remain confidential. At the end of the survey was a question asking for willing participation in an interview. If students were willing, then their contact

information appeared. After scoring the tests, the top three scores willing to be interviewed from each school were selected for a personal interview. During the interviews, family background, campus policies, and personal control issues are discussed.

Results 2

Completed surveys were imported into an Excel file, transposed into SPSS for Windows 15.0 and analyzed. Total EAT scores (Garner & Garfinkel, 2006) were computed, finding the University A sample yielded a mean EAT score of 13.57 with a range of 76 (0-76). The University B sample yielded a mean EAT score of 13.34 and a range of 42 (0-42). ANOVA's, *t*-tests, and Mann-Whitney U's were conducted for comparative analyses.

An independent samples *t*-test was performed in order to determine if there was a significant difference between University A and University B scores. A probability of .075 was calculated, indicating that there was no significant difference between the two universities. The means were nearly identical (Figure 4) with University A having a slightly larger mean score than University B (Table 3).

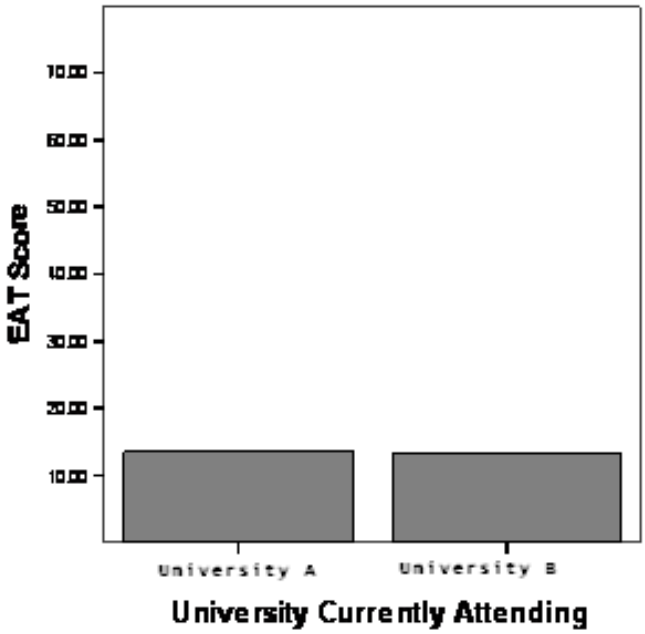

Figure 4. EAT Mean Scores For Universities A and B

Table 3.

University Mean Scores for the EAT

	I am currently attending:	N	Mean	Std. Deviation	Std. Error Mean
EAT Score	University A	224	13.5663	9.94030	1.09109
	University B	95	13.3365	12.49240	.86619

A closer examination of the individual scores was necessary to determine extreme scores that may skew the means. A histogram with the frequencies of scores is shown in Figures 5 and 6.

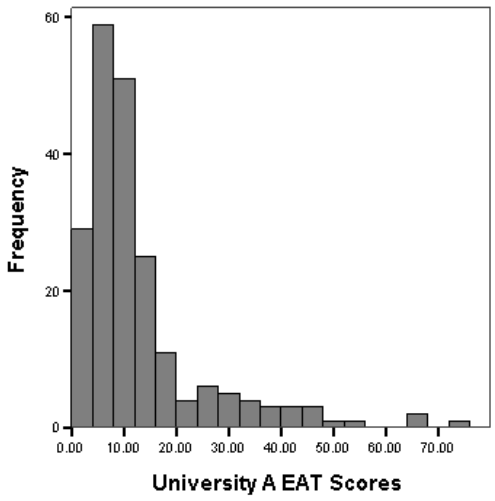

Figure 5. Frequency for EAT Scores at University A

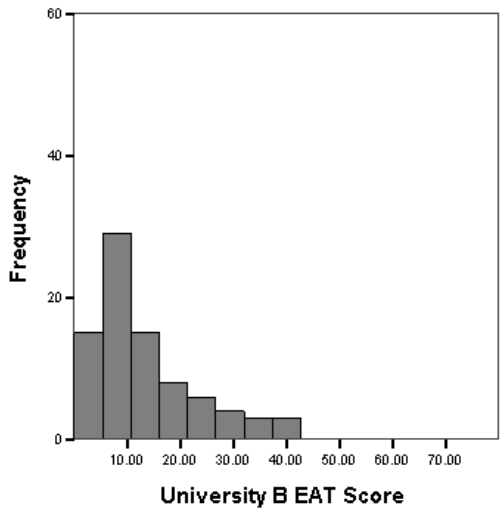

Figure 6. Frequency for EAT Scores at University B

The means of the students' scores may be very close, however, University A had students with scores above 42, whereas all scores at University B were below 42.

University A also had a higher percentage of students scoring within the 0 to 15 point range than University B.

Mann-Whitney U tests were conducted to determine if there were a significant affect of gender on EAT scores at each university. A few individuals chose not to give their gender, decreasing the n from the original sample size. The means were not different enough to hold significance in both the male and female cases (Table 4 and Table 5).

Table 4

Mean Ranks for Males at Universities A and B

Ranks(a)

	Iamacurrentstudentattending:	N	Mean Rank
EATScore	University B	17	18.15
	University A	23	23.68
	Total	40	

a Gender: = Male

Table 5

Mean Ranks for Females at Universities A and B

Ranks(a)

	Iamacurrentstudentattending:	N	Mean Rank
EATScore	University B	66	123.99
	University A	184	129.71
	Total	250	

a Gender: = Female

A probability of 0.069 was calculated indicating that there is no significant difference between males' scores and a probability of 0.291 was calculated signifying no significant difference between females' scores at each university. To compare scores between females and males, a *t*-test was performed. A probability of 0.150 was calculated, indicating no significant difference between females and males.

Discussion 2

Although gender seemed as a possible influential factor in the pilot study, the larger study found it to be insignificant to a greater degree. In the pilot study females scored higher than males in each case, however, in the most current study this was not the case. Females did yield higher scores than males overall and the majority of females had higher scores than the majority of males.

In this study there was no significant difference between EAT scores at University A and University B. This is probably an indication that university policy alone (at these types of schools) does not instigate or lead to disordered eating. Unversity A had a slightly higher mean for scores than University B, but again, not enough to hold significance. University structure and policy may have an impact on already struggling anorexics, bulimics, or others with higher susceptibility to developing disordered eating, however it is unclear in this study because of inadequate time to utilize the interview portion of the proposed study.

Limitations 2

Time was a limitation of the current study as the approval from the two universities took much longer than anticipated and left no time for interviews to be conducted. The interviews are necessary in order to accurately determine the existence of a relationship between the development of eating disorders and university policies. Sample size may again be considered a limitation because though the sample involved 319 students it would have been a more valid study with a larger, more representative sample. Another possible limitation is accurate scores on the EAT; though the test has been proven valid and reliable (Garner & Garfinkel, 2006), it is usually administered one-on-one instead of via computer. If respondents were not completely honest, then scores were inaccurately calculated.

Suggestions for Future Studies

One suggestion for further study in this area is that more time be allotted for institutional approval, leaving more time for interviews to be conducted. As mentioned earlier, the interview portion of the study is important in finding the qualitative reasons for the development of eating disorders among students at each college. Though there was no significant difference between the mean scores of the EAT at each university, each individual score was unique in the aspects of anorexia or bulimia nervosa that the student was exhibiting. By talking with the student about his or her eating attitudes and habits one can begin to determine whether the university policy and structure fueled further development and continuation of the disorder or helped the individual to cope more effectively.

Another suggestion is that a verbal announcement or invitation be made to participate in the study, rather than an email correspondence. A few verbal announcements were made during the last portion of the study and students were more responsive afterward.

References

Alfonsi, S. (2006, December). Diet industry is big business: Americans spend billions on weight-loss products not regulated by the government. Retrieved November 28, 2007 via website: http://www.cbsnews.com/stories/2006/12/01/eveningnews/main2222867.shtml

American Academy of Family Physicians (2006). Stress: How to cope with life's challenges. *American Family Physician, 74*(8), 1385-1386. Retrieved Friday, April 20, 2007 from the Academic Search Premier database.

Berger, K.S. (2005). *The developing person through the life span*. New York: Worth Publishers.

Edwards-Hewitt, T. & Gray, J.J. (1993, May). The prevalence of disordered eating attitudes and behaviors in Black-American and White-American college women: Ethnic, regional, class, and media differences. *European Eating Disorders Review, 1*(1), 41-54.

Evangelical Theological Society. (2005, December). *Journal of the Evangelical Theological Society, 48(4)*, inside cover.

Garner, D. (2002, December 9). Eating Attitudes Test (EAT-26). *University Health Services.* Retrieved April 3, 2007 from http://www.sa.psu.edu/uhs/healthinformation/eatingattitudes.cfm.

Garner, D. M. & Garfinkel, P. E. (2006, September 7). Eating attitudes test. *Psychology Central*. Retrieved April 3, 2007 from http://psychcentral.com/quizzes/eat.htm.

Garner, D. M. & Garfinkel, P. E. (1979). The eating attitudes test: An index of the symptoms of anorexia nervosa. *Psychological Medicine, 9*(1), 273-279. Retrieved August 19, 2007 from the EBSCOhost.

Jones, M. & Edelmann, R.J. (1988, July). Self-control deficits and eating problems: A reexamination. *International Journal of Eating Disorders, 8*(6), 695-699. Retrieved on September 13, 2007 via EBSCOhost.

Kugu, N., Akyuz, G., Dogan, O., Ersan, E., & Izgic, F. (2006, February). Prevalence of eating disorders among university students and the relationship with some individual characteristics. *Australian and New Zealand Journal of Psychiatry, 40*(2), 129-135. Retrieved February 18, 2007 via EBSCOhost.

Lesar, M.D., Arnow, B., Stice, E., & Agras W.S. (2000). Private high school students are at risk for bulimic pathology. *Eating Disorders, 9*, 125-129. Retrieved on September 12, 2007 via EBSCOhost.

Milkie, M.A. (1999). Social comparisons, reflected appraisals, and mass media: The impact of pervasive beauty images on black and white girls' self–concepts. *Social Psychology Quarterly, 62*, 190–210. Retrieved on September 30, 2007 via EBSOhost.

National Eating Disorders Association. (2006, November/December). In recent poll, nearly 20% of students admit to disordered eating. *Eating Disorders Review, 17*(6), 8-8. Retrieved February 11, 2007 via EBSCOhost.

Ormrod, J. E. (2004). *Human learning* (4th edition). New York: Merrill.

Pyle, R., Halvorson, P., Mitchell, J., & Neuman, P. (1991, November). An ongoing cross-sectional study of the prevalence of eating disorders in freshman college students. *International Journal of Eating Disorders, 10*(6), 667-677. Retrieved February 16, 2007 via EBSCOhost.

Smith, M., Mann, L., Pruitt, J., & Thelen, M.H., (1986, March). Attitudes and knowledge regarding bulimia and anorexia nervosa. *International Journal of Eating Disorders, 5*(3), 545-553. Retrieved February 14, 2007 via EBSCOhost.

Striegel-Moore, R., Frensch, P., Rodin, J., & Silberstein, L. (1989, September). A prospective study of disordered eating among college students. *International Journal of Eating Disorders, 8*(5), 499-509. Retrieved February 18, 2007.

Tiggemann, M., Gardiner, M., & Slater, A. (2000). “I would rather be a size 10 than have straight A’s”: A focus group study of adolescent girls’ wish to be thinner. *Journal of Adolescence, 23,* 645–659. Retrieved October 13, 2007 via EBSCOhost.

Vandereycken, W. (2006 March). Media influences and body dissatisfaction in young women. *Eating Disorders Review*, 5-6. Retrieved September 10, 2007 via EBSCOhost.

Wertheim, E.H., Paxton, S.J., Schutz, H.K., & Muir, S.L. (1997). Why do adolescent girls watch their weight? An interview study examining sociocultural pressures to be thin. *Journal of Psychosomatic Research*, *42*, 345–355. Retrieved October 13, 2007 via EBSOhost.

Zuckerman, D. M., Colby, A., Ware, N. C., & Lazerson, J. S. (1986, September). The prevalence of bulimia among college students. *American Journal of Public Health 76* (9), 1135-1137. Retrieved September 10, 2007 via EBSCOhost.

Appendix A

EAT-26 Questionnaire and Scoring Guide

Eating Attitudes Test (EAT-26)

Age: _____ Current Weight: _____ Highest weight (excluding pregnancy): _____
Sex: _____
Height: _____ Lowest Adult Weight: _____ Ideal Weight: _____

✓ Please choose one response by marking a check to the right for each of the following statements:	Always	Usually	Often	Some times	Rarely	Never	Score
1. Am terrified about being overweight.	_	_	_	_	_	_	
2. Avoid eating when I am hungry.	_	_	_	_	_	_	
3. Find myself preoccupied with food.	_	_	_	_	_	_	
4. Have gone on eating binges where I feel that I may not be able to stop.	_	_	_	_	_	_	
5. Cut my food into small pieces.	_	_	_	_	_	_	
6. Aware of the calorie content of foods that I eat.	_	_	_	_	_	_	
7. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)	_	_	_	_	_	_	
8. Feel that others would prefer if I ate more.	_	_	_	_	_	_	
9. Vomit after I have eaten.	_	_	_	_	_	_	
10. Feel extremely guilty after eating.	_	_	_	_	_	_	
11. Am preoccupied with a desire to be thinner.	_	_	_	_	_	_	
12. Think about burning up calories when I exercise.	_	_	_	_	_	_	
13. Other people think that I am too thin.	_	_	_	_	_	_	
14. Am preoccupied with the thought of having fat on my body.	_	_	_	_	_	_	
15. Take longer than others to eat my meals.	_	_	_	_	_	_	
16. Avoid foods with sugar in them.	_	_	_	_	_	_	
17. Eat diet foods.	_	_	_	_	_	_	
18. Feel that food controls my life.	_	_	_	_	_	_	
19. Display self-control around food.	_	_	_	_	_	_	
20. Feel that others pressure me to eat.	_	_	_	_	_	_	
21. Give too much time and thought to food.	_	_	_	_	_	_	
22. Feel uncomfortable after eating sweets.	_	_	_	_	_	_	
23. Engage in dieting behavior.	_	_	_	_	_	_	
24. Like my stomach to be empty.	_	_	_	_	_	_	
25. Have the impulse to vomit after meals.	_	_	_	_	_	_	
26. Enjoy trying new rich foods.	_	_	_	_	_	_	
						Total Score =	

Behavioral Questions:

In the past 6 months have you:	Yes	No
A. Gone on eating binges where you feel that you may not be able to stop? (Eating much more than most people would eat under the same circumstances) If you answered yes, how often during the worst week: _____		
B. Ever made yourself sick (vomited) to control your weight or shape? If you answered yes, how often during the worst week: _____		
C. Ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape? If you answered yes, how often during the worst week? _____		
D. Ever been treated for an eating disorder? When: _____		

EAT-26 From: Garner et al. 1982, *Psychological Medicine, 12,* 871-878); adapted by D. Garner with permission.

Note: For more information on the EAT-26, see: www.river-centre.org

SCORING THE EATING ATTITUDES TEST (EAT-26) ©

Follow the 5 steps below:

Step 1: EAT-26 ITEM SCORING:			
Score each item as indicated below and put score in box to the right of each item			
Items # 1-25:		Item #26 only:	
Always	= 3	=	0
Usually	= 2	=	0
Often	= 1	=	0
Sometimes	= 0	=	1
Rarely	= 0	=	2
Never	= 0	=	3

Step 2: Total EAT-26 Score	
	Total =
Add item scores together for a Total EAT-26 score:	

Step 3: Behavioral Questions	
	Yes
Did you score Yes on Questions A, B, C or D?	

Step 4: Underweight
Determine if you are significantly underweight according to the table to the right

Step 5: Referral	No	Yes
If your EAT-26 score is ***20 or more***		
or if you answered ***YES*** to any questions A-D		
or if your ***weight*** is below the number on the weight chart to the right,		
Please discuss your results with your physician or therapist		

Significantly Underweight According to Height (Body Mass Index of 18)*				
Height (inches)	Weight (pounds)		Height (inches)	Weight (pounds)
58	86		68	118
58 _	88		68 _	120
59	89		69	121
59 _	90		69 _	124
60	91		70	125
60 _	93		70 _	127
61	95		71	128
61 _	96		71 _	131
62	99		72	132
62 _	100		72 _	134
63	101		73	135
63 _	103		73 _	138
64	105		74	140
64 _	106		74 _	141
65	108		75	144
65 _	109		75 _	146
66	112		76	147
66 _	113		76 _	149
67	114		77	152
67 _	117		77 _	154

* Note: The table above indicates the body weights for heights considered to be "significantly underweight" according to a Body Mass Index (BMI) of 18. BMI is a simple method of evaluating body weight taking height into consideration. It applies to both men and women. There is some controversy regarding whether or not BMI is the best method of determining relative body weight and it is important to recognize that it is possible for someone to be quite malnourished even though they are above the weight listed in the table. In order to determine if you are "significantly underweight", locate your height (without shoes) on the table and see if the corresponding body weight (in light indoor clothing) is below that listed. If so, you are considered "significantly underweight" and should speak to your physician or therapist about your weight. To Calculate Body Mass Index (BMI) exactly: Weight (pounds) Divided by Height in Inches; Divide this again by Height in Inches and Multiply by 703

BMI = (lbs) ÷ (inches) ÷ (inches) X 703

Appendix B

Eating Attitudes Test (EAT) Original 40-item Version

APPENDIX Eating Attitudes Test

Please place an (X) under the column which applies best to each of the numbered statements. All of the results will be *strictly* confidential. Most of the questions directly relate to food or eating, although other types of questions have been included. Please answer each question carefully. Thank you.

Always	Very often	Often	Sometimes	Rarely	Never		
( )	( )	( )	( )	( )	(X)†	1.	Like eating with other people.
(X)	( )	( )	( )	( )	( )	2.	Prepare foods for others but do not eat what I cook.
(X)	( )	( )	( )	( )	( )	3.	Become anxious prior to eating.
(X)	( )	( )	( )	( )	( )	4.	Am terrified about being overweight.
(X)	( )	( )	( )	( )	( )	5.	Avoid eating when I am hungry.
(X)	( )	( )	( )	( )	( )	6.	Find myself preoccupied with food.
(X)	( )	( )	( )	( )	( )	7.	Have gone on eating binges where I feel that I may not be able to stop.
(X)	( )	( )	( )	( )	( )	8.	Cut my food into small pieces.
(X)	( )	( )	( )	( )	( )	9.	Aware of the calorie content of foods that I eat.
(X)	( )	( )	( )	( )	( )	10.	Particularly avoid foods with a high carbohydrate content (e.g. bread, potatoes, rice, etc.).
(X)	( )	( )	( )	( )	( )	11.	Feel bloated after meals.
(X)	( )	( )	( )	( )	( )	12.	Feel that others would prefer if I ate more.
(X)	( )	( )	( )	( )	( )	13.	**Vomit after I have eaten.
(X)	( )	( )	( )	( )	( )	14.	Feel extremely guilty after eating.
(X)	( )	( )	( )	( )	( )	15.	**Am preoccupied with a desire to be thinner.
(X)	( )	( )	( )	( )	( )	16.	Exercise strenuously to burn off calories.
(X)	( )	( )	( )	( )	( )	17.	**Weigh myself several times a day.
( )	( )	( )	( )	( )	(X)	18.	‡Like my clothes to fit tightly.
( )	( )	( )	( )	( )	(X)	19.	Enjoy eating meat.
(X)	( )	( )	( )	( )	( )	20.	Wake up early in the morning.
(X)	( )	( )	( )	( )	( )	21.	Eat the same foods day after day.
(X)	( )	( )	( )	( )	( )	22.	Think about burning up calories when I exercise.
( )	( )	( )	( )	( )	(X)	23.	Have regular menstrual periods.
(X)	( )	( )	( )	( )	( )	24.	Other people think that I am too thin.
(X)	( )	( )	( )	( )	( )	25.	Am preoccupied with the thought of having fat on my body.
(X)	( )	( )	( )	( )	( )	26.	Take longer than others to eat my meals.
( )	( )	( )	( )	( )	(X)	27.	Enjoy eating at restaurants.
(X)	( )	( )	( )	( )	( )	28.	**Take laxatives.
(X)	( )	( )	( )	( )	( )	29.	Avoid foods with sugar in them.
(X)	( )	( )	( )	( )	( )	30.	Eat diet foods.
(X)	( )	( )	( )	( )	( )	31.	Feel that food controls my life.
(X)	( )	( )	( )	( )	( )	32.	Display self control around food.
(X)	( )	( )	( )	( )	( )	33.	Feel that others pressure me to eat.
(X)	( )	( )	( )	( )	( )	34.	Give too much time and thought to food.
(X)	( )	( )	( )	( )	( )	35.	*Suffer from constipation.
(X)	( )	( )	( )	( )	( )	36.	Feel uncomfortable after eating sweets.
(X)	( )	( )	( )	( )	( )	37.	Engage in dieting behaviour.
(X)	( )	( )	( )	( )	( )	38.	Like my stomach to be empty.
( )	( )	( )	( )	( )	(X)	39.	Enjoy trying new rich foods.
(X)	( )	( )	( )	( )	( )	40.	Have the impulse to vomit after meals.

† The 'X' represents the most 'symptomatic' response and would receive a score of 3 points.
* $P < 0{\cdot}05$, *t*-test. ** $P < 0{\cdot}01$, *t*-test. ‡ $P > 0{\cdot}05$, *t*-test.
For all remaining items, group means differed at the $P < 0{\cdot}001$ level of confidence with a *t*-test.

Note. The analysis reported in the body of the paper is a point biserial correlation coefficient where item score was correlated with group membership to establish the validity of individual items as predictors. The *t*-test results reported above simply demonstrate the magnitude of the differences between mean item scores for the AN and NC cross-validation sample.

Appendix C

Interview Questions

1. What is your family like? Do you have siblings?
2. What kind of rules did you have growing up?
3. What are your hobbies or interests?
4. Who makes or helps you to make decisions in your life?
5. Do you feel like others have a lot of control or influence on your life? Who? How?
6. Do you feel that the university you attend has control over you? How?
7. What foods do you typically eat throughout the day? (Sample breakfast, lunch, dinner)
8. How much do you exercise? What do you do to exercise?
9. How does living on-campus compare to living at home?
10. How would you describe yourself to someone who has never met you?
11. How often do you think about your weight or shape?
12. Do you like to shop for clothing?
13. Do you have friends or family with a diagnosed eating disorder?
14. Are you engaged, or planning to be married in the near future?

Appendix D

EAT-40 Supplemental Questions

1. Have you gone on eating binges where you feel that you may not be able to stop? Eating much more food than most people would eat under the same circumstances.

NO YES

2. Have you ever made yourself sick (vomited) to control your weight or shape?

NO YES

3. Have you ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape?

NO YES

4. Have you ever been treated for an eating disorder?

NO YES

5. Have you recently thought of or attempted suicide?

NO YES

Your height and weight:

Height:_____ft.

_____in.

Weight:_____

Demographics

Age: _____

Gender: Male or Female

What is your country of origin? _____

How long have you lived in the United States? _____ years

Ethnicity: _____

Are you an athlete (participating in university sports)? Yes or No

What is your household yearly income?

Under $15,000 $35,000-$50,000 Above $100,000

$15,000-$25,000 $50,000-$75,000

$25,000-$35,000 $75,000-$100,000

Residence: University Housing On-campus

University Housing Off-campus

Other Off-campus housing

With parents

How often do you exercise? A few times a mo. 1-3 times a week

4-5 times a week 6-7 times a week

How long do you exercise? Less than 30 minutes 30 minutes

1 hour 2 hours

More than 2 hours