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Predisposition of Disordered Eating Among Women at the University of Mississir	sissippi
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	By
Lucy	Williams

A thesis submitted to the faculty of The University of Mississippi in partial fulfillment of the requirements of the Sally McDonnell Barksdale Honors College.

Oxford, MS May 2021

Approved By

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Reader: Dr. Melinda Valliant

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# **DEDICATION**

This thesis is dedicated to Dr. Kathy Knight and her 36 years of teaching and inspiring. Enjoy your well-deserved retirement.

#### **ACKNOWLEDGEMENTS**

Thank you to my primary advisor, Dr. Kathy Knight for helping me through every step of the way in this process. Dr. Knight was my first Nutrition Hospitality Management professor and inspired my love for Dietetics and Nutrition. She also inspired the topic for this project during discussion in one of her classes. Thank you for reassuring me after every meeting. I would also like to thank Dr. Melinda Valliant for her input and helpful feedback in writing this paper. Thank you to Dr. Scott Knight and Mr. Jangwoo Jo in helping me analyze and interpret the statistical data needed in this project. You two are very patient and kind. Thank you to Dr. Nadeeja Wijayatunga for serving as my third reader and providing helpful feedback. Thank you to the female students at the University of Mississippi for taking the time to participate in this survey.

Lastly, thank you to the Sally McDonnell Barksdale Honors College for giving me the opportunity to complete this thesis and learn from so many incredible educators.

My hope is that anyone struggling with body image or disordered eating seeks help and knows that they are not alone or at fault.

#### **ABSTRACT**

The intention of this project was to evaluate the attitudes, feelings and behaviors towards eating and food in Panhellenic sorority students, compared to women not in a sorority. The effect of other factors like grade point average, financial income, and the value of being viewed as attractive was also investigated. Two thousand sorority members and two thousand non-sorority members received a survey administered through Qualtrics to email addresses provided by the Office of Institutional Research, Effectiveness, and Planning at the University of Mississippi. Out of this group, 809 students participated in the survey. The survey consisted of questions from the Eating Attitudes Test 26 (EAT-26). The data collected from the survey was analyzed using SSPS version 27 and Microsoft Excel. The results revealed significant differences in the Dieting subscale and Bulimia and Food Preoccupation subcategories of the EAT-26 test between sorority and non-sorority women. They also revealed a positive correlation between EAT-26 scores and the importance of being perceived as attractive. A score of a 20 or higher on the test indicated a risk for disordered eating, and overall, 32% of participants received a score of 20 or higher, a rate higher than seen on many other college campuses.

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#### INTRODUCTION

Over the past few decades, research has shown that the rate of disordered eating among college students has increased (White, Reynolds-Malear, & Cordero; 2011). Some studies have found the percentage as high as 20% in female students (Walker, Thornton, De Choudhury, Teevan, Bulik, Levinson, & Zerwas; 2015). As with many mental health issues, disordered eating may be viewed as something that people have control over, and therefore not very serious. However, anorexia nervosa, a specific eating disorder, is the deadliest mental illness in the United States (Lester, 2019). Even more concerning is that over half of female students do not recognize that their eating behavior is disordered if it does not include vomiting. In addition, most students with disordered eating do not receive treatment (Gratwick-Sarll, Mond, & Hay; 2013). The side effects from disordered eating can be debilitating on a day-to-day basis, or even leave lasting effects, like infertility and heart problems (Gaudiani, 2019). To prevent disordered eating behaviors from worsening or developing into an eating disorder, early intervention and health promotion are extremely important (Eisenberg, Nicklett, Roeder, & Kirz; 2011). College is a time of change for most students, and with this comes anxiety, new eating habits, and possibly weight gain. Studies suggest that these changes correlate with a higher disordered eating risk (Vohs & Heatherton, 2001). As a college student and Panhellenic sorority member, I have seen students spend more time worried about "clean eating" and exercising than they spend on their schoolwork or enjoying their time with friends. Disordered eating has been more correlated with being in a sorority compared to the affiliations of other college students, especially in dieting activities (Averett, Terrizzi, & Wang; 2016). While documented risk factors such as maintaining

strong grades and a high level of school achievement, such as performing well in reading and writing (Sundquist, Ohlsson, Winkleby, Sundquist, & Crump; 2016), are seen in both sorority and independent women at the University of Mississippi, they are seen more in sorority women. Even with this, there may be a lack of awareness of the problem. Every sorority at the University of Mississippi raises several thousands of dollars each year for a philanthropy; however, none of the philanthropies represent disordered eating or body positivity.

Although evidence reveals a correlation between sorority women and disordered eating, there is a gap in the literature as to why this is happening (Averett et al., 2016). Are sorority members predisposed to disordered eating or does being a member of a sorority encourage these behaviors? The aim of this project was to determine the differences in attitudes, feelings and behaviors towards eating and food in Panhellenic sorority students, compared to non-sorority women, while also looking at other independent variables such as grade point average, income and the value of being viewed as attractive. Although this project will not reveal whether students suffer from an eating disorder, it can reveal "eating disorder risk" ("EAT-26 Rating Scale", n.d.). My hypothesis is that disordered eating will correlate with GPA, family income, importance of how attractive they are perceived by others, and being a member of a Panhellenic sorority. If the results are significant, they will be shared with the Ole Miss Office Student of Affairs and the sorority president.

#### LITERATURE REVIEW

What does a healthy relationship with food look like? The National Eating Disorder Organization defines a healthy eater as someone who eats when they are hungry and stops when they are full, while incorporating variety into their diet (Zucker 2018). Although there can be confusion between the terms "eating disorder" and "disordered eating" an eating disorder is specifically defined using the criteria set by the <u>Diagnostic & Statistical Manual of Mental</u> Disorders (DSM-V, 2013). The most recent version of the DSM (DSM-V, 2013) splits eating disorders into several categories: binge eating disorder, anorexia nervosa, bulimia nervosa, and other types of eating or feeding disorders (Kane & Prelack, 2018) based on symptoms, frequency of symptoms, and level of distress and disability the symptoms cause. That leaves disordered eating as a range of symptoms and behaviors that may involve anything outside of these diagnosable conditions. These symptoms/behaviors could include eliminating entire food groups from one's diet, continuing to eat when already full, excessive dieting or exercising, purposely skipping meals, and feeling shame or disgust with one's eating behaviors (Vohs & Heatherton, 2001). According to the Academy of Nutrition and Dietetics, disordered eating is "irregular eating behaviors that may or may not warrant a diagnosis of a specific eating disorder," (Academy of Nutrition and Dietetics, 2020) and would be referred to as Eating Disordered Not Otherwise Specified (EDNOS) in the DSM-V.

When picturing an "eating disorder," most people would think of anorexia nervosa (AN). AN is an eating disorder predominately defined by having an extremely low body weight, fear of gaining weight, and a distorted body image (Kane & Prelack, 2018). AN is split into two

categories based on the methods of preventing weight gain (Lester, 2019). The first is the bingepurge type, in which people will participate in an "inappropriate compensatory behavior" (Strumìa, Varotti, Manzato, & Gualandi; 2001) such as self-induced vomiting or laxatives. The other is the restrictive type, in which no compensatory behavior is required, and a person remains underweight by restricting their food intake or preforming excessive exercise (Lester, 2019). Bulimia nervosa (BN) is similar to AN because both manifest from a concern of having too much body fat. However, BN is characterized by an excessive intake of food, usually within a two-hour period, followed by a purge afterward (Brooks et al., 2001). BN patients report a feeling of being out of control and extreme guilt after their binges (Brooks et al., 2001). Typically, BN patients are at an average to above average weight (Kane & Prelack, 2018). Lastly, Binge eating disorder (BED) is characterized by an excessive intake of food, several times a week, without any compensatory behavior afterwards (National Eating Disorders Association, 2017). BED is the most common eating disorder in America (National Eating Disorders Association, 2017). People with BED also feel out of control during their binges and shame, guilt and disgust afterwards (Lester, 2019).

Throughout this paper, when referring to eating disorders, I will be referring to anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorder (BED). Disordered eating will refer to EDNOS.

#### **Risk Factors and Outcomes**

People who practice disordered eating often manifest one or more of several risk factors. The most prevalent of those is being a female. A study by Eisenberg et al, (2011) found women have a higher percentage of disordered eating characteristics such as, making themselves sick

after eating, feelings they are overweight when others say they are thin, feeling a loss of control when eating and feeling that food dominates their life. Another relevant risk factor is poor body image or body dissatisfaction. Typically, women with a larger body mass index (BMI) have a higher dissatisfaction with their body and have been more likely to suffer from disordered eating (Cooley & Toray, 2001), however, all women are more likely than men to have a poor body image (Grabe, Ward, and Hyde; 2008). Cooley & Toray (2001) assessed 225 college-aged females on a "Bulimia Scale" and "Restraint Scale" survey, asking them questions like "How often are you dieting?" 104 of the original students were reassessed several months later, and the study found that figure dissatisfaction, ineffectiveness (feelings of worthlessness and insecurity) and alcohol abuse were the best indicators of worsening symptoms. It is important to include risk factors for eating disorders as well, considering that there can be a thin line between the two definitions. These factors could include perfectionism, anxiety, depression, other family members who have eating disorders, and living in cultures that focus on thinness and dieting (National Eating Disorders Association, 2019). Especially, BN and AN are mostly seen in Caucasian women from a post-industrialized society (Kane & Prelack, 2018). BED is most commonly seen in women, but is the most common ED for men, and is seen across age groups (de Zwaan, 2001).

Depending on the type of eating disorder, there are varying health risks. In AN, bone mineral density significantly decreases when the body is in a starved state, (Kane & Prelack, 2018) which can lead to osteoporosis. Also, the low BMI usually associated with this disorder can lead to amenorrhea, (Kane & Prelack, 2018). a condition in which a female consistently misses her menstrual cycles, and which may affect fertility. People who have BN can experience eroded dental enamel, and even tears in the esophagus or stomach due to the forced vomiting that

is often associated with this condition (Fares, 2020). They can also suffer from severe dehydration and serious electrolyte imbalances, (Saviteer, 2017) impairing the body's function. AN can also have negative effects on the heart. People who have AN are not getting adequate nutrients because of their reduced intake of food ("How Anorexia Impacts your Heart," n.d.) which leads to a weakened heart and deterioration of the muscles around the heart, making it harder to pump blood. Heart conditions can also be seen in BN because the excessive vomiting leads to inflammation in the body and causing an electrolyte imbalance. ("How Anorexia Impacts your Heart," n.d.) Death rates have been measured as high as 1 in 20 in people with an eating disorders and/or disordered eating due to sudden heart attack and electrolyte imbalance (Saviteer, 2017). BED health risks include health risks associated with being overweight such as Type II diabetes, heart disease and high blood pressure (National Eating Disorders Association 2017). On a day-to-day basis, EDs can have a strong psychological effect, and those who have these conditions can feel defeated, unhappy and unable to focus on tasks other than their eating habits (Gaudiani, 2019).

# **Disordered Eating in College Students**

Disordered eating behaviors are especially high in college female students and can worsen with their time at school (Howard, Romano and Heron; 2020). Studies have shown that 17% of college-aged women are at high risk for developing disordered eating habits (Lipson & Sonneville, 2017), and this percentage is only increasing (White et al., 2011). It is also important to mention that the average onset age for AN and BN are 19, and 20 respectively, an age during which many young adults are attending college (Kane & Prelack, 2018). For many years, scientists have suggested that attending college is a risk factor for developing disordered eating

patterns (Vohs & Heatherton, 2001). Moving to college is a significant life change and can be a stressful time for both male and female students. Many EDs are seen in combination with depression or anxiety (Eisenberg et al., 2011). AN is often associated with a "stressful life event", like moving away to college (Kane & Prelack, 2018). In addition, college students are constantly surrounded by their peers in classrooms, residence halls and extracurricular activities. Being drawn into a constant state of comparison it is understandable that many students do not have a favorable view of their body. In 2017, Howard et al. examined 119 female undergraduate students to determine if stressors of moving to college, such as leaving home friends and family and stress about grades, impacted disordered eating and body dissatisfaction more so than sociocultural factors, like pressure from friends, family and media to attain a certain body type. The participants were first scored on body image, disordered eating risk, college adjustment and stress scale at the beginning of the year. Several months later, their body image and disordered eating risk were scored again. The findings of this study suggested that college stressors outside of sociocultural pressures (leaving home and leaving friends) could lead to an elevated risk of disordered eating habits (Howard, 2020). In addition, most first-year students tend to gain weight with their new, more sedentary, college lifestyle. Typically, men and women have finished growing in height and are now starting to gain adult weight. A study on disordered eating in college freshmen women found that the average woman gained 4.5 pounds in her first seven months on campus (Cooley & Toray, 2001), increasing her feelings of body dissatisfaction. It may be possible that certain extracurricular activities may heighten one's risk for developing disordered eating as well.

# **Disordered Eating in Sorority Women**

For decades, there has been a stereotypical association between sorority women and eating disorders, specifically anorexia nervosa and bulimia nervosa (Averett et al., 2016). The correlation between sorority women and disordered eating has been consistently so high, that certain actions have taken place to combat disordered eating behavior in sororities (Averett et al., 2016). In 2002 a study compared the risk of developing eating disorder risks among different groups around a college campus (Hoerr, Bokram, Lugo, & Bivins; 2002). The group at the most risk was sorority women living together off-campus at 15%, compared to 10.9% of women overall. Sorority women have also been found to be 47% more likely to use laxatives or vomiting as a way of weight control (Averett et al., 2016). Another study gauged the disordered eating of women before joining a sorority and women not intending to join a sorority, finding their baseline views the same. After the third year, the women who had joined a sorority had a stronger preoccupation with weight, while the other group thought about their weight less often (Allison & Park, 2004). Becker et al., (2018) found that women in college were more attracted to people with similar BMIs as themselves. This data suggests that more pressure could be placed on a sorority woman to conform to what her peers look like. Despite all of these studies, there is still research to be done as to what is causing this relationship as there is a possibility that an outside factor could be involved.

#### Sororities at the University of Mississippi

The Greek system at the University of Mississippi is split into three categories:

Interfraternity Council (males), National Pan-Hellenic Council (females) and Panhellenic

Council (females) ("Panhellenic Council", n.d.). For this project, the use of the word "sorority"

will refer to the Panhellenic Council specifically. The Panhellenic Council has ten chapters on campus, each having their own National Philanthropy. Chapters accept members based on their grade point average (GPA), campus and community involvement, recommendation letters from alumni of that chapter, and their connection with other girls in the sorority ("Panhellenic Council", n.d.). The majority of the members are Caucasian. In order to remain active in the chapter, members are required to pay semester dues, usually around \$2,000, maintain a minimum GPA and stay active in community service ("Panhellenic Council", n.d.). The UM Panhellenic website states that the average GPA is consistently higher than the average campus GPA ("Panhellenic Council", n.d.). Therefore, with all these standards to meet, it is possible that sorority members strive for perfectionism, a risk factor for developing an ED. One of the highest priorities of the National Panhellenic Council is to fight for body positivity on campus ("The Future is Women", n.d.). When asked if there were any resources provided by the Panhellenic office concerning disordered eating or mental health concerns on the UM campus, the Panhellenic President explained that if someone is struggling with their mental health, the Panhellenic office encourages them to seek counseling at the UM Counseling Center (McKissick, 2021). There is no official protocol if there are concerns about a student's eating behaviors. As for specific sororities a few of the chapters have had visits/lectures from specialists in eating disorders to increase awareness and body positivity (Anonymous, 2021). Several students, including one that was the Health and Wellness Chair of her sorority, have expressed that they wish to promote body positivity in their sororities and start the conversation about disordered eating. For the Health and Wellness Chair, this task was taken on completely by herself and was self-motivated.

# **Possible Treatment Programs**

The results of a thesis done by a student in the Sally McDonald Barksdale Honors

College at UM revealed that there is a lack of specific resources and awareness for eating
disordered on campus (Bouthillier, 2020). The University's current resources include the

University's Counseling Center and Collegiate Recovery Community (CRC) (Bouthillier, 2020),
however neither of these include programs are specific to disordered eating. In 2017, The

National Eating Disorder Association launched a project to analyze several colleges across the
country regarding their assistance to students with eating disorders due to the rising number of
cases (Saviteer, 2017). Their results of their study revealed that in order for early detection,
colleges needed to "educate, treat and screen students" on their eating behaviors (Saviteer, 2017).

Some of their suggestions included awareness events, educational workshops, counseling
services, and peer advising programs.

#### **METHODS**

A cross-sectional, survey-based study, this project was approved by the Institutional Review Board at the University of Mississippi (IRB). The IRB determined the research as exempt under 45 CFR 46.101(b)(#2).

# **Participants**

The population studied was undergraduate female students at the University of Mississippi. The survey was sent to 2000 Panhellenic sorority members and 2000 non-sorority members through the office of Institutional Research, Effectiveness and Planning (IREP) at the University of Mississippi using the Qualtrics survey platform. ("Qualtrics XM - Experience Management Software," n.d.) All subjects were at least 18 years of age. Out of the 15,546 undergraduate students, 809 female students completed the survey.

#### **Procedure**

Students were sent an e-mail that contained a recruiting script describing the project and asking if they would like to participate. If they agreed, they were then taken to a Qualtrics-based survey containing Eating Attitudes Test (EAT-26) and additional four questions created by the researchers on Panhellenic membership, GPA, financial income and the value that someone was perceived as attractive (Appendix A). At any point, participants could have discontinued the survey if they did not feel comfortable answering the questions. They were also informed that their participation in the survey would remain anonymous all data are de-identified and have no

negative consequences with regards to their position at the University or, if applicable, to their sorority.

# Survey

The survey consisted of 35 questions. The first four questions of the survey were added to gather demographic information about the participants. These questions were: 1) whether or not they were in a Panhellenic sorority; 2) what their grade point average (GPA) was; 3) what their family's yearly income was and 4) how important it is that they are perceived as attractive by others. These four questions were added because they could possibly provide a correlation to eating disorder risk. The rest of the questions were taken from Part B and Part C of the EAT-26. These questions asked the participants to rate how often they participated in a certain behavior or their attitudes about food and eating habits/behaviors. The EAT-26 has been one of the most widely used tools to screen for eating disorders and gage eating behaviors and attitudes. It has been used in several studies and health care settings (Hoerr et al., 2002) and has proven itself to be valid and reliable ("EAT-26 Rating Scale," n.d.).

# **Scoring**

A score of a 20 or above indicates a possible risk for an eating disorder ("EAT-26 Rating Scale," n.d.). The responses were measured using a 6-point Likert scale ranged from 1= Always, 2= Usually, 3= Often, 4=Sometimes, 5= Rarely, and 6= Never. Scores are calculated as the sum of 26 questions from EAT-26. Depending on how often a person participates in an action contributes to their score. The numbers used for scoring the answers for EAT-26 (which are questions 5-30 in the survey) can be seen in Appendix B. The EAT-26 has three subcategories:

Dieting scale items, Bulimia and Food Preoccupation scale items, and Oral Control subscale items ("Eating Attitudes Test Scoring and Interpretation," n.d.). Each question from the 26 questions falls into one of these categories.

# **Data Analysis Procedure**

The collected responses were firstly filtered by the time spent to complete the survey; responses completed in less than 90 seconds were excluded. Additionally, surveys that were not completed in their entirety were excluded. The SPSS 27 was used for the data analyses. A bivariate correlation test was conducted among the answers for the question "Select how important is it to you that you are perceived as attractive by others?" (Question 4) and their EAT-26 scores. Kruskal- Wallis H tests, a non-parametric test was also used to compare the individual EAT-26 items across sorority membership status, GPA, financial income, and value of being viewed as attractive. The Kruskal-Wallis H test was used instead of the Analysis of Variance (ANOVA) because the data did not meet the criteria for a one-way ANOVA. (Kruskal-Wallis Test, n.d.). Statistical significance was set for  $\alpha = .05$ .

# **RESULTS**

The response rate was 20.225% (n = 809). Of the respondents, 65.513% (530) had sorority involvement at some point in time, as seen in Figure 1.

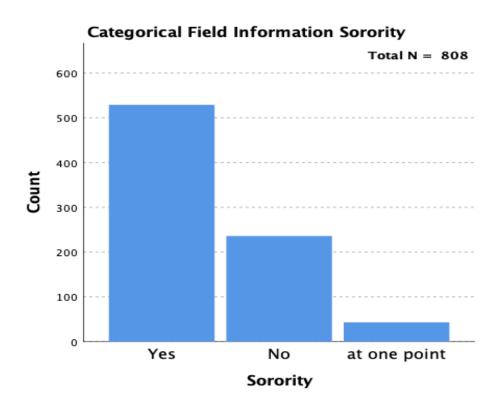


Figure 1. Categorical Field Information Sorority

In addition, 87.5 % of respondents had a GPA above a 3.0, which is may be because of the large number of sorority respondents and that sorority members as a group may have a higher GPA than the average GPA on campus (see Figure 2).

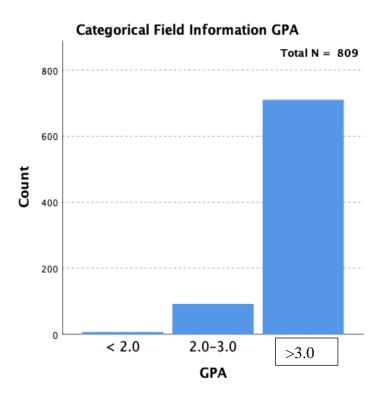


Figure 2. Categorical Field Information GPA.

Also, 40.7% of participants reported their annual household income as over \$150,000 (see Figure 3), making the majority of participants upper-middle class for a three-person household (Amadeo, 2020).

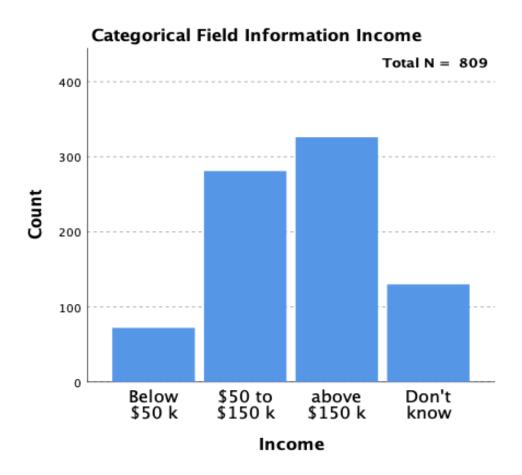


Figure 3. Categorical Field Information: Income

The most common answer to question 4, "Select how important it is to you that you are perceived as attractive by others", was "Important" at 43.2% (see Figure 4).

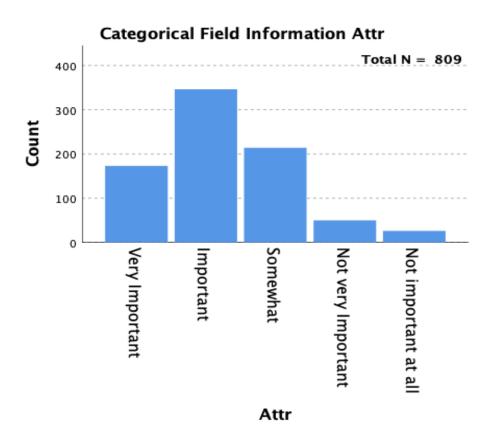


Figure 4. Categorical Field Information Attractiveness

When looking at the Kruskal-Wallis tests on individual EAT questions across sorority membership, significant differences were noted on every question in the "Bulimia and Food Preoccupation scale items" subcategory (questions 3,4,9,18,21 and 25). Some examples of these questions are "I find myself preoccupied with food" and "I vomit after I have eaten." Other questions in this category ask about how often the participant thinks about food and how much it

controls their life. In each case of these questions, sorority members' answers were more likely to answer with "Always," "Usually" and "Often" more so than non-sorority members, as seen by the means of each group. The p-values can be seen in Table 1. The questions from the "Bulimia and Food Preoccupation scale items" are in purple.

Significant differences between sorority and non-sorority members were also noted on 11/13 questions from the "Dieting Scale items" subcategory, specifically questions 1,6,7,10,11,12,14,17,22,23 and 24. Examples of these questions were "I am terrified of being overweight" and "I am aware of the calorie content of the foods that I eat." They also asked questions about the preoccupation with fat on the body and avoiding certain foods. In this case as well, sorority members were more likely to answer with "Always," "Usually" and "Often" more so than non-sorority members, as seen by the means of each group. These questions can be seen in Table 1 in green along with their corresponding test statistics and p-values.

**Table 1.** Results of Statistical Analysis to Determine Effects of Sorority Participation on Survey Scores.

Question	Sorority Affiliation	Test	Degree	P value
		Statistic	of	
			freedom	
1. I am terrified about being overweight.	Over All <sup>1</sup>	9.58	2	0.008
The state of the s	Yes-at one point <sup>2</sup>	-0.28		1.000
	Yes -No	-3.10		0.006
	At one point-No	1.19		0.706
3. I find myself preoccupied with food	Over All	6.06	2	0.048
3.1 Inid injoin processpica with root	Yes-at one point	36.35		0.576
	Yes -No	-2.26		0.072
	At one point-No	-0.19		1.000
4. I have gone on binges where I feel that I may not	Over All	6.27	2	0.044
be able to stop.	Yes-at one point	-0.42		1.000
	Yes -No	-2.50		0.037
	At one point-No	0.78		1.000
6. I am aware of the calorie content of the foods I	Over All	12.32	2	.002
	Yes-at one point	-0.17		1.000
eat.	Yes -No	-3.49		0.001
	At one point-No	1.49		0.409
7. Particularly avoid foods with high carbohydrate	Over All	22.81	2	< 0.001
	Yes-at one point	-0.85		1.000
content.	Yes -No	-4.77		< 0.001
	At one point-No	1.45		0.443

9. I vomit after I have eaten.	Over All	11.21	2	0.004
7. I voinit after I have eaten.	Yes-at one point	2.23		0.078
	Yes -No	-2.13		0.099
	At one point-No	3.14		0.005
10. I feel extremely guilty after eating.	Over All	12.03	2	0.002
	Yes-at one point	1.27		0.610
	Yes -No	-3.00		0.008
	At one point-No	2.630		0.026
11. I am preoccupied with a desire to be thinner.	Over All	18.92	2	< 0.001
	Yes-at one point	1.13		0.778
	Yes -No	-3.99		< 0.001
	At one point-No	2.96		0.009
12. I think about burning up calories when I	Over All	27.89	2	< 0.001
exercise.	Yes-at one point	-1.28		0.607
CACICISC.	Yes -No	-5.26		< 0.001
	At one point-No	1.26		0.619
14. I am preoccupied with the thought of having fat	Over All	6.78	2	0.034
on my body	Yes-at one point	0.95		1.000
on my body	Yes -No	-2.25		0.073
	At one point-No	1.97		0.146
17. I eat diet foods.	Over All	17.29	2	< 0.001
	Yes-at one point	-1.69		0.286
	Yes -No	-4.02		< 0.001
	At one point-No	0.30		1.000
18. I feel that food controls my life.	Over All	12.18	2	0.002
	Yes-at one point	-0.50		1.000
	Yes -No	-3.34		0.003
	At one point-No	2.05		0.120
21. I give too much time and thought to food.	Over All	9.64		0.008
	Yes-at one point	1.03		0.914
	Yes -No	-2.740		0.018
	At one point-No	2.28		0.068
22. I feel uncomfortable after eating sweets.	Over All	6.96	2	.031
	Yes-at one point	1.33		0.555
	Yes -No	-2.05		0.120
	At one point-No	2.24		0.076
23. I engage in dieting behavior.	Over All	9.74	2	0.008
	Yes-at one point	0.34		1.000
	Yes -No	-3.01		0.008
	At one point-No	1.75		0.241
24. I like my stomach to be empty.	Over All	6.49	2	0.039
	Yes-at one point	2.06		0.118
	Yes -No	-1.17		0.728
	At one point-No	2.52		0.035
25. I have the impulse to vomit after meals.	Over All	6.34	2	0.042
20. 2 may a mip and to young area means.	Yes-at one point	1.66		0.294
	Yes -No	-1.63		0.311
	At one point-No	2.34		0.057

<sup>1</sup> Kruskal-Wallis test results for differences between scores for sorority participation 2 Dunn's post hoc test with Bonferroni correction

The "Oral Control subscale items" questions (2,5,8,13,15,19,20) all retained the null hypothesis and did not have statistical significance between the sorority and non-sorority groups.

Examples of these questions are "Other people think that I am too thin" and "I feel that others pressure me to eat."

When looking at GPA as the independent variable, only EAT question 8 "Have gone on eating binges where I feel that I may not be able to stop" rejected the null hypothesis that the distribution of answers would be the same across all GPAs. In this case, p=.013. (Figure 5)

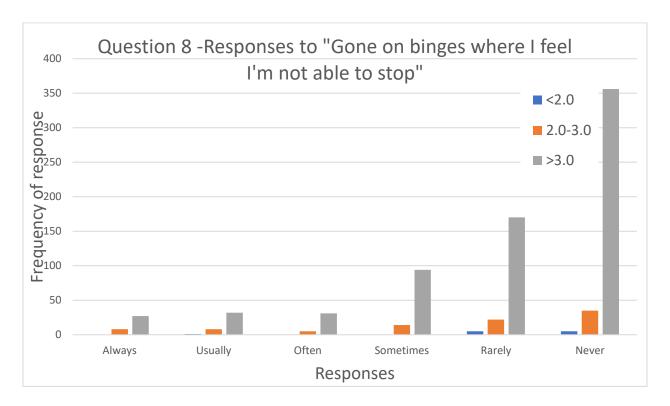


Figure 5. Question 8 Responses: Comparing GPA

When looking at financial income as the independent variable, EAT-26 questions 2,3,4,6,7,8,9,10,11,12,13,14,16,17,18,19,20,21,22,23,24, and 25 from the EAT-26 all rejected the null hypothesis that the distribution of answers would be the same across income levels. Examples of these questions are "I have gone on eating binges where I feel that I may not be able to stop" and "I am preoccupied with the desire to be thinner." In all cases, except question 13,

the means from each category revealed that the income level of \$150,000 and above were most likely to answers with "Always" "Usually" and "Often." The p-values can be seen on Table 2.

Table 2. Statistical Analysis to Determine Effects of Financial on Survey Scores

Question	Financial Status	Test Statistic	Degree of freedom	P value
2. I avoid eating when I am hungry.	Over all	13.32	3	0.004
	above \$150 k-\$50 to \$150 k	0.70		1.000
	above \$150 k-Below \$50 k	0.84		1.000
	above \$150 k-Don't know	-3.59		0.002
	\$50 to \$150 k-Below \$50 k	0.40		1.000
	\$50 to \$150 k-Don't know	-2.97		0.018
	Below \$50 k-Don't know	-1.79		0.443
3. I find myself preoccupied with food.	Over all	12.04	3	0.007
	above \$150 k-\$50 to \$150 k	2.17		0.180
	above \$150 k-Below \$50 k	1.92		0.326
	above \$150 k-Don't know	-3.13		0.011
	\$50 to \$150 k-Below \$50 k	0.56		1.000
	\$50 to \$150 k-Don't know	-1.40		0.974
	Below \$50 k-Don't know	-0.51		1.000
4. I have gone on eating binges where I feel that I	Over all	12.78	3	0.005
may not be able to stop.	above \$150 k-\$50 to \$150 k	2.09		0.221
	above \$150 k-Below \$50 k	1.48		0.831
	above \$150 k-Don't know	-3.42		0.004
	\$50 to \$150 k-Below \$50 k	0.17		1.000
	\$50 to \$150 k-Don't know	-1.74		0.492
	Below \$50 k-Don't know	-1.10		1.000
6. I aware of the calorie content of foods that I eat.	Over all	39.87	3	< 0.001
	above \$150 k-\$50 to \$150 k	2.54		0.067
	above \$150 k-Below \$50 k	3.54		0.002
	above \$150 k-Don't know	-5.89		< 0.001
	\$50 to \$150 k-Below \$50 k	1.92		0.329
	\$50 to \$150 k-Don't know	-3.81		0.001
	Below \$50 k-Don't know	-1.03		1.000
7. I particularly avoid food with a high	Over all	32.07	3	< 0.001
carbohydrate content (i.e. bread, rice, potatoes,	above \$150 k-\$50 to \$150 k	3.82		0.001
etc.)	above \$150 k-Below \$50 k	3.39		0.004
	above \$150 k-Don't know	-4.86		< 0.001
	\$50 to \$150 k-Below \$50 k	1.00		1.000
	\$50 to \$150 k-Don't know	-1.82		0.414
	Below \$50 k-Don't know	-0.41		1.000

0 I fool that athere	Over all	11.70		0.000
8. I feel that others would prefer if I ate more.		11.73	3	0.008
	above \$150 k-\$50 to \$150 k	1.61		0.642
	above \$150 k-Below \$50 k	2.43		0.091
	above \$150 k-Don't know	-2.90		0.023
	\$50 to \$150 k-Below \$50 k	1.40		0.965
	\$50 to \$150 k-Don't know	-1.60		0.664
	Below \$50 k-Don't know	0.12		1.000
9. I vomit after I have eaten.	Over all	12.08	3	0.007
	above \$150 k-\$50 to \$150 k	2.70		0.042
	above \$150 k-Below \$50 k	0.98		1.000
	above \$150 k-Don't know	-3.02		0.015
	\$50 to \$150 k-Below \$50 k	-0.69		1.000
	\$50 to \$150 k-Don't know	-0.88		1.000
	Below \$50 k-Don't know	-1.26		1.000
10. I feel extremely guilty after eating.	Over all	13.92	3	0.003
	above \$150 k-\$50 to \$150 k	2.12		0.207
	above \$150 k-Below \$50 k	1.40		0.977
	above \$150 k-Don't know	-3.61		0.002
	\$50 to \$150 k-Below \$50 k	0.07		1.000
	\$50 to \$150 k-Don't know	-1.90		0.342
	Below \$50 k-Don't know	-1.31		1.000
11. I am occupied with a desire to be thinner.	Over all	19.15	3	< 0.001
	above \$150 k-\$50 to \$150 k	2.83		0.028
	above \$150 k-Below \$50 k	2.21		0.162
	above \$150 k-Don't know	-3.99		< 0.001
	\$50 to \$150 k-Below \$50 k	0.44		1.000
	\$50 to \$150 k-Don't know	-1.72		0.510
	Below \$50 k-Don't know	-0.85		1.000
12. I think about burning up calories when I	Over all	17.09	3	0.001
exercise.	above \$150 k-\$50 to \$150 k	2.65		0.048
	above \$150 k-Below \$50 k	3.22		0.008
	above \$150 k-Don't know	-3.02		0.015
	\$50 to \$150 k-Below \$50 k	1.54		0.741
	\$50 to \$150 k-Don't know	-0.92		1.000
	Below \$50 k-Don't know	0.72		1.000
13. I other people think that I am too thin.	Over all	8.24	3	0.041
	above \$150 k-\$50 to \$150 k	-0.07		1.000
	above \$150 k-Below \$50 k	2.10		0.213
	above \$150 k-Don't know	-1.94		0.314
	\$50 to \$150 k-Below \$50 k	2.11		0.208
	\$50 to \$150 k-Don't know	-1.95		0.309
	Below \$50 k-Don't know	0.50		1.000
14. I am preoccupied with the thought of	Over all	17.08	3	0.001
having fat on my body.	above \$150 k-\$50 to \$150 k	2.42		0.093
	above \$150 k-Below \$50 k	2.43		0.090
		<u>∠.⊤J</u>	1	0.070

	above \$150 k-Don't know	-3.71		0.001
	\$50 to \$150 k-Below \$50 k	0.90		1.000
	\$50 to \$150 k-Don't know	-1.77		0.464
	Below \$50 k-Don't know	-0.47		1.000
16. I avoid foods with sugar in them.	Over all	13.00	3	0.005
	above \$150 k-\$50 to \$150 k	1.70		0.537
	above \$150 k-Below \$50 k	1.50		0.796
	above \$150 k-Don't know	-3.52		0.003
	\$50 to \$150 k-Below \$50 k	0.44		1.000
	\$50 to \$150 k-Don't know	-2.15		0.191
	Below \$50 k-Don't know	-1.16		1.000
17. I eat diet foods.	Over all	28.10	3	< 0.001
	above \$150 k-\$50 to \$150 k	2.57		0.062
	above \$150 k-Below \$50 k	3.23		0.007
	above \$150 k-Don't know	-4.81		< 0.001
	\$50 to \$150 k-Below \$50 k	1.61		0.650
	\$50 to \$150 k-Don't know	-2.73		0.038
	Below \$50 k-Don't know	-0.53		1.000
18. I feel that food controls my life.	Over all	21.50	3	< 0.001
·	above \$150 k-\$50 to \$150 k	2.29		0.133
	above \$150 k-Below \$50 k	1.89		0.353
	above \$150 k-Don't know	-4.52		< 0.001
	\$50 to \$150 k-Below \$50 k	0.46		1.000
	\$50 to \$150 k-Don't know	-2.66		0.047
	Below \$50 k-Don't know	-1.50		0.798
19. I display self-control around food.	Over all	10.89	3	0.012
	above \$150 k-\$50 to \$150 k	0.45		1.000
	above \$150 k-Below \$50 k	3.04		0.014
	above \$150 k-Don't know	-1.66		0.579
	\$50 to \$150 k-Below \$50 k	2.72		0.039
	\$50 to \$150 k-Don't know	-1.29		1.000
	Below \$50 k-Don't know	1.52		0.773
20. I feel that others pressure me to eat.	Over all	15.33	3	0.002
	above \$150 k-\$50 to \$150 k	1.75		0.482
	above \$150 k-Below \$50 k	1.33		1.000
	above \$150 k-Don't know	-3.88		0.001
	\$50 to \$150 k-Below \$50 k	0.23		1.000
	\$50 to \$150 k-Don't know	-2.45		0.087
	Below \$50 k-Don't know	-1.55		0.725
21. I give too much time and thought to	Over all	21.14	3	< 0.001
food.	above \$150 k-\$50 to \$150 k	2.57		0.061
	above \$150 k-Below \$50 k	2.06		0.237
	above \$150 k-Don't know	-4.39		< 0.001
	\$50 to \$150 k-Below \$50 k	0.45		1.000
	\$50 to \$150 k-Don't know	-2.33		0.120

	Below \$50 k-Don't know	-1.28		1.000
22. I feel uncomfortable after eating	Over all	16.90	3	0.001
sweets.	above \$150 k-\$50 to \$150 k	2.55		0.065
	above \$150 k-Below \$50 k	2.39		0.100
	above \$150 k-Don't know	-3.67		0.002
	\$50 to \$150 k-Below \$50 k	0.79		1.000
	\$50 to \$150 k-Don't know	-1.62		0.629
	Below \$50 k-Don't know	0.46		1.000
23. I engage in dieting behavior	Over all	19.99	3	< 0.001
	above \$150 k-\$50 to \$150 k	2.36		0.111
	above \$150 k-Below \$50 k	2.42		0.094
	above \$150 k-Don't know	-4.17		< 0.001
	\$50 to \$150 k-Below \$50 k	0.94		1.000
	\$50 to \$150 k-Don't know	-2.27		0.140
	Below \$50 k-Don't know	-0.79		1.000
24. I like my stomach to be empty.	Over all	21.64	3	< 0.001
	above \$150 k-\$50 to \$150 k	1.02		1.000
	above \$150 k-Below \$50 k	-3.91		0.001
	above \$150 k-Don't know	3.14		0.010
	\$50 to \$150 k-Below \$50 k	-3.05		0.014
	\$50 to \$150 k-Don't know	2.47		0.081
	Below \$50 k-Don't know	0.03		1.000
25. I have the impulse to vomit after	Over all	14.63	3	0.002
meals.	above \$150 k-\$50 to \$150 k	1.87		0.373
	above \$150 k-Below \$50 k	0.75		1.000
	above \$150 k-Don't know	-3.78		0.001
	\$50 to \$150 k-Below \$50 k	-0.41		1.000
	\$50 to \$150 k-Don't know	-2.26		0.142
	Below \$50 k-Don't know	-2.00		0.270

<sup>&</sup>lt;sup>1</sup> Kruskal-Wallis test results for differences between scores for sorority participation

A bivariate correlation test was conducted between the rating of how important it was that one was perceived as attractive (question 4) and their EAT-26 score. The results suggest a strong correlation between scores of EAT-26 and Attractiveness ( $\alpha$  = .821, p < .001). Meaning, the more important it was to be perceived as attractive, the higher the likelihood of having a larger EAT-26 score.

<sup>&</sup>lt;sup>2</sup> Dunn's post hoc test with Bonferroni correction

The average EAT-26 score overall was a 15.666. In addition, 31.150% (252) students scored a 20 or above on the EAT-26, suggesting disordered eating risk. 69.565% (176) of these students were members of a sorority. 23.320% (59) of these students were non-sorority members, and 6.324%(16) students were once part of a sorority or chose not to answer.

#### **DISCUSSION**

The purpose of this study was to investigate attitudes and behaviors concerning food and eating of undergraduate women at the University of Mississippi, while also looking closely at their sorority membership status, GPA, financial income and the value of how attractive they are perceived. One limitation to this study is that it was not taken by the entire population of undergraduate females on campus. Therefore, it is only a sample size and cannot represent the entire population's beliefs. It should also be noted that someone with an eating disorder may be less inclined to take the survey, or on the other hand, be more likely to take the survey.

Additionally, participants took this survey after the COVID-19 pandemic, which could possibly affect eating behaviors and attitudes towards food.

When looking at the descriptive statistics, majority of the participants were members of a sorority, upper middle class, and had a 3.0 GPA or higher. These findings align with the fact that sorority members on average have a higher GPA than the rest of campus ("Panhellenic Council", n.d.). It could also be inferred that sorority members come from a higher economic status because of the financial dues they are required to pay each semester.

Significant differences were found in all of the Bulimia and Food Preoccupation scale items when comparing sorority, non-sorority and past sorority membership status. Sorority members consistently had mean scores closer to the lower end of the 6-point Likert scale, meaning they were more likely to answer with "Always," "Usually" and "Often" when answering questions about Bulimia symptom related questions. This could suggest that sorority women are more likely to vomit after meals or think about food and weight more often than non-

sorority members. This same trend occurred in 11/13 of the questions in the "Dieting scale items." As stated in the results, these questions asked specifically about how often participants thought about limiting certain food groups such as carbohydrates and how preoccupied they were with fat being in their body. Results showed that sorority women spent more time trying to diet or focusing on calories. However, there was no significant difference in "Oral Control subscale" category, which asked about being too thin and people encouraging them to eat more. These results suggest that sorority members may focus on dieting behaviors and bulimia like symptoms more often than non-sorority or previous sorority members.

When looking at the effect of GPA on disordered eating behavior, not much relevant data was found. This disagrees with other studies suggesting that better grades are a risk factor for developing an eating disorder (Sundquist et al., 2016).

The correlation variable test that was conducted revealed significance with a point estimate of .821. Meaning, the more important it was to a participant that they were perceived as attractive, the more likely they were to score higher on the EAT-26 test. This aligns with the data found that body image is a risk factor for developing an eating disorder (Cooley, et al., 2001).

One of the most relevant pieces of information was that 31.15% of all the participants scored above a 20 on the EAT-26 test, indicating that they may be at risk for disordered eating. These statistics are higher than rates seen on other campuses of similar size (Eisenburg et al., 2011), which saw eating disordered symptoms at 13.5% in females. In the study by Hoerr et al., (2002) conducted, which also used the EAT-26 test on a population of similar size, only 10.9% of women scored above a 20, and 15% in sorority women living together off campus. The data found in this project is over double those numbers.

One note: Just because a person scores above a 20 does not mean that they have an officially diagnosable eating disorder. All eating disorders must be diagnosed by a professional ("EAT-26 Rating Scale," n.d.), and diagnoses are based on a variety of mental and physical observations. It is also important to mention that a score below a 20 does not mean that a person is not a risk for an eating disorder or does not have disordered eating behaviors. It should be taken into consideration that some participants may be dishonest when answering questions ("EAT-26 Rating Scale," n.d).

#### **CONCLUSION**

The purpose of this study was to evaluate the eating habits and attitudes of undergraduate female students at the University of Mississippi, and compare the independent variables of sorority membership, GPA, financial income and the value of being viewed as attractive throughout the group. Participants received a recruiting script in an email and were then prompted to take a survey administered through Qualtrics. The survey consisted of questions from the Eating Attitudes 26 test (EAT-26) and were scored depending on the answers to their questions. 4000 female students received the survey, and 809 students responded. The data revealed significant differences in the "Bulimia and Food Preoccupation scale items" and "Dieting scale items" subcategories. The data also revealed a positive correlation between how important that the participant is viewed as attractive and their EAT-26 score.

The percentage of participants that did score high enough to be at a risk for disordered eating (31.12%), was higher than rates seen at other universities. The University of Mississippi should consider opening a facility that specializes in eating disorders and disordered eating to target the relevant needs seen on campus.

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### **APPENDICES**

## Appendix A:

# Survey

- 1. Are you a member of a Panhellenic Sorority?
  - A. Yes
  - B. No
  - C. I was at one point
- 2. What is your GPA?
  - A. Below 2.0
  - B. 2.0-3.0
  - C. Above 3.0
- 3. What is your family's yearly income?
  - A. Below \$50,000
  - B. \$50,000-\$150,000
  - C. Above \$150,000
  - D. I do not know
- 4. Select how important is it to you that you are perceived as attractive by others?
  - A. Very important
  - B. Important
  - C. Somewhat important
  - D. Not very important
  - E. Not important at all

The following questions are used from:

Eating Attitudes Test© (EAT-26)

- 1. Am terrified about being overweight.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 2. Avoid eating when I am hungry.
  - a. Always

- b. Usually
- c. Often
- d. Sometimes
- e. Rarely
- f. Never
- 3. Find myself preoccupied with food.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 4. Have gone on eating binges where I feel that I may not be able to stop.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 5. Cut my food into small pieces.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 6. Aware of the calorie content of foods that I eat.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 7. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 8. Feel that others would prefer if I ate more.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely

- f. Never 9. Vomit after I have eaten.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 10. Feel extremely guilty after eating.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 11. Am preoccupied with a desire to be thinner.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 12. Think about burning up calories when I exercise.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 13. Other people think that I am too thin.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 14. Am preoccupied with the thought of having fat on my body.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 15. Take longer than others to eat my meals.
  - a. Always
  - b. Usually

- c. Often
- d. Sometimes
- e. Rarely
- f. Never
- 16. Avoid foods with sugar in them.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 17. Eat diet foods.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 18. Feel that food controls my life.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 19. Display self-control around food.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 20. Feel that others pressure me to eat.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 21. Give too much time and thought to food.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never

- 22. Feel uncomfortable after eating sweets.
  a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 23. Engage in dieting behavior.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 24. Like my stomach to be empty.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 25. Have the impulse to vomit after meals.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
- 26. Enjoy trying new rich foods.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never

### Part C:

- 1. Gone on eating binges where you feel that you may not be able to stop?
  - a. Never
  - b. Once a month of less
  - c. 2-3 times a month
  - d. Once a week
  - e. 2-6 times a week
  - f. Once a day or more
- 2. Ever made yourself sick (vomited) to control your weight or shape?
  - a. Never

- b. Once a month of less
- c. 2-3 times a month
- d. Once a week
- e. 2-6 times a week
- f. Once a day or more
- 3. Ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape?
  - a. Never
  - b. Once a month of less
  - c. 2-3 times a month
  - d. Once a week
  - e. 2-6 times a week
  - f. Once a day or more
- 4. Exercised more than 60 minutes a day to lose or to control your weight?
  - a. Never
  - b. Once a month of less
  - c. 2-3 times a month
  - d. Once a week
  - e. 2-6 times a week
  - f. Once a day or more
- 5. Lost 20 pounds or more in the past 6 months
  - a. Yes
  - b. No

## Appendix B:

Table 3: Scoring the EAT-26 Test

Scoring for Questions 5-29	Scoring for Question 30
Always = 3	Always = 0
Usually = 2	Usually = 0
Often = 1	Often = 0
Sometimes = 0	Sometimes = 1
Rarely = 0	Rarely = 2
Never = 0	Never = 3