Biological, cultural, and psychological factors that may predispose young adults to anorexia nervosa, bulimia nervosa, and binge eating disorders

Madison Christian

Follow this and additional works at: https://scholarsjunction.msstate.edu/td

Recommended Citation
Christian, Madison, "Biological, cultural, and psychological factors that may predispose young adults to anorexia nervosa, bulimia nervosa, and binge eating disorders" (2020). Theses and Dissertations. 884. https://scholarsjunction.msstate.edu/td/884
Biological, cultural, and psychological factors that may predispose young adults to anorexia nervosa, bulimia nervosa, and binge eating disorders

By

Madison Christian

A Thesis
Submitted to the Faculty of Mississippi State University
in Partial Fulfillment of the Requirements for the Degree of Master of Science in Nutrition in the Department of Food Science, Nutrition, and Health Promotion

Mississippi State, Mississippi

May 2020
Copyright by

Madison Christian

2020
Biological, cultural, and psychological factors that may predispose young adults to anorexia nervosa, bulimia nervosa, and binge eating disorders

By

Madison Christian

Approved:

________________________________
Terezie Tolar-Peterson
(Major Professor)

________________________________
Diane K. Tidwell
(Committee Member)

________________________________
Rahel Mathews
(Committee Member)

________________________________
Marion W. Evans Jr.
(Graduate Coordinator)

________________________________
George M. Hopper
Dean
College of Agriculture and Life Sciences
This study investigated the extent biological, cultural, and psychological factors predispose individuals to eating disorders and compared the prevalence between (N = 103) male and female students (18-27 years of age) from Mississippi State University (MSU). Data was collected from the Eating Disorder Screen for Primary Care (ESP), a media consumption questionnaire, the Contour Drawing Rating Scale (CDRS), the Diet History Questionnaire III (DHQ III), the Eating Attitudes Test-26 (EAT-26), and the Rosenberg Self Esteem Scale. Age of onset was collected if participants identified as having an eating disorder. Data was analyzed using the Mann-Whitey U test and Pearson correlations to determine biological, cultural, and psychological susceptibility. This study determined that there are significant biological, cultural, and psychological predispositions that should be considered when diagnosing and treating individuals with eating disorders. Findings from MSU students were compared to current evidence and provides a basis for the development of future studies.
DEDICATION

This is dedicated to my family and friends who supported and encouraged me throughout my college career and made this journey possible.
ACKNOWLEDGEMENTS

I would like to thank my advisor, Terezie Tolar-Peterson, who always had a great attitude, made it easier for me to succeed by dedicating time to helping and advising me, instilled confidence, and inspired me to complete research I am truly passionate about. I would also like to acknowledge my committee members, Diane Tidwell and Rahel Mathews, and thank them for their feedback, help, and intellectual contributions.
TABLE OF CONTENTS

DEDICATION ............................................................................................................................ ii

ACKNOWLEDGEMENTS ......................................................................................................... iii

LIST OF TABLES ..................................................................................................................... vii

LIST OF FIGURES .................................................................................................................. ix

CHAPTER

I. INTRODUCTION ......................................................................................................................1

II. LITERATURE REVIEW ..........................................................................................................5

National Prevalence of Eating Disorders ......................................................................... 5
Genetics, Family History, and Age of Onset ................................................................. 7
Media Exposure ...................................................................................................................... 9
Psychological Manifestations ............................................................................................. 10
Sex ....................................................................................................................................... 11
Race ..................................................................................................................................... 12
Treatment Approaches ....................................................................................................... 12
Anorexia Nervosa, Bulimia Nervosa, and Binge Eating Disorder Diagnostic Criteria .......................................................................................................................... 13
Eating Disorders and Physical Activity ........................................................................... 16
Body Image and/or Body Dysmorphia Disorder and Disordered Eating Patterns ............... 18
Eating Disorders and Socioeconomic Status ................................................................... 19
Sexual Abuse and Eating Disorders ................................................................................. 19
Comorbid Psychiatric Disorders and Eating Disorders ................................................... 20
Complications of Eating Disorders ................................................................................ 21
Rationale for Conducting Study ....................................................................................... 22

III. METHODOLOGY ............................................................................................................... 24

Purpose of Study ..................................................................................................................... 24
Research Questions: ............................................................................................................. 24
Procedure ................................................................................................................................ 25
Institutional Review Board Approval ............................................................................... 25
Participants ........................................................................................................................... 25
# Measures

- Biological Measures ................................. 27
- Eating Disorder Screen for Primary Care (ESP) ... 27
- Age of Onset ......................................... 27
- Cultural Measures ................................... 27
- Media Consumption Questionnaire .................. 27
- Psychological Measures ................................ 28
- Contour Drawing Rating Scale ....................... 28
- Diet History Questionnaire (DHQ) III ............... 28
- Eating Attitudes Test – 26 (EAT-26) ................. 29
- Rosenberg Self-Esteem Scale ......................... 30

## Data Collection .................................. 30

## Statistical Analysis .............................. 31

## Expected Outcomes ............................. 32

# IV. RESULTS AND DISCUSSION .................. 33

## Descriptive Results for Participants .............. 34

## Biological Measures ................................ 38
- Eating Disorder Screen for Primary Care (ESP) .... 38
- Age of Onset ......................................... 40

## Cultural Measure .................................. 42
- Media Consumption Questionnaire .................. 42

## Psychological Measures ............................ 45
- Contour Drawing Rating Scale ....................... 45
- Diet History Questionnaire (DHQ) III ............... 47
- Eating Attitudes Test – 26 .......................... 50
- Rosenberg Self-Esteem Scale ......................... 56

## Sex and Eating Disorder Susceptibility ............ 60

## Age and Eating Disorder Susceptibility ............ 61

## Self Esteem and Eating Disorder Susceptibility .......... 62

# V. CONCLUSION ................................ 63

REFERENCES ........................................ 65

APPENDIX

- A. EATING DISORDER SCREEN FOR PRIMARY CARE ............ 71
- B. MEDIA CONSUMPTION QUESTIONNAIRE .................. 73
- C. CONTOUR DRAWING RATING SCALE ..................... 78
- D. NIH DIET HISTORY QUESTIONNAIRE III (DHQ III) .......... 80
- E. EATING ATTITUDES TEST-26 (EAT-26) ...................... 91
F. PERMISSION TO REPRODUCE EAT26 .......................................................... 93
G. ROSENBURG SELF-ESTEEM SCALE .................................................... 95
H. IRB APPROVAL ................................................................................... 98
LIST OF TABLES

Table 1.1  Lifetime Treatment of Eating Disorders Among United States Adults
Data from National Comorbidity Survey Replication ........................................... 4

Table 2.2  Estimated age of onset and persistence of DSM-IV eating disorders
and related entities ........................................................................................................ 8

Table 2.3  Rates of Lifetime Disorder-Specific Mental Health Service Use
Among Adolescents with a Diagnosis and Statistical Manual Mental
Disorder by Sex and Age Group .............................................................................. 12

Table 2.4  Lifetime and 12-month prevalence estimates of DSM-IV eating
disorders and related behavior ................................................................................. 15

Table 2.5  Gender Differences in Prevalence and Overlap of Excessive,
Compulsive, and Compensatory Aspects of Unhealthy Exercise ....................... 17

Table 4.1  Descriptive Results for Participants ......................................................... 34

Table 4.2  Eating Disorder Screen for Primary Care (ESP) Responses ................. 39

Table 4.3  The Probability of an Eating Disorder based on the number of
Abnormal Responses on the ESP ............................................................................ 39

Table 4.4  Age of Onset Reported ............................................................................. 41

Table 4.5  Media Consumption Questionnaire Responses ..................................... 43

Table 4.6  Contour Drawing Rating Scale Descriptive Statistics ............................ 46

Table 4.7  Body Mass Index (BMI) Categories of Participants ............................... 46

Table 4.8  Variable correlation coefficients ............................................................... 47

Table 4.9  Diet History Questionnaire (DHQ) III Target Calories vs Eaten
Calories .................................................................................................................... 49

Table 4.10 EAT – 26 Behavioral Questions Scoring ................................................. 53

Table 4.11 Rosenberg Self-Esteem Scale Responses ................................................. 58
Table A.1  Eating Disorder Screen for Primary Care.........................................................72
Table B.1  Media Consumption Questionnaire.................................................................74
Table C.1  Contour Drawing Rating Scale........................................................................79
Table D.1  NIH Diet History Questionnaire III (DHQ III) ..................................................81
Table E.1  Eating Attitudes Test – 26 (EAT-26) .................................................................92
Table F.1  Permission to Reproduce EAT-26.......................................................................94
Table G.1  Rosenberg Self-Esteem Scale............................................................................96
Table H.1  IRB Approval .....................................................................................................99
LIST OF FIGURES

Figure 2.1  The Percentage of American Adults that Struggle from Eating Disorders.................................................................6

Figure 2.2  Data from National Comorbidity Survey Adolescent Supplement (NCS-A) .................................................................8

Figure 4.1  Eating Attitudes Test – 26 (EAT – 26) Age Frequency .................................54

Figure 4.2  EAT – 26 Sex Frequency ........................................................................54

Figure 4.3  EAT – 26 BMI..................................................................................55

Figure 4.4  EAT – 26 Test Item Questions 1-25 Scores ..............................................56

Figure 4.5  Rosenberg Self-Esteem Scale Scores .....................................................59

Figure 4.6  Sex and Eating Disorder Susceptibility .................................................61
CHAPTER I
INTRODUCTION

In the United States, approximately thirty million people of all ages and genders suffer from an eating disorder (Hudson, Hiripi, Pope, & Kessler, 2007). Eating disorders affect all races and ethnic groups (Marques et al., 2011). Lifetime prevalence estimates from the National Comorbidity Survey Replication (NCS-R) are 0.6%, 1.0%, and 2.8% respectively for anorexia nervosa, bulimia nervosa, and binge-eating disorder among United States adults (Hudson et al. 2007). The median age of onset is 21 years-old for binge eating disorder and 18 years-old for anorexia nervosa and bulimia nervosa based on diagnostic interview data from the NCS-R (Hudson et al., 2007). NCS-R diagnostic interview data also indicated that a total of 33.8%, 43.2%, and 43.6% of United States adults 18 and older with Anorexia nervosa, Bulimia nervosa, and Binge eating disorder, respectively, sought treatment specifically for their eating disorder (Table 1.1, National Institute of Mental Health [NIMH], 2017). Eating disorder prevalence estimates are increased among college students, ranging from 8-17% (Eisenberg, Nicklett, Roeder, & Kirz, 2011). Eating disorders have the highest mortality rate of all mental illnesses (Smink, van Hoeken, & Hoek, 2012).

Eating disorders are medical illnesses caused by severe disturbances to an individual’s eating behavior (NIMH, 2016). These illnesses manifest as Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder, eating disorder not otherwise
specified, restrictive food intake disorder, other specified feeding or eating disorder, unspecified feeding or eating disorder, pica, and rumination disorder according to the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorder (DSM-5) (2013). Binge eating disorder is the most common eating disorder affecting 3.5% of women and 2% of men (Hudson et al., 2007).

Genetics, environmental factors, and personality traits predispose individuals to developing an eating disorder (National Association of Anorexia Nervosa and Associated Disorders [ANAD], 2018). Biological, cultural, and psychological factors should be considered when diagnosing and treating individuals that struggle with eating disorders. Treatment can be provided to address each aspect encompassed in disordered eating by establishing a treatment team with members of multiple relevant disciplines to address and assist in stages of change with abnormal eating behavior cycles and aid in the prevention of relapse.

The role and implications of physical activity behaviors, body image and body dysmorphia, sexual abuse and trauma, and common complications are discussed as they are important to consider when diagnosing and treating individuals with eating disorders. These underlying factors need to be addressed in order to implement a holistic and effective approach that considers the complexities of disordered eating patterns. Individuals with eating disorders can develop problematic physical activity behaviors and patterns which can perpetuate extreme weight loss and increase risk for injury (Brehm & Steffen, 1998; Lipsey, Barton, Hulley, & Hill, 2006; Meyer, Taranis, Goodwin & Haycraft, 2011; Vartanian, Wharton, & Green, 2012). Being aware of these behaviors is especially important in vulnerable population, such as athletes (Holland, Brown, & Keel,
Individuals with eating disorders can experience body dysmorphia and be obsessive about their physical appearance and this can manifest into compensatory behaviors to achieve unrealistic idealization (McConville, 2017). Thirty percent of patients with eating disorders had a history of sexual abuse which must be addressed to achieve meaningful and lasting recovery (Connors & Worse, 1993). Eating disorders can significantly impact emotional and physical health, productivity, and relationships which can cause serious ailments that are necessary to address before they fester to the point of permanent damage to the body or diminish quality of life (National Eating Disorder Association [NEDA], 2018b). Treatment is more effective when it considers the causes and symptoms that coexist with eating disorders.

This study examined to what extent biological, cultural, and psychological factors predispose young adults to eating disorders. The purpose of this study was to determine if there was a significant difference for predispositions between younger and older and male and female participants. The objective was to compare predisposing factors to determine influence on eating behaviors, body image, and physical activity. This study also explored a multidisciplinary approach for diagnosing and treating eating disordered individuals. Unique aspects of the study include multifaceted factors such as family history, sex, media exposure, and psychological manifestations that were examined to consider and explore the wide variety of components which predispose individuals to disordered eating. In addition, it compared the prevalence of eating disorders between younger and older, and male and female participants.
Table 1.1  Lifetime Treatment of Eating Disorders Among United States Adults Data from National Comorbidity Survey Replication

<table>
<thead>
<tr>
<th></th>
<th>Anorexia Nervosa (%)</th>
<th>Bulimia Nervosa (%)</th>
<th>Binge-Eating Disorder (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>33.8</td>
<td>43.2</td>
<td>43.6</td>
</tr>
<tr>
<td>Female</td>
<td>29.8</td>
<td>47.0</td>
<td>50.8</td>
</tr>
<tr>
<td>Male</td>
<td>50.2</td>
<td>29.1</td>
<td>28.9</td>
</tr>
</tbody>
</table>

CHAPTER II
LITERATURE REVIEW

National Prevalence of Eating Disorders

Thirty million people have anorexia nervosa, bulimia nervosa, and related eating disorders in the United States (National Association of Anorexia Nervosa and Associated Disorders, 2017). The percentage of American adults that struggle from anorexia nervosa is 0.9%, while the percentage of the adult population that struggle with bulimia nervosa and binge eating disorder is 1.5% and 2.8% respectively (Figure 2.1, Hudson et al., 2007). The overall lifetime prevalence of eating disorder among United States adolescents is 2.7% (Figure 2.2, NIMH, 2016). Anorexia nervosa has the highest mortality rate of all mental illnesses (Fichter & Quadflieg, 2016). The weighted annual mortality for AN was 5.10 deaths per 1000 persons with 1.3 of these deaths resulting from suicide (Arcelus, Mitchell, Wales, & Nielson, 2011). Eating disorders, although relatively rare among the general population, pose a public health concern based on their frequent association with other psychiatric conditions and role impairment, and are frequently under-treated (Le Grange, Swanson, Crow, & Merikangas, 2012).

Eating disorders can be effectively treated. However, many individuals with eating disorders do not receive any treatment, and only about a third of individuals with eating disorders receive some treatment. (Hudson et al., 2007). Based on a survey taken of 109 eating disorder specialists in the U.S., approximately ninety-seven percent believe
their patients with anorexia nervosa are put in life threatening situations because of the refusal of health insurance companies to cover costs of treatment (Eating Disorders Coalition, 2016). This insurance dilemma accentuates and compounds the number of people who ultimately do not receive necessary treatment that is indicated by these health concerns.

Figure 2.1  The Percentage of American Adults that Struggle from Eating Disorders

Anorexia Nervosa: 0.9%  Bulimia Nervosa: 1.5%  Binge Eating Disorder: 2.8%
Source: Hudson et al., 2007.
Genetics, Family History, and Age of Onset

Recent studies suggest genetics may influence an individual's susceptibility to psychological disorders characterized by abnormal or disturbed eating habits including anorexia nervosa, bulimia nervosa, and binge eating disorders (Berrettini, 2004). Berrettini (2004) conducted a study that found a seven to twelve-fold increase in the prevalence of anorexia nervosa and bulimia nervosa in relatives, supporting familial transmission of both disorders. The same study reported binge eating, self-induced vomiting, and dietary restraints were roughly 46 to 72 percent heritable (Berrettini, 2004). There was increased heritability in post-pubertal relative to pre-pubertal twins who were the same age in a follow up study (Berrettini, 2004). These findings may reflect an activation of etiological genes during puberty (Berrettini, 2004).

Zerwas and Bulik (2011) conducted genetic research over several decades that examined studies on family, twin, and adoption in relation to disordered eating. The authors were able to estimate a degree to which shared genes influences eating disorders by comparing eating disorders rates between identical and non-identical twins (Zerwas & Bulik, 2011). In a study conducted with a US-representative sample of Minnesota twins, Klump et al. (2009) revealed that 50 percent of the variability of individual differences in eating disorders can be attributed to genes. With that said, genes contribute zero percent risk until puberty, indicating that a potential vulnerability towards eating disorders is only “activated” when individuals reach puberty (Klump et al., 2009). The average age of onset for eating disorders is during adolescence and young adulthood (Table 2.2, Families Empowered and Supporting Treatment of Eating Disorders, 2009; Hudson et al., 2007).
Table 2.2  Estimated age of onset and persistence of DSM-IV eating disorders and related entities

<table>
<thead>
<tr>
<th></th>
<th>Anorexia Nervosa</th>
<th>Bulimia Nervosa</th>
<th>Binge Eating Disorder</th>
<th>Subthreshold Binge Eating Disorder</th>
<th>Any Binge Eating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age of onset</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (se)</td>
<td>18.9 (0.8)</td>
<td>19.7 (1.3)</td>
<td>25.4 (1.2)</td>
<td>22.7 (1.9)</td>
<td>22.4 (1.1)</td>
</tr>
<tr>
<td>Median (IQR)</td>
<td>18 (16.0–22.0)</td>
<td>18.0 (14.0–22.0)</td>
<td>21.0 (17.0–32.0)</td>
<td>20.0* (17.0–27.0)</td>
<td>20.0* (16.0–27.0)</td>
</tr>
<tr>
<td><strong>Years with episode</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (se)</td>
<td>1.7 (0.2)</td>
<td>8.3* (1.6)</td>
<td>8.1* (1.1)</td>
<td>7.2* (2.0)</td>
<td>8.7* (0.7)</td>
</tr>
<tr>
<td>Median (IQR)</td>
<td>1.0 (1.0–13.0)</td>
<td>5.0* (2.0–13.0)</td>
<td>4.0* (1.0–10.0)</td>
<td>2.0* (1.0–10.0)</td>
<td>3.0* (1.0–13.0)</td>
</tr>
<tr>
<td><strong>12-month persistence, % (se)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (se)</td>
<td>0.0 (-)</td>
<td>30.6* (7.2)</td>
<td>44.2* (6.0)</td>
<td>47.2* (10.0)</td>
<td>46.9* (4.1)</td>
</tr>
<tr>
<td>Median (IQR)</td>
<td></td>
<td>15.0 (10.0–24.0)</td>
<td>10.0 (6.0–20.0)</td>
<td>15.0 (10.0–20.0)</td>
<td>15.0 (10.0–20.0)</td>
</tr>
<tr>
<td><strong>(n)</strong></td>
<td>(23)</td>
<td>(52)</td>
<td>(115)</td>
<td>(46)</td>
<td>(192)</td>
</tr>
</tbody>
</table>

Abbreviations: se, standard error; IQR, interquartile range.
*Significantly different from anorexia nervosa based on a .05 level, two-sided test.
Source: Hudson et al., 2007.

Figure 2.2  Data from National Comorbidity Survey Adolescent Supplement (NCS-A)
Media Exposure

There is a misconception that eating disorders are solely a result of social and media factors that surround our lives today. However, cultural factors, such as the media, are not the strongest reasons for the development of eating disorders. Harrison and Cantor (1997) examined the relationship between media consumption and eating disorders. Changes in the sociocultural set of risk factors may have been especially important in affecting the increase in the prevalence of eating disorders (Harrison & Cantor, 1997).

Garfinkel and Garner (1982), two pioneers in the study of disordered eating, described this role: “The media have capitalized upon and promoted this image (of thinness) and through popular programming have portrayed the successful and beautiful protagonists as thin. Thinness has thus become associated with self-control and success” (p. 145). Historical trends, content analyses, and effects studies suggest that media trends may have a significant influence in supporting the idealization of thinness and, thus, to the development of eating disorders in media consumers (Garfinkel & Garner, 1982).

Historical trends reveal the highest reported prevalence of disordered eating habits during the 1920s and 1980s (Boskind-White & White, 1983). During these two periods of time, feminine beauty ideals were the thinnest in United States history (Boskind-White & White, 1983). According to Mazur (1986), who tracked United States trends in feminine beauty through the 20th century and matched those trends to female disorders prevailing during the same periods, a sizable minority of women have over-adapted to each beauty trend, accounting for the prevalence of disorders such as anorexia nervosa and bulimia nervosa when the slim female form was in fashion.
**Psychological Manifestations**

Eating disorders have a significant psychological component that contributes to disturbances in eating behavior and weight regulation. Psychological factors are conducive to behaviors expressed by individuals with eating disorders (NIMH, 2014). Therefore, psychological manifestations play a significant role in disordered eating patterns and are important to consider. Psychological manifestations range widely and can be displayed as obsessive behavior, low self-esteem, or many health conditions such as anxiety and depression.

Anorexia nervosa is associated with distorted body image and obsessive behavior with eating, food, and weight (NIMH, 2014). These symptoms accentuate the practice of severe food restriction, the intense fear of gaining weight and typically results in an extremely low body weight (NIMH, 2014). According to NEDA, psychological predispositions are related to low self-esteem, feelings of inadequacy or lack of control in life, depression, anxiety, anger, stress or loneliness.

Bulimia nervosa is characterized by consuming an unusually large quantity of food followed by removing the food consumed by purging, abusing laxatives, or extreme exercise (NIMH, 2014). Individuals with bulimia are often impulsive and may have other preexisting mental disorders (American Psychological Association [APA], 2011).

Binge eating disorder is similar to bulimia nervosa except binge-eaters do not purge the unusually large amount of food they consume (NIMH, 2014). Higher rates of other pre-existing or current mental disorders including depression, anxiety disorders, and substance abuse is seen in those who struggle with eating disorders when compared with other people (APA, 2011).
Once an individual begins engaging in abnormal eating behaviors, an eating disorder can evolve (APA, 2011). Typically, after initially practicing an abnormal eating behavior, that behavior is repeated and the problem can perpetuate itself (APA, 2011). Bingeing and purging can become a vicious cycle done in association with getting rid of excess calories and psychological pain and then escaping problems using food in everyday life (APA, 2011).

**Sex**

It is often assumed that women are more susceptible to eating disorders. However, studies show that eating disorders in men are underdiagnosed, undertreated, and misunderstood (Strother, Lemberg, Stanford, & Turberville, 2012). Hudson et al. (2007) reported that males represent 25% of anorexia nervosa and bulimia nervosa cases. The stereotype and stigma surrounding eating disorders as a “women’s disorder” results in men being significantly underdiagnosed and undertreated (Table 2.3, Strother et al., 2012). Differences exist in the predisposing, precipitating, and perpetuating factors for eating disorders in men and women (Strother et al., 2012). Awareness is critical to promote environments in which men are able to talk about food and body issues and recognize issues, as eating disorders are primarily believed to be a women’s problem (Strother et al., 2012). Research is needed to encourage the development of more effective and conclusive diagnostic criteria, assessment tools, and treatment interventions (Strother et al., 2012).
Table 2.3  Rates of Lifetime Disorder-Specific Mental Health Service Use Among Adolescents with a Diagnosis and Statistical Manual Mental Disorder by Sex and Age Group

<table>
<thead>
<tr>
<th>DSM – IV Disorder</th>
<th>Cases (n)</th>
<th>Total % (SE)</th>
<th>Female % (SE)</th>
<th>Male % (SE)</th>
<th>13 – 14 % (SE)</th>
<th>15 – 16 % (SE)</th>
<th>17-18 % (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating Disorders</td>
<td>176</td>
<td>12.8 (3.7)</td>
<td>17.0 (5.4)</td>
<td>1.8 (1.3)</td>
<td>4.7 (2.9)</td>
<td>11.7 (4.0)</td>
<td>30.4 (9.5)</td>
</tr>
</tbody>
</table>

SE = Standard Error
Source: Merikangas et al., 2011.

Race

Few studies have examined the role of race in the prevalence of eating disorders. One study revealed the prevalence for anorexia nervosa and binge eating disorder were similar in Latinos, Asians, African Americans, and non-Latino Whites (Marquez et al., 2011). However, bulimia nervosa was less prevalent in non-Latino Whites than Latinos and African Americans (Marquez et al., 2011). These findings suggest a need for additional research, policy intervention, and clinician training to achieve and deliver equitable eating disorder care across all ethnic groups in the United States (Marquez et al., 2011).

Treatment Approaches

Eating disorders, including anorexia nervosa, bulimia nervosa, and binge eating are medical illnesses that are a result of a wide variety of factors including biological, cultural, and psychological components and predispositions. These multifaceted factors
should be considered when diagnosing and treating individuals that struggle with eating disorders. A broad approach is necessary during treatment to appropriately consider relevant and defining attributes of disordered eating. Treatment can be provided to address each aspect encompassed in disordered eating by developing a treatment team with members of multiple relevant disciplines to address and assist in stages of change with abnormal eating behavior cycles and aid in the prevention of relapse (Joy, Wilson & Varechok, 2003).

**Anorexia Nervosa, Bulimia Nervosa, and Binge Eating Disorder Diagnostic Criteria**

Anorexia nervosa is associated with a significantly low body weight as a result of not consuming enough calories (ANAD, 2018). An intense fear of gaining weight commonly exist with anorexia nervosa (ANAD, 2018). Persistent behaviors lead to low weight and interfere with weight gain (ANAD, 2018). Individuals afflicted with anorexia nervosa often have a distorted perception of body image and are not able to recognize how underweight they are (ANAD, 2018).

Bulimia nervosa is characterized by recurrent binge eating episodes (ANAD, 2018). There is often a sense of lack of control overeating during an episode that leads to eating an abnormally large portion of food than would normally be consumed by a person within a two-hour time period (ANAD, 2018). Fasting, self-induced vomiting or purging, excessive exercise or use of laxatives are common ways individuals with bulimia nervosa attempt to compensate for eating (ANAD, 2018). Concern for weight and body shape often exist in individuals with bulimia nervosa (ANAD, 2018).

Binge eating disorder is the most common eating disorder in the United States (Table 2.4, NEDA, 2018). It is similar to bulimia nervosa with recurrent episodes of
consuming large quantities of food, often quickly and with lack of control, to the point of discomfort (NEDA, 2016). Eating alone or hiding when eating, feelings of guilt and shame after eating, and eating large quantities of food when not physically hungry are symptoms of binge eating episodes (NEDA, 2016). Binge eating episodes that occur at least once a week for three months without compensatory behaviors such as purging are indicators for a binge eating disorder diagnosis (NEDA, 2016). There are also diagnostic criteria that differentiates full syndrome versus subthreshold anorexia nervosa, bulimia nervosa, and binge eating disorder (Crow, Stewart, Halmi, Mitchell, & Kraemer, 2002). The primary difference between full syndrome and subthreshold eating disorders are more severe eating disorder symptoms (Crow et al., 2002).
Table 2.4  Lifetime and 12-month prevalence estimates of DSM-IV eating disorders and related behavior

<table>
<thead>
<tr>
<th>Lifetime prevalence</th>
<th>Male % (se)</th>
<th>Female % (se)</th>
<th>Total % (se)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anorexia Nervosa</td>
<td>0.3* (0.1)</td>
<td>0.9* (0.3)</td>
<td>0.6 (0.2)</td>
</tr>
<tr>
<td>Bulimia Nervosa</td>
<td>0.5* (0.3)</td>
<td>1.5* (0.3)</td>
<td>1.0 (0.2)</td>
</tr>
<tr>
<td>Binge-eating Disorder</td>
<td>2.0* (0.5)</td>
<td>3.5* (0.5)</td>
<td>2.8 (0.4)</td>
</tr>
<tr>
<td>Subthreshold Binge-eating</td>
<td>1.9* (0.5)</td>
<td>0.6* (0.1)</td>
<td>1.2 (0.2)</td>
</tr>
<tr>
<td>Any binge-eating behavior</td>
<td>4.0 (0.7)</td>
<td>4.9 (0.6)</td>
<td>4.5 (0.4)</td>
</tr>
</tbody>
</table>

II. Twelve-month prevalence

<table>
<thead>
<tr>
<th>II. Twelve-month prevalence</th>
<th>Male % (se) (n = 1220)</th>
<th>Female % (se) (n= 1760)</th>
<th>Total % (se) (n=2980)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulimia Nervosa</td>
<td>0.1* (0.1)</td>
<td>0.5* (0.2)</td>
<td>0.3 (0.1)</td>
</tr>
<tr>
<td>Binge-eating Disorder</td>
<td>0.8* (0.3)</td>
<td>1.6* (0.2)</td>
<td>1.2 (0.2)</td>
</tr>
<tr>
<td>Subthreshold binge-eating</td>
<td>0.8 (0.3)</td>
<td>0.4 (0.1)</td>
<td>0.6 (0.2)</td>
</tr>
<tr>
<td>Any binge-eating behavior</td>
<td>1.7 (0.4)</td>
<td>2.5 (0.3)</td>
<td>2.1 (0.2)</td>
</tr>
</tbody>
</table>

*Significant sex difference based on a .05 level, two-sided test.

1None of the respondents met criteria for 12 – month Anorexia Nervosa

2se = standard error

Source: Hudson et al., 2007.
Eating Disorders and Physical Activity

Physical activity is associated with a healthy lifestyle and is recognized for its many health benefits (Holland, Brown, & Keel, 2014). However, individuals with eating disorders often have a distorted body image and unrealistic body idealization that can lead to problematic physical activity behaviors and patterns (Table 2.5, Brehm & Steffen, 1998; Lipsey, Barton, Hulley, & Hill, 2006; Meyer, Taranis, Goodwin & Haycraft, 2011; Vartanian, Wharton, & Green, 2012). Problematic physical activity behaviors can become an unhealthy behavioral feature in individuals with eating disorders according to Davis et al. (1997) who reported that it occurs in approximately 80% and 55% of acute stage patients with anorexia nervosa and bulimia nervosa respectively. Thus, a comprehensive understanding of unhealthy physical activity behaviors is necessary with eating disorder assessment, intervention, and treatment (Holland, Brown, & Keel, 2014).

Exercise that is associated with disorder eating and eating disorder diagnoses is defined and described as a compensatory and compulsive behavior among individuals with eating disorders (Table 2.5, Holland et al., 2014). Compulsive and compensatory physical activity practices were found to be better predictors of disordered eating and eating disorder diagnoses rather than excessive physical activity patterns (Holland et al., 2014). According to Holland et al. (2014), being able to identify these defining attributes as unhealthy exercise behaviors may help improve recognition of eating disorders, especially in men. Monitoring of unhealthy physical activity patterns becomes especially important in high-risk individuals, such as with athletes that often have pressures to meet specific weight and fitness goals related to performance (Holland et al., 2014).
Table 2.5  Gender Differences in Prevalence and Overlap of Excessive, Compulsive, and Compensatory Aspects of Unhealthy Exercise

<table>
<thead>
<tr>
<th>Aspect of Unhealthy Exercise</th>
<th>Men</th>
<th>Women</th>
<th>$X^2$ (1)</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive</td>
<td>8.3</td>
<td>5.4</td>
<td>5.94</td>
<td>.01*</td>
</tr>
<tr>
<td>Compulsive</td>
<td>2.7</td>
<td>4.0</td>
<td>1.79</td>
<td>.11</td>
</tr>
<tr>
<td>Compensatory</td>
<td>4.4</td>
<td>10.4</td>
<td>18.50</td>
<td>&lt;.001***</td>
</tr>
<tr>
<td>Excessive &amp; Compulsive</td>
<td>1.0</td>
<td>1.0</td>
<td>0.02</td>
<td>.54</td>
</tr>
<tr>
<td>Excessive &amp; Compensatory</td>
<td>0.8</td>
<td>1.6</td>
<td>1.89</td>
<td>.12</td>
</tr>
<tr>
<td>Compulsive &amp; Compensatory</td>
<td>1.0</td>
<td>2.4</td>
<td>4.11</td>
<td>.03*</td>
</tr>
<tr>
<td>Excessive, Compulsive, Compensatory</td>
<td>0.5</td>
<td>0.6</td>
<td>0.08</td>
<td>.53</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overlap (%)</th>
<th>Men</th>
<th>Women</th>
<th>$X^2$ (1)</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive &amp; Compulsive</td>
<td>10.2</td>
<td>11.4</td>
<td>0.01</td>
<td>.57</td>
</tr>
<tr>
<td>Excessive &amp; Compensatory</td>
<td>7.1</td>
<td>11.8</td>
<td>0.73</td>
<td>.27</td>
</tr>
<tr>
<td>Compulsive &amp; Compensatory</td>
<td>16.7</td>
<td>20.4</td>
<td>0.37</td>
<td>.36</td>
</tr>
</tbody>
</table>
Table 2.5 (continued)

<table>
<thead>
<tr>
<th></th>
<th>Excessive, Compulsive, Compensatory</th>
<th>3.9</th>
<th>4.1</th>
<th>0.01</th>
<th>.58</th>
</tr>
</thead>
</table>

*P < 0.05, ***P < 0.001
Source: Holland, Brown, & Keel, 2014.

Body Image and/or Body Dysmorphia Disorder and Disordered Eating Patterns

Body dysmorphia disorder (BDD) is classified as a mental health condition that is associated with an altered body image perceived by the individual (McConville, 2017). The individual has a preoccupation about a perceived defect in their appearance (McConville, 2017). This preoccupation leads the individual to become significantly distressed with excessive concern for their appearance to the point where it interferes with their quality of life and leads to declined overall functioning (McConville, 2017). This condition can be misdiagnosed as anorexia nervosa or a different mental illness where similar symptoms are experienced (McConville, 2017).

BDD is often associated with low self-esteem and frequently leads to the individual identifying their value as a person based on their appearance (McConville, 2017). BDD is commonly considered to be a symptom of eating disorders. While there are similarities between characteristics of BDD and eating disorders, eating and weight are not usually affected in individuals that experience BDD (McConville, 2017). However, individuals with eating disorders can experience body dysmorphia and be obsessive about their physical appearance (McConville, 2017). This can result in individuals with eating disorders exhibiting an excessively negative body image or self-esteem (McConville, 2017).
Eating Disorders and Socioeconomic Status

The stereotype that eating disorders predominantly exist among middle class, Caucasian, young females has persisted over time (Bruch, 1973). However, recent research has explored eating disorders across demographic groups and has revealed that eating disorders are distributed equally across all levels of socioeconomic status (Mulders-Jones, Mitchison, Girosi, & Hay, 2017). Eating disorders affect middle-aged and older individuals, males, and individuals with a non-White ethnicity (Mulders-Jones et al., 2017). Therefore, it is necessary for healthcare workers to be trained to detect and diagnose eating disorders in diverse subgroups to minimize barriers to treatment services (Mulders-Jones et al., 2017).

Sexual Abuse and Eating Disorders

Connors and Worse (1993) revealed that 30% of patients with eating disorders had a history of sexual abuse. There is a significant relationship between trauma and disordered eating patterns that should be recognized (Brewerton, 2007). Brewerton (2007) noted that trauma was reported most commonly in bulimia nervosa than any other eating disorder. Brewerton (2007) also states that trauma was associated with greater comorbidity, specifically post-traumatic stress disorder (PTSD), in patients with eating disorders. Therefore, trauma and PTSD must be appropriately and adequately addressed to effectively facilitate full recovery from eating disorders and all associated comorbidity (Brewerton, 2007).

Strother et al. (2012) suggests that sexual abuse among men is underreported related to the disproportionate shame and stigmatization they experience compared to that of women. This results in an underreporting of sexual abuse among men and a fewer
number of males with a documented history of sexual abuse (Strother et al., 2012). This is important to consider because males who are victims of sexual abuse may develop issues surrounding sexual orientation and this may lead to a fear of maturity and/or sexuality (Morgan, 2008). Morgan (2008) suggests that this may result in victims resorting to asexual behaviors to avoid sexual issues entirely. It was also suggested that victims of sexual abuse with maturity fears can develop disordered eating patterns as a coping mechanism to avoid maturing sexually (Morgan, 2008). Lower testosterone and estrogen levels were observed with anorexia nervosa related to severe weight loss that creates changes in the body’s physiology (Morgan, 2008).

**Comorbid Psychiatric Disorders and Eating Disorders**

Individuals with eating disorders commonly have coexisting psychiatric disorders (Spindler & Milos, 2007). Spindler and Milos (2007) revealed that affective and anxiety-related disorders are related with increased fears and concerns surrounding weight and appearance. Spindler and Milos (2007) also found that anxiety disorders, substance-related disorders, and Cluster B personality disorders were associated with binge-eating and purging behaviors. Anxiety disorders were most significantly linked to the severity of eating disorder symptoms compared to affective or substance-related disorder (Spindler & Milos, 2007).

There is a significant association between distinct eating disorder symptoms and specific forms of psychiatric comorbidity (Spindler & Milos, 2007). Blinder, Cumella, and Sanathara (2006) analyzed a sample of 2,436 female inpatients with eating disorders and found that 94% had comorbid mood disorders, particularly depression. Anxiety disorders and substance-use disorders were observed in 56% and 22% of these patients
respectively (Blinder et al., 2006). Patients with bulimia nervosa were twice as likely to abuse and/or have a dependence on alcohol and three times as likely to abuse and/or have a dependence on multiple substances (Blinder et al., 2006). Patients with restrictive and binge-purge anorexia nervosa were twice as likely to have obsessive compulsive disorder (Blinder et al., 2006). Patients with binge-purge anorexia nervosa were twice as likely to have PTSD and schizophrenia and other psychoses while patients with restrictive anorexia nervosa were three times as likely to have schizophrenia and other psychoses (Blinder et al., 2006). This provides evidence for the importance of identifying and treating coexisting psychiatric disorders in patients with eating disorders in order to appropriately address symptoms and obtain lasting recovery (Blinder et al., 2006).

**Complications of Eating Disorders**

Eating disorders can significantly impact emotional and physical health, productivity, and relationships (NEDA, 2018b). If an individual does not consume enough calories, the body begins to break down its own tissues, especially muscles, for fuel (NEDA, 2018b). Purging and laxative abuse that is seen with Bulimia nervosa can deplete the body of electrolytes, which are important for proper functioning (NEDA, 2018b). Potassium is an important electrolyte that has a role in helping the heart beat and muscles contract. When binge eating is prolonged over time, it can cause the body to develop insulin resistance (NEDA, 2018b).

Prolonged food restriction can lead to gastroparesis, which is slowed digestion (NEDA, 2018b). This affects the ability of the stomach emptying which can cause pain, bloating, nausea, vomiting, bacterial infection, and constipation. Regularly vomiting can cause damage to the esophagus and can result in it rupturing (NEDA, 2018b). The brain
is also impacted if sufficient calories are not consumed (NEDA, 2018b). This can result in complications with concentrating and obsessive behavior with food (NEDA, 2018b).

Complications that are especially associated with anorexia nervosa and bulimia nervosa are reduced sex hormone levels, specifically estrogen and testosterone as a result of insufficient consumption of fat and calories (NEDA, 2018b). This can cause amenorrhea in women (NEDA, 2018b). It also impacts the bones and increases the risk for broken bones and fractures (NEDA, 2018b). Inadequate calories and fat can also result in dry skin and hair loss (NEDA, 2018b). These are only a few of the complications that can occur with prolonged disordered eating behaviors. Complications that can occur with binge eating disorder are obesity, increased risk for high cholesterol, high blood pressure, heart disease, and psychiatric illnesses, especially depression (Johns Hopkins Medicine, 2019).

**Rationale for Conducting Study**

Based on the information reviewed, it was concluded that additional information regarding biological, cultural, and psychological predispositions to eating disorders and continued research on the role of age and sex in predisposing college students to eating disorders would be useful. Therefore, the goals of this study were to measure biological, cultural, and psychological factors and determine the significance of age and sex as they may act as predisposing factors to eating disorders. The ESP was used to identify presence of family history to support heritability and genetic predisposition and age of onset to determine if disorder eating behaviors were pre or post puberty (Klump et al., 2009). This provided evidence to determine the role of biological factors in predisposing individuals to eating disorders. It was also used to determine the significance of age as a
predisposing factor to eating disorders. Cultural factors that predispose individuals to eating disorder were analyzed using the media consumption questionnaire. It was used to describe the role of media on body image perception and eating behaviors related to the amount of time spent on media. The CDRS examined distorted body image perception by comparing body mass index (BMI) to results indicated with the CDRS. The DHQ III was used to determine a restricted or excessive calorie intake by comparing the estimated daily calorie intake to the recommended intake based on BMI, age, and sex. The EAT-26 measured the level of concern about dieting, body weight, and the level of problematic eating behaviors present in participants (Garner et al., 1982). A total score was calculated for each participant to determine if there were disturbances in eating behavior. The Rosenberg Self-Esteem Scale measured participants self-worth and revealed if participants had low self-esteem, which is often present in individuals with eating disorders. The CDRS, DHQ III, EAT-26, and Rosenberg Self-Esteem Scale were collectively used to determine the role of psychological factors in predisposing individuals to eating disorders.
CHAPTER III
METHODOLOGY

Purpose of Study

The purpose of this study was to investigate major predispositions that contribute to the development of eating disorders in young adults and determine their relative significance among MSU students. Biological, cultural, and psychological factors were measured to determine how significantly each may predispose young adults to eating disorders. The significance of age and sex were measured to determine their relative significance as predisposing factors particularly among young adult college students in Mississippi and were compared to existing research.

Research Questions:

1. What is the role of sex on the prevalence of anorexia nervosa, bulimia nervosa, and binge eating disorders?

2. To what extent do biological (sex, family history, and age of onset), cultural (media), and psychological (lack of control in life, low self-esteem, restrictive or abnormal eating behavior) factors and predispositions contribute to eating disorders in young adults?

3. What is the role of age to the prevalence of anorexia nervosa, bulimia nervosa, and binge eating disorders?
Procedure

Detailed research protocol was developed under the guidance of committee members and previously published research. All involved personnel completed Institutional Review Board (IRB) training. The study was advertised on the MSU campus. The aim was to have a total of 155 students complete the study. With an estimated 20% dropout rate, the plan was to enroll approximately 120 students in the study.

Institutional Review Board Approval

Approval to conduct research and for advertising materials was obtained from IRB prior to starting the study through the MSU Regulatory Compliance Office, Mississippi State, Mississippi. Data collection was conducted on the MSU campus in Starkville, Mississippi.

Participants

The participants for this study were student from MSU. The aim was to have a total of approximately 120 participants and 30 participants with eating disorders. Students 18 years of age and older and currently enrolled at MSU were eligible to be included in the study. Participants were recruited during a presentation given at the beginning of their class, with an announcement posed on their student canvas account, and a flyer was advertised between January and May 2019. Students were given access to the web-based surveys through Canvas, which is the course management platform used by MSU. After completing all the surveys on Canvas, students were instructed to contact the researcher in order to receive a link to complete the DHQ III. Upon completion of the DHQ III,
participants were instructed to email the researcher in order to be documented to receive extra credit for their participation. Students that did not want to participate were given the option to complete an assignment for extra credit instead.

Research participants were required to complete the following:

a. Research participants were informed about the study protocol by email using a flyer and in person during a presentation.

b. Participants indicated their sex (male/female) and age (18 +).

c. Participant responses to the ESP (Appendix A) were documented to identify possible presence of eating disorder and family history of eating disorders.

d. Participants provided age of onset to identify pre or post puberty ED onset.

e. Participants completed the Media Consumption Questionnaire (Appendix B) to determine influences of media consumption on beliefs regarding appearance, dietary intake and physical activity level.

f. Participants used the CDRS (Appendix C) to measure body image perception.

g. The web based DHQ III (Appendix D) was completed by each participant to identify restrictive or disordered eating habits.

h. Participants completed the EAT-26 (Appendix E) to identify tendencies of anorexia nervosa, bulimia nervosa, and binge eating disorder.

i. Participants used the Rosenberg Self-Esteem Scale (Appendix G) to measure individual self-esteem.
Measures

Biological Measures

*Eating Disorder Screen for Primary Care (ESP)*

The ESP consisted of five questions (Cotton, Ball, & Robinson, 2003) (Appendix A). The ESP identifies the possible presence of an eating disorder and family history of eating disorders. A “no” response to question number one of the ESP is considered an abnormal response. A “yes” response to questions two through five is considered an abnormal response. Any abnormal response indicates further assessment is needed (Cotton et al., 2003).

*Age of Onset*

Participants were asked to document the age of eating disorder onset if they reported the presence of an eating disorder currently or in the past on the ESP (Appendix A). Responses were analyzed to determine if eating disorder onset was pre or post puberty.

Cultural Measures

*Media Consumption Questionnaire*

The media consumption questionnaire was developed for this study to measure how much time is spent on media, the effect media has on body image and perception, and how it influences eating behaviors and self-esteem. The questionnaire is made up of 10 questions that are scored using a five-point Likert scale (Appendix B). The effect of media consumption on eating behaviors and body image or ideals was measured as it relates to existing historical trends, content analyses, and effects studies that suggest that media trends may have a significant influence in supporting the idealization of thinness.
and, thus, to the development of eating disorders in media consumers (Garfinkel & Garner, 1982).

**Psychological Measures**

*Contour Drawing Rating Scale*

The CDRS is a body-image assessment tool consisting of 9 male and 9 female contour drawings (Thompson & Gray, 1995) (Appendix C). The drawings were designed with detailed features, are of precisely graduated sizes, and are easily split at the waist for accurate upper and lower body comparisons. Initial evidence of the scale's reliability and validity supports its use as a measure of body-size perception (Thompson & Gray, 1995). The rationale for the use of this scale relates to the presence of a distorted body image among individuals with eating disorders (NIMH, 2014).

*Diet History Questionnaire (DHQ) III*

The DHQ III consists of 135 food and beverage line items and 26 dietary supplement questions (Appendix D, NIH, 2018). Some line items for foods and beverages have additional embedded questions that allow for final assignment to items in the nutrient and food group database leading to 263 foods/beverages listed in the database (NIH, 2018). For example, a single line item asks frequency of intake and portion size of soda or soft drinks. Embedded underneath are questions regarding whether the soft drinks consumed are regular vs. diet or caffeinated vs. decaffeinated (NIH, 2018). Answers to these questions lead to assignment of one of four food codes in the database: diet soda with caffeine, diet soda without caffeine, regular soda with caffeine or regular soda without caffeine. This questionnaire yields a recommended or “target” calorie
consumption for each participant based on their age and sex (NIH, 2018). It also provides a typical calorie consumption for each participant based on their diet history responses. This served to determine and provided a basis for typical dietary patterns among participants. Individuals with eating disorders often alter their eating patterns and this can be reflected in either an under or overconsumption of food (NIMH, 2014).

Eating Attitudes Test – 26 (EAT-26)

The EAT-26 (Garner, Olmsted, Bohr, & Garfinkel, 1982) consists of 26 items organized into three subscales: (1) Dieting, (2) Bulimia and Food Preoccupation, and (3) Oral Control (Appendix E, Garner et al., 1982). It yields a “referral index” based on three criteria including: the total score based on the answers to the EAT-26 questions, answers to the behavioral questions related to eating symptoms and weight loss, and the individual’s BMI based on weight and height reported (EAT-26, 2017). Part A of the EAT-26 has participants indicate their birth date, sex, height, current weight, highest weight, lowest adult weight, and ideal weight. Part B of the EAT-26 are the test item questions 1-26. Questions 1 through 25 are scored where always = 3, usually = 2, often = 1, and sometimes, rarely and never = 0. Question 26 is scored where always, usually, and often = 0, sometimes = 1, rarely =2, and never = 3. Each question is scored individually to yield the total score. A high level of concern about dieting, body weight or problematic eating behavior is indicated if the cumulative score is at or above 20. A score of 20 or more on questions 1-26 indicates referral to a healthcare professional is needed (Garner et al., 1982). Part C is comprised of behavioral questions that are broken down into four categories: (A) Binge, (B) Vomit, (C) Laxatives, diuretics, and (D) Exercise. Additionally, respondents are asked to indicate whether they have lost 20 or more pounds
in this section (Garner et al., 1982). This section is scored based on how often the behavior is practiced. If the respondent indicates any of the responses that have a check mark, referral is recommended (Garner et al., 1982).

**Rosenberg Self-Esteem Scale**

The Rosenberg Self-Esteem Scale has 10 items that determine global self-worth by measuring both positive and negative feelings about the self (Rosenberg, 1965). The scale is believed to be uni-dimensional (Rosenberg, 1965). All items are answered using a 4-point Likert scale format ranging from strongly agree to strongly disagree where strongly agree = 3, agree = 2, disagree = 1, and strongly disagree = 0 for questions 1, 2, 4, 6, and 7. Questions 3, 5, 8, 9, and 10 are scored in reverse for directional consistency where strongly agree = 0, agree = 1, disagree = 2, and strongly disagree = 3. The total score from the scale ranges from 0 to 30. Scores below 15 indicate low self-esteem and scores between 15 and 25 indicate a normal self-esteem (Rosenberg, 1965).

**Data Collection**

Sex, age, and data collected from biological, cultural, and psychological measures were analyzed. The DHQ III integrated analysis software program was used to analyze the DHQ III (NIH, 2018). EAT-26 was analyzed using the scoring and interpretation document (Garner et al., 1982). Biological measures include the ESP (Cotton et al., 2003) and age onset. The ESP identifies the possible presence of an eating disorder and family history of eating disorders. Age of onset was documented and compared to existing data that suggest the vulnerability for eating disorders is only “activated” when individuals reach puberty (Klump et al., 2009). The Media Consumption Questionnaire was
developed for this study and was used to measure cultural and media influences in the development of eating disorders and their role in body image perception, body dissatisfaction, and drive for thinness. Psychological measures include the CDRS (Thompson & Gray, 1995), the DHQ III, the EAT-26, and the Rosenberg Self-Esteem Scale (Rosenberg, 1965). The DHQ III was considered a psychological measure because it was used to determine if participants had restrictive or excessive eating patterns and behaviors. These measures combined indicated if participants had a distorted body image perception, restrictive or excessive eating patterns and behaviors, the presence of an eating disorder, and their self-esteem respectively.

**Statistical Analysis**

The G*Power 3.1 power analysis tool was used to compute statistical power and sample size for each research question. The sample size computed for research questions 1 and 3 was 125 and for research question 2 it was 30. Significance levels were set at 0.05. The Statistical Package for Social Sciences software, version 25.0 (SPSS, Inc., Chicago, IL) was used to analyze data. Data collected on sex and age were compared to eating disorder susceptibility. Correlation coefficients were examined to investigate the relationship between and determine the significance of sex and age to eating disorder susceptibility. Survey and questionnaire data collected on biological, cultural, and psychological susceptibilities were compared. Coefficients were used to examine the extent of biological, cultural, and psychological susceptibilities in individuals that struggle with an eating disorder. Participants that completed all parts of the study were included in data analysis. Continuous data such as age, weight, and BMI are presented as means ± standard deviations (SD).
Expected Outcomes

It was expected that there would be significant differences in eating disorder prevalence between younger and older, and male and female participants. These expectations are based on the perception in literature, historically, that suggests eating disorders are more prevalent among younger females than older age groups and males (Mangweth-Matzek & Hoek, 2017; Sharan & Sunder, 2015). It was expected that results from the sample of MSU students would indicate a similar susceptibility to the nation prevalence and there would be a significant difference in eating disorder prevalence between younger and older age groups, and males and females.

Factors that predispose individuals to eating disorders were measured to support the notion that eating disorders stem from multifaceted constituents. Data collected serves as a basis for additional research in the area. Results also encourage the development of more effective, less stigmatized treatment resources that are targeted at all age groups and are intended for both males and females. It was expected that there would be significant biological, cultural, and psychological predispositions that contribute to eating disorders in young adults, indicating the necessity of a multidisciplinary approach in treating individuals that struggle with eating disorders.
CHAPTER IV
RESULTS AND DISCUSSION

This cross-sectional study was conducted with students on the MSU campus in Starkville, Mississippi to evaluate and observe the role of age and sex in predisposing participants to eating disorders. Additionally, the extent to which biological, cultural, and psychological factors predisposed participants to eating disorders was analyzed to form a basis for their role in disordered eating patterns and behaviors among students on a college campus. Results indicated significant differences (P ≤ 0.05) in outcomes between younger and older and male and female participants. Results also indicated there were significant biological, cultural, and psychological predispositions that contributed to eating disorders in college students. Demographic characteristics between men and women are presented in Table 4.1. The mean age of participants was 19.8 ± 1.6 years with a range of 18 to 27 years old. The mean ideal body weight stated by participants was 146.2 ± 29.4 pounds with a range of 100 to 230 pounds. The mean EAT-26 score was 10.9 ± 10.2 with a range of 1 to 67.
## Descriptive Results for Participants

Table 4.1  Descriptive Results for Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>n&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Mean ± standard deviation (range)</th>
<th>P value&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>29</td>
<td>20.6 ± 1.3 (18 – 24)</td>
<td>&lt;.001***</td>
</tr>
<tr>
<td>Women</td>
<td>74</td>
<td>19.5 ± 1.6 (18 – 27)</td>
<td></td>
</tr>
<tr>
<td><strong>Current weight (pounds)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>29</td>
<td>158.9 ± 33.9 (93 – 235)</td>
<td>.428</td>
</tr>
<tr>
<td>Women</td>
<td>74</td>
<td>158.1 ± 46.0 (98 – 373.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Body mass index (kg/m&lt;sup&gt;2&lt;/sup&gt;)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>29</td>
<td>25.7 ± 5.0 (18.1 – 44.3)</td>
<td>.053</td>
</tr>
<tr>
<td>Women</td>
<td>74</td>
<td>24.2 ± 5.6 (15.8 – 46.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Highest weight (pounds)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>27</td>
<td>170.4 ± 39.7 (105 – 246)</td>
<td>.407</td>
</tr>
<tr>
<td>Women, excluding pregnancy</td>
<td>74</td>
<td>167.9 ± 49.5 (98 – 395)</td>
<td></td>
</tr>
<tr>
<td><strong>Lowest adult weight (pounds)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>29</td>
<td>145.9 ± 29.8 (92 – 205)</td>
<td>.226</td>
</tr>
<tr>
<td>Women</td>
<td>72</td>
<td>141.8 ± 38.0 (90 – 300)</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Number of participants <br> <sup>b</sup> P value from t-test
Table 4.1 (continued)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n(^a)</th>
<th>Mean ± standard deviation (range)</th>
<th>P value(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your ideal body weight (pounds)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>102</td>
<td>146.2 ± 29.4 (100 – 230)</td>
<td>.039*</td>
</tr>
<tr>
<td>Women</td>
<td>28</td>
<td>155.4 ± 27.6 (110 – 200)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>73</td>
<td>143.1 ± 29.5 (100 – 230)</td>
<td></td>
</tr>
<tr>
<td>Energy (kcal)</td>
<td>66</td>
<td>1560 ± 926 (251 – 4507)</td>
<td>.840</td>
</tr>
<tr>
<td>Men</td>
<td>18</td>
<td>1679 ± 1070 (491 – 3804)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>48</td>
<td>1515 ± 874 (251 – 4507)</td>
<td></td>
</tr>
<tr>
<td>Eating Attitudes Test (EAT26 score)(^c)</td>
<td>103</td>
<td>10.9 ± 10.2 (1 – 67)</td>
<td>.057</td>
</tr>
<tr>
<td>Men</td>
<td>29</td>
<td>7.8 ± 6.8 (1 – 35)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>74</td>
<td>12.1 ± 11.1 (1 – 67)</td>
<td></td>
</tr>
<tr>
<td>Eating Disorder Screen for Primary Care (ESP score)(^d)</td>
<td>100</td>
<td>1.7 ± 1.4 (0 – 5)</td>
<td>.304</td>
</tr>
<tr>
<td>Men</td>
<td>28</td>
<td>1.4 ± 1.3 (0 – 5)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>72</td>
<td>1.7 ± 1.4 (0 – 5)</td>
<td></td>
</tr>
<tr>
<td>Rosenberg self-esteem score(^e)</td>
<td>103</td>
<td>16.4 ± 1.7 (12 – 21)</td>
<td>.214</td>
</tr>
<tr>
<td>Men</td>
<td>29</td>
<td>16.9 ± 1.7 (13 – 19)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>74</td>
<td>16.3 ± 1.7 (12 – 21)</td>
<td></td>
</tr>
<tr>
<td>What number best represents your current body image perception?(^f)</td>
<td>98</td>
<td>5.7 ± 1.8 (1 – 9)</td>
<td>.634</td>
</tr>
<tr>
<td>Men</td>
<td>28</td>
<td>5.9 ± 1.6 (1 – 9)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>70</td>
<td>5.6 ± 1.9 (1 – 9)</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.1 (continued)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n(^a)</th>
<th>Mean ± standard deviation (range)</th>
<th>P value(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you watch television shows?(^g)</td>
<td>101</td>
<td>3.3 ± 1.1 (1 – 5)</td>
<td>.620</td>
</tr>
<tr>
<td>Men</td>
<td>28</td>
<td>3.3 ± 1.0 (1 – 5)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>73</td>
<td>3.4 ± 1.1 (1 – 5)</td>
<td></td>
</tr>
<tr>
<td>How often do you watch television through streaming services (such as Netflix, Hulu, HBO, Go, etc.)?(^g)</td>
<td>101</td>
<td>3.6 ± 1.0 (1 – 5)</td>
<td>.943</td>
</tr>
<tr>
<td>Men</td>
<td>28</td>
<td>3.6 ± 1.0 (1 – 5)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>73</td>
<td>3.6 ± 1.1 (1 – 5)</td>
<td></td>
</tr>
<tr>
<td>How often do you use social media sites (Facebook, Instagram, Twitter, etc.)?(^g)</td>
<td>101</td>
<td>4.0 ± 0.9 (1 – 5)</td>
<td>.298</td>
</tr>
<tr>
<td>Men</td>
<td>28</td>
<td>4.1 ± 1.0 (1 – 5)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>73</td>
<td>4.0 ± 0.9 (1 – 5)</td>
<td></td>
</tr>
<tr>
<td>How often does media influence your body perception?(^g)</td>
<td>101</td>
<td>3.0 ± 1.2 (1 – 5)</td>
<td>.445</td>
</tr>
<tr>
<td>Men</td>
<td>28</td>
<td>2.9 ± 1.3 (1 – 5)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>73</td>
<td>3.0 ± 1.2 (1 – 5)</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.1 (continued)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n¹</th>
<th>Mean ± standard deviation (range)</th>
<th>P valueᵇ</th>
</tr>
</thead>
</table>
| To what extent does media influence your body perception (body ideals/standards)?²|h  
  Men                                                                     | 101  | 2.9 ± 1.2 (1.0 – 5.0)             | .114     |
|                                                                          | 28   | 2.6 ± 1.2 (1 – 5)                 |          |
|                                                                          | 73   | 3.0 ± 1.2 (1 – 5)                 |          |
| How often has media influenced your eating behaviors/patterns?³|h  
  Men                                                                     | 100  | 2.3 ± 1.2 (1 – 5)                 | .975     |
|                                                                          | 28   | 2.3 ± 1.2 (1 – 5)                 |          |
|                                                                          | 72   | 2.3 ± 1.2 (1 – 5)                 |          |
| To what extent does media influence your eating behaviors/patterns?³|h  
  Men                                                                     | 101  | 2.3 ± 1.3 (1 – 5)                 | .595     |
|                                                                          | 28   | 2.2 ± 1.1 (1 – 5)                 |          |
|                                                                          | 73   | 2.4 ± 1.3 (1 – 5)                 |          |

¹Number of participants (n) varies. Some participants did not respond to all items.
²P values determined differences between men and women using Mann-Whitney U test.
³A high level of concern for eating disorder behaviors is indicated if the cumulative score is at or above 20. A score of 20 or more on questions 1-26 indicates referral is needed (Garner et al., 1982). Any abnormal response to section c indicated referral is needed (Table 4.7).
⁴A “no” response to question number one of the ESP is considered an abnormal response. A “yes” response to questions two through five is considered an abnormal response. Any abnormal response indicates further assessment is needed (Cotton, Ball, & Robinson, 2003).
⁵The Rosenberg Self-Esteem Scale is scored on a four-point likert scale where Strongly agree = 3, Agree = 2, Disagree = 1, and Strongly Disagree = 0 for questions 1, 2, 4, 6, and 7. Questions 3, 5, 8, 9, and 10 are scored in reverse where Strongly Agree = 0, Agree =1, Disagree = 2, and Strongly Disagree = 3. Scores below 15 indicate low self-esteem. Scores between 15 and 25 indicate a normal self-esteem (Rosenberg, 1965).
⁶Graphic choices were 1 = very underweight to 9 = very obese.
⁷1 = never, 2 = rarely, 3 = occasionally, 4 = frequently, 5 = very frequently.
⁸1 = not at all, 2 = a little, 3 = a moderate amount, 4 = a lot, 5 = a great deal
*P < 0.05, **P < 0.001
Biological Measures

Eating Disorder Screen for Primary Care (ESP)

There were 100 participants that completed the ESP (Table 4.2). A “no” response to question number one of the ESP is considered an abnormal response (Cotton et al., 2003). A “yes” response to questions two through five is considered an abnormal response (Cotton et al., 2003). Any abnormal response indicates further assessment is needed (Cotton et al., 2003) (Table 4.3).

Thirteen participants indicated they have had members of their family suffer with an eating disorder. Fourteen participants identified as currently suffering with or having suffered in the past with an eating disorder. The results indicate a similar number of participants that have or have had an eating disorder and those that reported a family history of eating disorders (Table 4.2). This supports existing research that eating disorders have a significant biological component that predisposes individuals with a genetic susceptibility to developing an eating disorder (Klump et al., 2009). The majority of participants that reported having an eating disorder also had a high number of abnormal responses on the ESP (n = 11, 79%, Table 4.3). However, three participants who reported having an eating disorder had a low number of abnormal responses on the ESP. This supports that any abnormal response on the ESP indicates further assessment is needed.
Table 4.2  Eating Disorder Screen for Primary Care (ESP) Responses

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are you satisfied with your eating patterns?</td>
<td>54 (54)</td>
<td>46 (46)</td>
</tr>
<tr>
<td>2. Do you ever eat in secret?</td>
<td>26 (26)</td>
<td>74 (74)</td>
</tr>
<tr>
<td>3. Does your weight affect the way you feel about yourself?</td>
<td>66 (66)</td>
<td>34 (34)</td>
</tr>
<tr>
<td>4. Have any members of your family suffered with an eating disorder?</td>
<td>13 (13)</td>
<td>87 (87)</td>
</tr>
<tr>
<td>5. Do you currently suffer with or have you ever suffered in the past with an eating disorder?</td>
<td>14 (14)</td>
<td>86 (86)</td>
</tr>
</tbody>
</table>

Table 4.3  The Probability of an Eating Disorder based on the number of Abnormal Responses on the ESP

<table>
<thead>
<tr>
<th>Number of Abnormal Responses</th>
<th>Eating Disorder</th>
<th>Not Eating Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>3 or 4</td>
<td>8</td>
<td>17</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>0 or 1</td>
<td>1</td>
<td>50</td>
</tr>
</tbody>
</table>
Age of Onset

Participants were asked to identify the age at which they started experiencing eating disorder symptoms if they have ever suffered with an eating disorder either in the past or if they currently suffer with an eating disorder. Eighty-three participants responded that they had never experienced an onset of eating disorder symptoms. Sixteen participants reported they started experiencing eating disorder symptoms ranging from the age 12 to age 20 (Table 4.4). Table 4.4 outlines all the ages of eating disorder onset reported. The majority of participants reported an age of onset prior to puberty, before or at the age of 15 (n = 11), which is considered the age at which puberty occurs by the American Academy of Family Physicians (2017). This supports the findings of Klump et al. (2009) that suggested a potential vulnerability towards eating disorders being “activated” when individuals reach puberty.
Table 4.4  Age of Onset Reported

<table>
<thead>
<tr>
<th>Age Reported</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>3</td>
<td>3%</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>14</td>
<td>4</td>
<td>4%</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>19</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Never</td>
<td>83</td>
<td>83.8%</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>100%</td>
</tr>
</tbody>
</table>
Cultural Measure

Media Consumption Questionnaire

There were 98 participants that completed the media consumption questionnaire. Questions were designed to measure the type of media consumption, the amount of time spent on different media outlets, and the impact that media has on body image, body ideal and eating patterns and behaviors (Table 4.5). It measured how often participants watched television shows and used social media to measure its influence on body image perception. This was used to determine if there was a positive correlation between the amount of media consumed and how often media influenced body perception. In other words, if as media consumption increased was there also an increase in how often it influenced body perception. Questions also determined the number of hours participants watched television or read online news. This was used to determine how much media was consumed by participants on a typical day. Additionally, the Media Consumption Questionnaire measured how often and the extent to which media influenced participants body image perception and eating behaviors and patterns. This was used to determine if media influenced participants to have unhealthy body ideals and standards and in turn led them to compensate by changing eating behaviors and patterns to obtain an idealized body type.

The results indicated that media influenced a portion of participants’ body image, body ideals, and eating patterns and behaviors. This relates to existing historical trends, content analyses, and effects studies which suggest that media trends may have an influence in supporting the idealization of thinness and, thus, to the development of eating disorders in media consumers (Garfinkel & Garner, 1982). This also supports
findings of Mazur (1986) who tracked United States trends in feminine beauty through
the 20th century and matched those trends to female eating disorders prevailing during
the same periods. Mazur (1986) reported that a sizable minority of women have over-
adapted to each beauty trend, which has a role in the prevalence of disorders such as
anorexia nervosa and bulimia nervosa when the slim female form was in fashion.

Table 4.5  Media Consumption Questionnaire Responses

<table>
<thead>
<tr>
<th>Questions</th>
<th>Never</th>
<th>Rarely (1-4 hours per week)</th>
<th>Occasionally (5-9 hours per week)</th>
<th>Frequently (10-14 hours per week)</th>
<th>Very Frequently (15-20 or more hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you watch television shows?</td>
<td>n = 4</td>
<td>n = 19</td>
<td>n = 33</td>
<td>n = 26</td>
<td>n = 16</td>
</tr>
<tr>
<td>How often do you watch cable or satellite television?</td>
<td>n = 26</td>
<td>n = 48</td>
<td>n = 14</td>
<td>n = 6</td>
<td>n = 4</td>
</tr>
<tr>
<td>How often do you watch television through streaming services (Netflix, Hulu, HBO Go, etc)</td>
<td>n = 2</td>
<td>n = 13</td>
<td>n = 29</td>
<td>n = 32</td>
<td>n = 22</td>
</tr>
<tr>
<td>How often do you use social media sites</td>
<td>n = 2</td>
<td>n = 6</td>
<td>n = 11</td>
<td>n = 50</td>
<td>n = 29</td>
</tr>
</tbody>
</table>
Table 4.5 (continued)

<table>
<thead>
<tr>
<th>How often does media influence your body perception?</th>
<th>0 - 1</th>
<th>1 - 2</th>
<th>2 - 3</th>
<th>3 - 4</th>
<th>5 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>n = 13</td>
</tr>
<tr>
<td>Questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>On a typical day, how many hours do you spend watching television?</th>
<th>n = 24</th>
<th>n = 30</th>
<th>n = 29</th>
<th>n = 10</th>
<th>n = 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 66</td>
<td>n = 23</td>
<td>n = 8</td>
<td>n = 1</td>
<td>n = 0</td>
<td></td>
</tr>
<tr>
<td>Questions</td>
<td>Not at all</td>
<td>A little</td>
<td>A moderate amount</td>
<td>A lot</td>
<td>A great deal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>To what extent does media influence your body perception (body ideals/standards)?</th>
<th>n = 15</th>
<th>n = 25</th>
<th>n = 29</th>
<th>n = 16</th>
<th>n = 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 33</td>
<td>n = 28</td>
<td>n = 21</td>
<td>n = 11</td>
<td>n = 5</td>
<td></td>
</tr>
<tr>
<td>How often has media influenced your eating behaviors/patterns?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.5 (continued)

<table>
<thead>
<tr>
<th>To what extent does media influence your eating patterns/behaviors?</th>
<th>n = 35</th>
<th>n = 23</th>
<th>n = 20</th>
<th>n = 14</th>
<th>n = 6</th>
</tr>
</thead>
</table>

**Psychological Measures**

**Contour Drawing Rating Scale**

There were 98 participants that completed the CDRS (Table 4.6). The CDRS was used to measure participants self-perception of their body size based on 9 male and 9 female contour drawings (Thompson & Gray, 1995). Participants were asked to select the number associated with the contour drawing they thought best represented their current body image perception. Image five is portrayed in the middle of the contour drawings (Appendix B). The majority of participants (26.5%) reported a 7 followed by 20.4% and 17.3% of participants that reported a 6 and 5, respectively. Results of the contour drawing rating scale were compared with participants’ BMI values (Table 4.7) to measure a discrepancy between the BMI number in each category with the value reported on the CDRS (Table 4.8). The majority of participants (52.9%) had a normal BMI of 18.5 to 24.9 kg/m² while 38.4% were overweight or obese and 7.7% were underweight (Table 4.7).
Table 4.6  Contour Drawing Rating Scale Descriptive Statistics

<table>
<thead>
<tr>
<th>Contour Drawing Rating Scale Number</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>98</td>
</tr>
</tbody>
</table>

Table 4.7  Body Mass Index (BMI) Categories of Participants

<table>
<thead>
<tr>
<th>Category</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight (less than 18.5 kg/m²)</td>
<td>8 (7.7)</td>
</tr>
<tr>
<td>Normal weight (18.5 – 24.9 kg/m²)</td>
<td>55 (52.9)</td>
</tr>
<tr>
<td>Overweight (25.0 – 29.9 kg/m²)</td>
<td>30 (28.8)</td>
</tr>
<tr>
<td>Obese (30.0 kg/m² and higher)</td>
<td>10 (9.6)</td>
</tr>
<tr>
<td>No response</td>
<td>1 (1.0)</td>
</tr>
</tbody>
</table>
Table 4.8 Variable correlation coefficients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Body mass index</th>
<th>CDRS&lt;sup&gt;a&lt;/sup&gt;</th>
<th>EAT-26&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Rosenberg self-esteem scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mass index</td>
<td></td>
<td>.190</td>
<td>.064</td>
<td>.036</td>
</tr>
<tr>
<td>CDRS</td>
<td></td>
<td>-.093</td>
<td>.004</td>
<td></td>
</tr>
<tr>
<td>ESP&lt;sup&gt;c&lt;/sup&gt; score</td>
<td>-.115</td>
<td>-.080</td>
<td>.053</td>
<td>.013</td>
</tr>
<tr>
<td>Energy (kcal)</td>
<td>.086</td>
<td>-.257*</td>
<td>-.131</td>
<td>-.243*</td>
</tr>
<tr>
<td>To what extent does media influence your eating patterns?&lt;sup&gt;d&lt;/sup&gt;</td>
<td>-.190</td>
<td>.021</td>
<td>.261**</td>
<td>.025</td>
</tr>
</tbody>
</table>

<sup>a</sup>Contour Drawing Rating Scale  
<sup>b</sup>Eating Attitudes Test-26  
<sup>c</sup>Eating Disorder Screen for Primary Care  
Responses: 1 = not at all, 2 = a little, 3 = a moderate amount, 4 = a lot, 5 = a great deal  
*P < 0.05, **P < 0.01

Diet History Questionnaire (DHQ) III

A total of 68 participants completed the DHQ III (Table 4.9). The DHQ III was used to compare sex and age parameters to the average daily calories consumed. The DHQ III provided a recommended daily calorie consumption for each participant that completed the questionnaire based on their sex and age (NIH, 2018). This recommendation is called the target calorie consumption and is compared to their estimated daily calorie consumption, which is referred to as eaten calories, based on an extensive past month dietary recall that is broken down into serving sizes for each food group (NIH, 2018).

Each sex had a different recommended target calorie range based on their age group. For example, 18-year-old males target calorie range was 2400 calories per day whereas 18-year-old females target calorie range was 1800 calories. There were discrepancies between target calories and eaten calories for some participants (Table 4.9). This served to determine and provide a basis for typical dietary patterns among participants.
Individuals with eating disorders often alter their eating patterns and this can be reflected in either an under or overconsumption of food (NIMH, 2014). A symptom exhibited by individuals with anorexia nervosa is the practice of severe food restriction (NIMH, 2014). A reliable way to determine if an individual is severely restricting food intake is by identifying a severe restriction of calories. Eating behaviors seen with individuals with bulimia nervosa and binge eating disorder can manifest into the consumption of large quantities of food related to a lack of control they experience (ANAD, 2018). Overconsumption of food is reflected in an increased calorie consumption. The CDRS and energy intake had a significant negative relationship (P < 0.05, Table 4.8). As respondents perceived themselves as having a larger body size, they reported consuming fewer calories.
<table>
<thead>
<tr>
<th>Target Calories</th>
<th>Age</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>M: 2400</td>
<td></td>
<td>F: 1800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 2000</td>
<td></td>
<td>M: 2600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 2600</td>
<td></td>
<td>F: 2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 2400</td>
<td></td>
<td>F: 2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 2400</td>
<td></td>
<td>F: 2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 2400</td>
<td></td>
<td>F: 2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 2400</td>
<td></td>
<td>F: 2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 1888</td>
<td></td>
<td>F: 1125</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 961</td>
<td></td>
<td>M: 251</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 831</td>
<td></td>
<td>F: 1945</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 2396</td>
<td></td>
<td>F: 591</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 468</td>
<td></td>
<td>F: 1973</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 751</td>
<td></td>
<td>M: 1517</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 1945</td>
<td></td>
<td>M: 2778</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 2778</td>
<td></td>
<td>F: 468</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 1116</td>
<td></td>
<td>F: 2238</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 953</td>
<td></td>
<td>M: 118</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 899</td>
<td></td>
<td>M: 2519</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 1433</td>
<td></td>
<td>F: 984</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 688</td>
<td></td>
<td>F: 730</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 956</td>
<td></td>
<td>F: 2364</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 3082</td>
<td></td>
<td>M: 382</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 1153</td>
<td></td>
<td>M: 2666</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 1426</td>
<td></td>
<td>M: 990</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 1975</td>
<td></td>
<td>F: 1535</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 1649</td>
<td></td>
<td>M: 3760</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 780</td>
<td></td>
<td>F: 2887</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 746</td>
<td></td>
<td>F: 1516</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 594</td>
<td></td>
<td>F: 1483</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: 1860</td>
<td></td>
<td>F: 2222</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 1570</td>
<td></td>
<td>F: 1665</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F: 637</td>
<td></td>
<td>F: 690</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.9 (continued)

<table>
<thead>
<tr>
<th>Age</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>F, 994</td>
<td>F, 750</td>
<td>M, 2069</td>
<td>F, 1054</td>
<td>F, 491</td>
<td>F, 3804</td>
<td>M, 1480</td>
<td>F, 1488</td>
<td></td>
</tr>
<tr>
<td>F, 491</td>
<td>F, 3804</td>
<td>M, 1480</td>
<td>F, 1488</td>
<td>M, 1436</td>
<td>F, 4082</td>
<td>M, 2862</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F, 1259</td>
<td>F, 1912</td>
<td>M, 1114</td>
<td>M, 1569</td>
<td>M, 1114</td>
<td>M, 1569</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F, 1294</td>
<td>M, 4507</td>
<td>F, 1067</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No participants were 25 or 26 years of age.

**Eating Attitudes Test – 26**

The EAT-26 (Appendix E) was used to measure the level of concern about dieting, body weight, and the level of problematic eating behaviors present in participants (Garner et al., 1982). All questions were scored and summed to determine the total test.
score. A high level of concern for these behaviors is indicated if the cumulative score is at or above 20 (Garner et al., 1982). A score of 20 or more on questions 1-26 indicates referral is needed (Garner et al., 1982). Part C is made up of behavioral questions that are broken down into four categories: A) Binge, B) Vomit, C) Laxatives, diuretics, D) Exercise, and (Garner et al., 1982) (Table 4.11). Additionally, respondents are asked to indicate whether they have lost 20 or more pounds in the section (Garner et al., 1982). This section is scored based on how often the behavior is practiced (Table 4.11). If the respondent indicates any of the responses that have a check mark, referral is recommended (Garner et al., 1982) (Table 4.11). If participants indicated any of these responses, they were marked as needing referral. If they did not indicate any of these responses, they were marked as not needing referral. Forty-five participants (43.7%) identified as practicing at least one of the responses for the behavioral questions that had a check mark (Table 4.11). Fifty-eight (56.3%) participants did not indicate any response to the behavioral questions that had a check mark.

One hundred three participants completed the EAT-26 test (Figure 4.4). Seventeen participants scored at or above 20 on questions 1-26 on the EAT-26, indicating they are at risk for disordered eating behaviors (Figure 4.4). Six participants left one question unanswered which caused there to be missing data. According to EAT-26 (2017) protocol there is no agreed-upon procedure for dealing with missing data for the EAT-26. Therefore, the number of participants that completed each question on the EAT-26 varied.

Participants were asked to provide their years of age on the EAT-26 test. One hundred one were 23 years of age and younger and two participants were 24 and 27 years
of age (Figure 4.1). Participants were prompted to provide their sex on the EAT-26. Seventy-four were female and twenty-nine were male (Figure 4.2). Each participants BMI was calculated from the height and weight they reported on the EAT-26 (Figure 4.3). The number of participants that fell within each BMI category can be found in Table 4.7. It was noted that the overall EAT-26 score was significantly related to the media consumption questionnaire item “To what extent does media influence your eating patterns?” (P < .01, Table 4.8). As the EAT-26 scores increased, the participants tended to respond that media influenced their eating patterns a moderate amount, a lot, or a great deal.
<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Once a month or less</th>
<th>2-3 times a month</th>
<th>Once a week</th>
<th>2-6 times a week</th>
<th>Once a day or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Binge</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B) Vomit</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C) Laxatives, diuretics</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D) Exercise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E) Lost 20 pounds or more in the past 6 months</td>
<td>Yes ✓</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 4.1    Eating Attitudes Test – 26 (EAT – 26) Age Frequency

Figure 4.2    EAT – 26 Sex Frequency
Figure 4.3  EAT – 26 BMI
Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale was used to measure self-worth by measuring both positive and negative feelings about the self (Rosenberg, 1965). Individuals with eating disorders often have comorbid mood disorders, particularly depression and anxiety which is related to self-esteem (Blinder, Cumella, & Sanathara, 2006). Body dysmophia disorder (BDD) is often associated with a low self-esteem and frequently leads to the individual identifying their value as a person based on their appearance (McConville, 2017). BDD is commonly considered to be a symptom of eating disorders. This is the rationale for measuring self-worth in participants.
One hundred three participants completed the Rosenberg Self-Esteem Scale (Table 4.13) and the total scores were calculated for each participant that completed the Rosenberg Self-Esteem Scale (Figure 4.5). The total score from the scale ranged from 0 to 30. Scores below 15 indicate low self-esteem and scores between 15 and 25 indicate a normal self-esteem (Rosenberg, 1965). Thirteen participants scored at or below 15 (Figure 4.5).

Results indicated that many participants had low self-worth and had negative feelings toward themselves (Table 4.13). Eighteen participants (17%) reported that on a whole they are not satisfied with themselves. Forty-seven participants (46%) reported at times they think they are no good at all. Eighteen participants (17%) reported they feel they do not have much to be proud of. Forty-five participants (44%) reported they certainly feel useless at times. Fifty-six participants (54%) reported that they wish they could have more respect for themselves. Nineteen participants (18%) reported that all in all they are inclined to think they are a failure. Twenty participants (19%) reported they do not take a positive attitude towards themselves. It was noted that the Rosenberg self-esteem scale and energy (kcal) intake had a significant negative relationship (P < 0.05, Table 4.8). As the Rosenberg self-esteem scale increased indicating a normal self-esteem, energy intake tended to decrease in the participants.
Table 4.11  Rosenberg Self-Esteem Scale Responses

<table>
<thead>
<tr>
<th>Questions</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the whole, I am satisfied with myself.</td>
<td>N=25</td>
<td>N=60</td>
<td>N=15</td>
<td>N=3</td>
</tr>
<tr>
<td>At times I think I am no good at all.</td>
<td>N=11</td>
<td>N=36</td>
<td>N=43</td>
<td>N=13</td>
</tr>
<tr>
<td>I feel that I have a number of good qualities.</td>
<td>N=34</td>
<td>N=64</td>
<td>N=4</td>
<td>N=1</td>
</tr>
<tr>
<td>I am able to do things as well as most other people.</td>
<td>N=36</td>
<td>N=57</td>
<td>N=9</td>
<td>N=1</td>
</tr>
<tr>
<td>I feel I do not have much to be proud of.</td>
<td>N=2</td>
<td>N=16</td>
<td>N=55</td>
<td>N=30</td>
</tr>
<tr>
<td>I certainly feel useless at times.</td>
<td>N=14</td>
<td>N=31</td>
<td>N=41</td>
<td>N=17</td>
</tr>
<tr>
<td>I feel that I’m a person of worth, at least on an equal plane with others.</td>
<td>N=34</td>
<td>N=57</td>
<td>N=11</td>
<td>N=1</td>
</tr>
<tr>
<td>I wish I could have more respect for myself</td>
<td>N=22</td>
<td>N=34</td>
<td>N=40</td>
<td>N=7</td>
</tr>
</tbody>
</table>
Table 4.13 (continued)

<table>
<thead>
<tr>
<th>All in all, I am inclined to feel that I am a failure.</th>
<th>N=6</th>
<th>N=13</th>
<th>N=56</th>
<th>N=28</th>
</tr>
</thead>
<tbody>
<tr>
<td>I take a positive attitude toward myself.</td>
<td>N=34</td>
<td>N=49</td>
<td>N=17</td>
<td>N=3</td>
</tr>
</tbody>
</table>

Figure 4.5  Rosenberg Self-Esteem Scale Scores
Sex and Eating Disorder Susceptibility

Participants that reported they currently had an eating disorder or have had an eating disorder in the past on the ESP were analyzed by sex to determine eating disorder susceptibility among each sex. The majority of participants were female (n = 74, 71.8%) with 29 (28.2%) of participants being male (Figure 4.2). A total of 14 participants reported having an eating disorder currently or in the past on the ESP (Table 4.2). Twelve (86%) of these participants were female and 2 (14%) were male (Figure 4.6). Based on the sample being predominantly females, and the small sample of students that identified as having an eating disorder, it is not representative of college students as a whole or the prevalence among each sex. However, factors that should be considered include the stereotype that eating disorders only occur in women and the stigma associated with a male identifying as having an eating disorder (NEDA, 2018a). This could have resulted in underreporting among male students. The results found with EAT-26 also reveal that some participants may not recognize they have disordered eating behaviors. Seventeen of the EAT-26 participants scored at or above 20 points on the test, which indicated referral is needed.
Participants ranged from 18 to 27 years of age (Figure 4.1). The majority of participants (n = 70) were 21 years of age and younger. The age of onset reported by participants ranged from 12 to 20 (Table 4.4). Sixteen participants reported an age-of-onset and 7 (44%) reported an age of onset of 12 and 14. Klump et al. (2009) revealed that 50 percent of the variability of individual differences in eating disorders can be attributed to genes. This suggests that genes contribute 0 percent risk until puberty, indicating that a potential vulnerability towards eating disorders is only “activated” when individuals reach puberty (Klump et al., 2009). Puberty typically occurs between the ages of 8 and 15 (American Academy of Family Physicians, 2017). However, this does not apply to everyone and in some instances, puberty is early or delayed (American Academy of Family Physicians, 2017). The age-of-onset reported most commonly by participants

Figure 4.6   Sex and Eating Disorder Susceptibility

Age and Eating Disorder Susceptibility

Participants ranged from 18 to 27 years of age (Figure 4.1). The majority of participants (n = 70) were 21 years of age and younger. The age of onset reported by participants ranged from 12 to 20 (Table 4.4). Sixteen participants reported an age-of-onset and 7 (44%) reported an age of onset of 12 and 14. Klump et al. (2009) revealed that 50 percent of the variability of individual differences in eating disorders can be attributed to genes. This suggests that genes contribute 0 percent risk until puberty, indicating that a potential vulnerability towards eating disorders is only “activated” when individuals reach puberty (Klump et al., 2009). Puberty typically occurs between the ages of 8 and 15 (American Academy of Family Physicians, 2017). However, this does not apply to everyone and in some instances, puberty is early or delayed (American Academy of Family Physicians, 2017). The age-of-onset reported most commonly by participants
ranged from 12 to 15 years of age. This indicated that most participants had an age of onset during puberty.

**Self Esteem and Eating Disorder Susceptibility**

There were a concerning level of low self-esteem qualities reported by participants (Table 4.10). Many participants reported low self-worth and self-respect for themselves. Low self-esteem is a predominant feature that presents as a psychological manifestation among individuals with eating disorders. The number of participants that scored below 15 on the Rosenberg Self-Esteem Scale and that were identified as having low self-esteem \( (n = 15) \) was similar to the number that reported currently having or having had an eating disorder in the past \( (n = 14) \) and those that reported an age they started experiencing eating disorder symptoms \( (n = 16) \). As discussed, low self-esteem can be a motivator for practicing disordered eating behaviors such as calorie restriction, purging, laxative or diuretic abuse, and obsessive exercise. It can also lead individuals to continue practicing these behaviors as a coping mechanism and can cause individuals with eating disorders to go to extremes in order to achieve a desired physical appearance. Self-esteem and psychological manifestations must be considered when diagnosing and treating individuals with eating disorders in order to have a holistic approach that is effective.
CHAPTER V
CONCLUSION

All individuals with eating disorders have an increased mortality risk (Smink et al., 2012), making it especially important to be able to identify eating disorders and diagnose these individuals early on. Young people between the ages of 15 to 24 with anorexia nervosa have 10 times the risk of dying compared to their same-age peers (Fichter & Quadflieg, 2016; Smink et al., 2012). Individuals with eating disorders are frequently under-treated (Le Grange et al., 2012). It is important to increase awareness and destigmatize eating disorders by recognizing that eating disorders can affect all people regardless of sex, age, or race. Increased accessibility to treatment programs is needed to effectively reach and provide help to individuals with eating disorders.

This study determined that there are significant biological, cultural, and psychological predispositions that are important to consider when diagnosing and treating individuals with eating disorders. Family history can indicate a genetic predisposition and increase susceptibility to the development of eating disorders. It is important to consider that an individual’s age is not a good predictor of whether or not they may have an eating disorder. However, age-of-onset can be especially useful for determining biological susceptibility. Psychological manifestations often coexist with eating disorders and can perpetuate disordered eating behaviors, distorted body image, or extreme compensatory behaviors such as laxative abuse, purging, and compulsive exercise. Media consumption
can lead individuals to have unrealistic and unhealthy body ideals. It can also influence eating behaviors and patterns.

Limitations of this study include the small sample size of participants with eating disorders and the nature of the measures used. The measures required participants to self-report their answers. This can result in misinformation and discrepancies. Additionally, the DHQ III is extensive and can be time-consuming. This may have resulted in less participants taking the time to complete it. The sample also had a disproportionate number of females which limited the ability to compare results between males and females.

Treatment that considers and addresses relevant biological, cultural, and psychological factors is imperative to appropriately treat individuals with eating disorders in order to achieve meaningful and lasting recovery. A multidisciplinary treatment team is needed to provide structured care that addresses relevant aspects of disordered eating and guidance to help change abnormal eating behavior patterns and prevent relapse. This study supports existing research that considers a multidisciplinary team approach to treat disordered eating patterns as a best practice (Joy et al., 2003). It also supports the existing research which suggests a genetic susceptibility to eating disorders (Klump et al., 2009), that media consumption can support and encourage the idealization of thinness and disordered eating behaviors (Garfinkel & Garner, 1982), and that psychological factors can perpetuate behaviors performed by individuals with eating disorders (National Institute of Mental Health, 2014).
REFERENCES


APPENDIX A

EATING DISORDER SCREEN FOR PRIMARY CARE
Table A.1  Eating Disorder Screen for Primary Care

1. Are you satisfied with your eating patterns? (A “no” to this question was classified as an abnormal response).

2. Do you ever eat in secret? (A “yes” to this and all other questions was classified as an abnormal response).

3. Does your weight affect the way you feel about yourself? (A “yes” to this and all other questions was classified as an abnormal response).

4. Have any members of your family suffered with an eating disorder? (A “yes” to this and all other questions was classified as an abnormal response).

5. Do you currently suffer with or have you ever suffered in the past with an eating disorder? (A “yes” to this and all other questions was classified as an abnormal response).

(Cotton, Ball, & Robinson, 2003)
APPENDIX B

MEDIA CONSUMPTION QUESTIONNAIRE
Table B.1 Media Consumption Questionnaire

INSTRUCTIONS: Please read the following questions and mark the response that applies most to you.

1. How often do you watch television shows?
   - Very frequently
   - Frequently
   - Occasionally
   - Rarely
   - Never

2. How often do you watch cable or satellite television?
   - Very frequently
   - Frequently
   - Occasionally
   - Rarely
   - Never

3. How often do you watch television through streaming services (such as netflix, hulu, hbo go, etc.)?
   - Very frequently
   - Frequently
   - Occasionally
   - Rarely
Table B.1 (continued)

☐ Never

4. On a typical day, how many hours do you spend watching television?
   ☐ 0-1
   ☐ 1-2
   ☐ 2-3
   ☐ 3-4
   ☐ 5 or more

5. On a typical day, how many hours do you spend reading online news?
   ☐ 0-1
   ☐ 1-2
   ☐ 2-3
   ☐ 3-4
   ☐ 5 or more

6. How often do you use social media sites (Facebook, Instagram, Twitter, etc.)?
   ☐ Very frequently
   ☐ Frequently
   ☐ Occasionally
   ☐ Rarely
   ☐ Never
Table B.1 (continued)

7. How often does media influence your body perception?

- Very frequently
- Frequently
- Occasionally
- Rarely
- Never

8. To what extent does media influence your body perception (body ideals/standards)?

- A great deal
- A lot
- A moderate amount
- A little
- Not at all

9. How often has media influenced your eating behaviors/patterns?

- Very frequently
- Frequently
- Occasionally
- Rarely
- Never
Table B.1 (continued)

10. To what extent does media influence your eating behaviors/patterns?

- A great deal
- A lot
- A moderate amount
- A little
- Not at all
APPENDIX C

CONTOUR DRAWING RATING SCALE
Table C.1  Contour Drawing Rating Scale

(Thompson & Gray, 1995)
APPENDIX D

NIH DIET HISTORY QUESTIONNAIRE III (DHQ III)
Table D.1   NIH Diet History Questionnaire III (DHQ III)

FOR INFORMATIONAL USE ONLY

About you

In what month and year were you born?
Are you male or female?
○ Male
○ Female

Beverages

What beverages did you drink?

Please check the box next to each beverage that you drank at least once in the past month.

☐ Tomato juice or vegetable juice
☐ Orange juice or grapefruit juice
☐ Grape juice
☐ Other 100% fruit juices or 100% fruit juice mixtures (such as apple, pineapple, or others)
☐ Fruit or vegetable smoothies
☐ Other fruit drinks, regular or diet (such as Hi-C, fruit punch, lemonade, or cranberry cocktail)
☐ Milk as a beverage (NOT in coffee, tea, or cereal; including soy, rice, almond, and coconut milk; NOT including chocolate milk, hot chocolate, and milkshake)
☐ Chocolate milk or hot chocolate
☐ Milkshakes
☐ Meal replacement or high-protein beverages (such as Ensure, Boost, Muscle Milk, Slimfast, Instant Breakfast, or others; NOT including any added protein powder)
☐ Soda or pop
☐ Sports drinks (such as Gatorade, Powerade, or Propel)
☐ Energy drinks (such as Red Bull or Jolt)
☐ Water (including tap, bottled, and carbonated water; NOT including vitamin water)
☐ Vitamin water (such as SoBe, Propel Zero, or Glaceau Water)
Table D.1 (continued)

- Beer
- Wine or wine cooler
- Liquor or mixed drinks
- Coffee, caffeinated or decaffeinated (including brewed coffee, instant coffee, or espresso shots; NOT including espresso drinks such as latte, mocha, etc.)
- Espresso drink mixtures, caffeinated or decaffeinated (including latte, mocha, cappuccino, etc.)
- COLD or ICED tea, caffeinated or decaffeinated (NOT including herbal or green tea)
- HOT tea, caffeinated or decaffeinated (NOT including herbal or green tea)
- Green tea
- Herbal or fruit tea (including hibiscus, chamomile, licorice, sassafras, etc.)

Fruits

What fruits have you eaten?

Please check the box next to each food that you ate at least once in the past month.

- Applesauce
- Apples
- Bananas

- Pineapple (fresh, canned, or frozen)
- Pears (fresh, canned, or frozen)
- Peaches, nectarines, or plums
- Dried fruit (such as prunes or raisins)
- Grapes
- Cantaloupe
- Melons, other than cantaloupe (such as watermelon or honeydew)
- Strawberries
- Blueberries
- Oranges, tangerines, or clementines
- Grapefruit
- Avocado or guacamole
- Other kinds of fruit (not listed above)
Table D.1 (continued)

**Vegetables, potatoes, beans**

**What vegetables, potatoes, and beans did you eat?**

Please check the box next to each food that you ate at least once in the **past month**.

- ☐ COOKED greens (such as spinach, turnip, collard, mustard, chard, or kale)
- ☐ RAW greens (such as spinach, turnip, collard, chard, kale, watercress, seaweed, mustard greens, beet greens, or dandelion greens)
- ☐ Coleslaw
- ☐ Sauerkraut or cabbage (other than coleslaw)
- ☐ COOKED carrots (including frozen, fresh, or canned)
- ☐ RAW carrots
- ☐ String beans or green beans (fresh, canned, or frozen)
- ☐ Peas (fresh, canned, or frozen)
- ☐ Corn (fresh, canned, or frozen)
- ☐ Broccoli (fresh or frozen)
- ☐ Cauliflower or Brussels sprouts (fresh or frozen)
- ☐ Sweet peppers (green, red, or yellow)
- ☐ Onions
- ☐ Garlic
- ☐ Mixed vegetables
- ☐ Lettuce salads (with or without other vegetables)

- ☐ Salad dressing on salads (including low-fat or fat-free)
- ☐ Mayonnaise on salads (including low-fat, diet, or light)
- ☐ Fresh tomatoes (including those in salads)
- ☐ Salsa
- ☐ Catsup or ketchup
- ☐ Sweet potatoes or yams
- ☐ French fries, home fries, hash browned potatoes, or Tater Tots
- ☐ Potato salad
- ☐ Baked, boiled, or mashed potatoes
- ☐ Cooked dried or canned beans (such as baked beans, pintos, kidney, black-eyed peas, lima, lentils, soybeans, or refried beans; **NOT including bean soups or chili**)
- ☐ Other kinds of vegetables (not listed above)
Table D.1 (continued)

**Soups, chili, tacos, burritos, tortillas, etc.**

**What soups, chili, tacos, burritos, tortillas, etc. have you eaten?**

Please check the box next to each food that you ate at least once in the past month.

- [ ] Soups
- [ ] Chili
- [ ] Tacos, tostados, burritos, tamales, fajitas, enchiladas, quesadillas, or chimichangas
- [ ] Corn or wheat tortillas

**Rice, pasta, pizza**

**What rice, pasta, and pizza have you eaten?**

Please check the box next to each food that you ate at least once in the past month.

- [ ] Rice or other cooked grains (such as bulgur, cracked wheat, or millet; NOT including sushi)
- [ ] Sushi
- [ ] Lasagna, stuffed shells, stuffed manicotti, ravioli, or tortellini (including gluten-free; NOT including spaghetti or other pasta)
- [ ] Macaroni and cheese (including gluten-free)

- [ ] Pasta salad or macaroni salad (including gluten-free)
- [ ] Pasta, spaghetti, or other noodles (other than those listed above; including gluten-free)
- [ ] Pizza (including gluten-free)

**Cereal, pancakes, breads**

**What cereal, pancakes, and breads have you eaten?**

Please check the box next to each food that you ate at least once in the past month.

- [ ] Oatmeal, grits, or other cooked cereals
- [ ] Cold cereal (including gluten-free)
- [ ] Pancakes, waffles, or French toast (including gluten-free)
Table D.1 (continued)

- Bagels or English muffins (including gluten-free)
- Breads or rolls AS PART OF SANDWICHES (including gluten-free)
- Breads or dinner rolls NOT AS PART OF SANDWICHES (including gluten-free)
- Cornbread or corn muffins
- Biscuits
- Jam, jelly, or honey (on bagels, muffins, breads, rolls, crackers, etc.)
- Peanut butter or other nut butter
- Hummus

Cold cuts, luncheon meats, hot dogs

What cold cuts, luncheon meats, and hot dogs have you eaten?

Please check the box next to each food that you ate at least once in the past month.

- Roast beef or steak IN SANDWICHES
- Luncheon or deli-style ham (NOT including other ham)
- Turkey or chicken COLD CUTS (such as loaf, luncheon meat, turkey ham, turkey salami, or turkey pastrami; NOT including other turkey or chicken)
- Bologna
- Other cold cuts or luncheon meats (such as salami, corned beef, pastrami, etc.; NOT including ham, turkey, or chicken, bologna cold cuts)
- Hot dogs or frankfurters (NOT including sausage or vegetarian hot dogs)
Table D.1 (continued)

**Meat, poultry, fish**

**What meat, poultry, and fish have you eaten?**

Please check the box next to each food that you ate at least once in the **past month**.

- Ground chicken or turkey
- Baked, broiled, roasted, stewed, grilled, pan-fried, or fried chicken (including chicken nuggets, **NOT including chicken in mixtures**)
- Chicken in mixed dishes (such as salads, sandwiches, casseroles, stews, or other mixtures)
- Turkey including in mixed dishes (**NOT including ground turkey**)
- Beef hamburgers or cheeseburgers from a FAST FOOD RESTAURANT
- Beef hamburgers or cheeseburgers **NOT** from a FAST FOOD RESTAURANT
- Ground beef in mixtures (such as meatballs, casseroles, chili, or meatloaf)
- Beef mixtures (such as beef stew, beef pot pie, beef and noodles, or beef and vegetables)
- Roast beef or pot roast (**NOT including roast beef or pot roast in sandwiches**)
- Beef steak (**NOT including steak in sandwiches**)
- Pork or beef spareribs

- Baked ham or ham steak
- Pork (including chops, roasts, and in mixed dishes, **NOT including ham, ham steak, or sausage**)
- Gravy on meat, chicken, potatoes, rice, etc.
- Liver (all kinds) or liverwurst
- Bacon (all kinds)
- Sausage (all kinds)
- Canned tuna or tuna salad (including in sandwiches or casseroles; **NOT including fresh tuna**)
- Fresh tuna, trout, anchovy, mackerel, herring, or sardine
- Salmon
- Fried shellfish (such as crab, lobster, shrimp, or clams)
- Shellfish (such as crab, lobster, or shrimp) that was **NOT FRIED**
- Fish sticks or other fried fish (**NOT including shellfish**)
- Other fish that was **NOT FRIED** (**NOT including shellfish**)
Table D.1 (continued)

What eggs and meat alternatives have you eaten?

Please check the box next to each food that you ate at least once in the past month.

- Tofu, soy burgers, or soy meat-substitutes
- Eggs, egg whites, or egg substitutes (including eggs in salads, quiche, and souffles; NOT including eggs in baked goods and desserts)

Chips, pretzels, other snacks

What chips, pretzels, and other snacks have you eaten?

Please check the box next to each food that you ate at least once in the past month.

- Crackers (including gluten-free)
- Potato chips
- Corn chips or tortilla chips
- Popcorn

- Pretzels (including gluten-free)
- Whole nuts (including peanuts, almonds, seeds, or other nuts)
- High-protein or breakfast bars (such as Power Bars, Balance, Clif, etc.)
- Protein powder
- Granola bars

Yogurt and cheese

What yogurt and cheese have you eaten?

Please check the box next to each food that you ate at least once in the past month.

- Yogurt (NOT including frozen yogurt)
- Cottage cheese or ricotta cheese
- Cheese (including low-fat, on cheeseburgers, or in sandwiches or subs)
- Whipped cream
Table D.1 (continued)

**Sweets, baked goods, desserts**

**What sweets, baked goods, or desserts have you eaten?**

Please check the box next to each food that you ate at least once in the **past month**.

- Frozen yogurt, sorbet, or ices
- Ice cream, ice cream bars, or sherbet (including light, low-fat, or fat-free)
- Cake (all kinds)
- Pie (all kinds)
- Cookies (all kinds)
- Brownies (all kinds)
- Doughnuts, sweet rolls, Danish, or Pop-Tarts
- Sweet muffins or dessert breads (all kinds)
- Pudding or custard
- Chocolate bar or chocolate candy (such as M&Ms, Kit Kat, Mr. Goodbar, etc.)
- Other types of candy

**Spreads and dressings**

**What spreads and dressings have you eaten?**

The following questions are about the kinds of margarine, mayonnaise, and salad dressing that you ate. If possible, please check the labels of these foods to help you answer.

Please check the box next to each food that you ate at least once in the **past month**.

- Margarine
- Mayonnaise or mayonnaise-type dressing
- Salad dressing
Table D.1 (continued)

**Summary questions**

For ALL of the past month, have you followed any type of vegetarian diet?

- Yes
- No

Which of the following foods did you TOTALLY EXCLUDE from your diet? Mark all that apply.

- Meat (beef, pork, lamb, etc.)
- Poultry (chicken, turkey, duck)
- Fish and seafood
- Eggs
- Dairy products (milk, cheese, etc.)
Table D.1 (continued)

**Vitamins and supplements**

What vitamins and dietary supplements did you take?

Please check the box next to each vitamin or dietary supplement that you took at least once in the past month.

- Multivitamin/mineral (such as One-A-Day, Centrum, Nutrilite, Gentol or prenatal, as pills, liquids or packets; **NOT including eye health supplements**)

- Eye health supplement (such as Ocuvite, PreserVision or I-Caps)
- B-complex (**NOT as part of a multivitamin**)
- Antacids (such as Tums or Rolaid)
- B-12 (**NOT as part of a multivitamin**)
- B-6 (**NOT as part of a multivitamin**)
- Biotin (**NOT as part of a multivitamin**)
- Calcium (with or without vitamin D; **NOT as part of a multivitamin or antacid**)
- Coenzyme Q
- Fiber supplement (such as Metamucil or Benefiber)
- Folate or folic acid (**NOT as part of a multivitamin**)
- Garlic supplement
- Joint supplement (such as glucosamine, with or without chondroitin or other ingredients)
- Iron (**NOT as part of a multivitamin**)
- Magnesium (**NOT as part of a multivitamin**)
- Melatonin
- Niacin (**NOT as part of a multivitamin**)
- Omega-3 (ALA/DHA/EPA) or fish oil
- Potassium (**NOT as part of a multivitamin**)
- Probiotics (in pill, powder, or liquid form)
- Saw palmetto
- Vitamin C (**NOT as part of a multivitamin**)
- Vitamin D (**NOT as part of a multivitamin or calcium supplement**)
- Vitamin E (**NOT as part of a multivitamin**)
- Zinc (**NOT as part of a multivitamin**)
- Other supplements (**NOT as part of a multivitamin**)

(NIH, 2018)
APPENDIX E

EATING ATTITUDES TEST-26 (EAT-26)
Table E.1 Eating Attitudes Test – 26 (EAT-26)

<table>
<thead>
<tr>
<th>Eating Attitudes Test (EAT-26)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructions: This is a screening measure to help you determine whether you might have an eating disorder that needs professional attention. This screening measure is not designed to make a diagnosis of an eating disorder or take the place of a professional consultation. Please fill out the below form as accurately, honestly and completely as possible. There are no right or wrong answers. All of your responses are confidential.</td>
</tr>
<tr>
<td>Part A: Complete the following questions:</td>
</tr>
<tr>
<td>1) Birth Date: Day: Month: Year: 2) Gender: Male Female</td>
</tr>
<tr>
<td>3) Height Feet: Inches:</td>
</tr>
<tr>
<td>4) Current Weight (lbs.): 5) Highest Weight (excluding pregnancy):</td>
</tr>
<tr>
<td>6) Lowest Adult Weight: 7) Ideal Weight:</td>
</tr>
<tr>
<td>Part B: Check a response for each of the following statements:</td>
</tr>
<tr>
<td>1. Am terrified about being overweight:</td>
</tr>
<tr>
<td>2. Avoid eating when I am hungry:</td>
</tr>
<tr>
<td>3. Find myself preoccupied with food:</td>
</tr>
<tr>
<td>4. Have gone on eating binges where I feel that I may not be able to stop:</td>
</tr>
<tr>
<td>5. Cut my food into small pieces:</td>
</tr>
<tr>
<td>6. Aware of the calorie content of foods that I eat:</td>
</tr>
<tr>
<td>7. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.):</td>
</tr>
<tr>
<td>8. Feel that others would prefer if I ate more:</td>
</tr>
<tr>
<td>9. Vomit after I have eaten:</td>
</tr>
<tr>
<td>10. Feel extremely guilty after eating:</td>
</tr>
<tr>
<td>11. Am preoccupied with a desire to be thinner:</td>
</tr>
<tr>
<td>12. Think about burning up calories when I exercise:</td>
</tr>
<tr>
<td>13. Other people think that I am too thin:</td>
</tr>
<tr>
<td>14. Am preoccupied with the thought of having fat on my body:</td>
</tr>
<tr>
<td>15. Take longer than others to eat my meals:</td>
</tr>
<tr>
<td>16. Avoid foods with sugar in them:</td>
</tr>
<tr>
<td>17. Eat diet foods:</td>
</tr>
<tr>
<td>18. Feel that food controls my life:</td>
</tr>
<tr>
<td>19. Display self-control around food:</td>
</tr>
<tr>
<td>20. Feel that others pressure me to eat:</td>
</tr>
<tr>
<td>21. Give too much time and thought to food:</td>
</tr>
<tr>
<td>22. Feel uncomfortable after eating sweets:</td>
</tr>
<tr>
<td>23. Engage in dieting behavior:</td>
</tr>
<tr>
<td>24. Like my stomach to be empty:</td>
</tr>
<tr>
<td>25. Have the impulse to vomit after meals:</td>
</tr>
<tr>
<td>26. Enjoy trying new rich foods:</td>
</tr>
<tr>
<td>Part C: Behavioral Questions: In the past 6 months have you:</td>
</tr>
<tr>
<td>A. Gone on eating binges where you feel that you may not be able to stop? *</td>
</tr>
<tr>
<td>B. Ever made yourself sick (vomited) to control your weight or shape?</td>
</tr>
<tr>
<td>C. Ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape?</td>
</tr>
<tr>
<td>D. Exercised more than 60 minutes a day to lose or to control your weight?</td>
</tr>
<tr>
<td>E. Lost 20 pounds or more in the past 6 months</td>
</tr>
</tbody>
</table>

* Defined as eating much more than most people would under the same circumstances and feeling that eating is out of control

© Copyright: EAT-26: (Garner et al. 1982, Psychological Medicine, 12, 871-879); adapted by D. Garner with permission.
APPENDIX F

PERMISSION TO REPRODUCE EAT26
Hello,
Thank you for your request for permission to reproduce and use the EAT-26. The EAT-26 is protected under copyright; however, all fees and royalties have been waived because it has been our wish for others to have free access to the test.

Please consider this e-mail as granting you permission to reproduce the test for the purpose suggested in your request if the EAT-26 is cited properly. The correct citation is: "The EAT-26 has been reproduced with permission. Garner et al. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. Psychological Medicine, 12, 871-878."

You can download a copy of the scoring instructions and the test on the homepage of the EAT-26 website. If you use the written version of the test, it is recommended that you provide respondents with the link to the EAT-26 website (www.eat-26.com) so that they can learn more about the test.

Again, thank you for requesting permission to reproduce and use the EAT-26. If you intend on publishing your work, please send me your results so that they can be included in a research database being developed on the EAT-26 website (www.eat-26.com).

Best wishes,

David M. Garner, Ph.D.

EAT Copyright Holder

President & CEO

River Centre Clinic

5465 Main Street

Sylvania, OH 43560

dmgarner@gmail.com
APPENDIX G

ROSENBERG SELF-ESTEEM SCALE
Table G.1    Rosenberg Self-Esteem Scale

1. On the whole, I am satisfied with myself.
   Strongly Agree    Agree    Disagree    Strongly Disagree

2. At times I think I am no good at all.
   Strongly Agree    Agree    Disagree    Strongly Disagree

3. I feel that I have a number of good qualities.
   Strongly Agree    Agree    Disagree    Strongly Disagree

4. I am able to do things as well as most other people.
   Strongly Agree    Agree    Disagree    Strongly Disagree

5. I feel I do not have much to be proud of.
   Strongly Agree    Agree    Disagree    Strongly Disagree

6. I certainly feel useless at times.
   Strongly Agree    Agree    Disagree    Strongly Disagree

7. I feel that I'm a person of worth, at least on an equal plane with others.
   Strongly Agree    Agree    Disagree    Strongly Disagree

8. I wish I could have more respect for myself.
   Strongly Agree    Agree    Disagree    Strongly Disagree
Table G.1 (continued)

9. All in all, I am inclined to feel that I am a failure.

Strongly Agree     Agree     Disagree     Strongly Disagree

10. I take a positive attitude toward myself.

Strongly Agree     Agree     Disagree     Strongly Disagree

(Rosenberg, 1965)
APPENDIX H

IRB APPROVAL
Table H.1  IRB Approval

From:  prm199@msstate.edu

Sent Date:  Thursday, January 17, 2019 14:43:33 PM

To:  ttm135@msstate.edu, cm998@msstate.edu, dkt10@msstate.edu,
mhc152@msstate.edu

Cc:

Bcc:

Subject:  Approval Notice for Study # IRB-18-038, Biological, Cultural, and Psychological factors that may predispose young adults to anorexia nervosa, bulimia nervosa, and binge eating disorders

Message:

Protocol ID: IRB-18-038  Principal Investigator: Terezie Mosby  Protocol Title: Biological, Cultural, and Psychological factors that may predispose young adults to anorexia nervosa, bulimia nervosa, and binge eating disorders  Review Type: EXEMPT  Approval Date: January 17, 2019  Expiration Date: January 16, 2024

The above referenced study has been approved. To access your approval documents, log into myProtocol and click on the protocol number to open the approved study. Your official approval letter can be found under the Event History section. For non-exempt approved studies, all stamped documents (e.g., consent, recruitment) can be found in the Attachment section and are labeled accordingly.

If you have any questions that the HRPP can assist you in answering, please do not hesitate to contact us at irb@research.msstate.edu or 662.325.3994.