Stigma and Perception of Causes, Personal Responsibility, and Recovery for Anorexia Nervosa and Obesity

by

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Abstract

According to previous research, society’s misconceptions regarding anorexia nervosa (AN) and obesity contribute to a stigmatization of these medical conditions. Literature reveals that society rarely acknowledges the biological causes of these conditions and tends to see individuals as personally responsible for their condition. There is also a lack of agreement on the likelihood and definition of recovery for both conditions. Furthermore, there is evidence that gender may influence stigmatization of these conditions. Therefore, the purpose of the current study was to see how perceptions about causes, personal responsibility, and recovery vary across condition. In addition, this study aimed to determine if stigma differed depending on condition and gender. Seventy-six undergraduate students were randomly assigned to read a vignette depicting either a male or female with either AN or obesity. Participants then answered questionnaires designed to assess stigma and beliefs. The results revealed that participants highlighted biological causes for obesity and psychological causes for AN. Participants also identified psychological criteria as more critical for recovery from AN and physical criteria as more critical for recovery from obesity. The degree of personal responsibility was not affected by condition. Stigmatization varied by condition with participants reporting greater behavioral stigma for obesity but greater cognitive stigma for AN. Gender had no effect on stigmatization. Thus, this study revealed that causes and recovery criteria differed depending on condition and stigma toward AN occurs on a cognitive level, while stigma towards obesity occurs on a behavioral level. This understanding can shape educational programs that raise awareness and reduce stigma for these conditions.
Introduction

Stigma

Despite the different symptoms and presentation of anorexia nervosa (AN) and obesity, stigma profoundly affects individuals with both conditions in similar ways. Stigma towards persons with AN and obesity can often result in stereotyping and discrimination against both groups. This discrimination tends to lead to feelings of shame among persons with AN and obesity. As a result, people with AN and obesity may be less inclined to be open about their condition in order to avoid marginalization. Becker, Franko, Nussbaum, and Herzog (2004) found that “feeling exposed” was a reason stated for stopping medical treatment after one or more appointments by individuals who were told to get further medical advice on their disordered eating. It is possible that avoiding “exposure” is connected to wanting to avoid discrimination and in turn, feelings of shame. In regards to obesity, Westermann, Rief, Euteneuer, and Kohlmann (2015) found that when exposed to social exclusion, individuals with obesity experienced a significant increase in shame, indicating that shame is a pronounced emotion. Shame in this experimental study was the direct result of social exclusion (i.e., a form of discrimination), thereby indicating that societal treatment and perception of people with obesity can impact an individual’s emotional state. If shame is the result of how individuals perceive those with obesity, then it is possible that people with obesity will be less open about their condition (i.e., not discuss it with their peers) in order to avoid feelings of shame.

The experience of shame provides a potential explanation for why individuals with these conditions are less inclined and motivated to seek help. Stigmatization may
hinder both individuals with AN and obesity from seeking treatment. However, although the experience of shame and its consequence of making individuals less inclined to seek help exists for both conditions, the reasons for not seeking help may be different. A study asking participants with disordered eating why they would not seek medical help yielded the response, “not wanting others to know” (Becker et al., 2004). The inclination to hide or deny one’s condition is commonly seen in individuals with AN. This desire to hide one’s condition may be a result of feelings of shame surroundings one’s condition and a desire to avoid being marginalized. This concealment of one’s condition makes sense given that a 2003 survey distributed by the UK Office for National Statistics found that 33% of individuals felt that people with eating disorders “feel different from us” (Crisp, 2005). Thus, hiding one’s condition could be an attempt to not isolate oneself from those without eating disorders. In addition, the significance of AN as a condition is often undermined by the public, as the 2003 survey revealed that 35% of participants said people with eating disorders “could pull themselves together” (Crisp). Individuals who think that people with AN can just “pull themselves together” may not take the condition seriously. This disregard for AN as a serious condition seems to make individuals with AN more ashamed and in turn, less motivated to find help.

While the ability to physically hide one’s condition exists with AN, it does not with obesity. If one has obesity, it is difficult to prevent others from knowing this, as the signs of obesity are often more visible. Thus, the cost of shame can function in different ways for obesity, as people with obesity may be unable to avoid being marginalized. Because individuals with obesity cannot cover up their condition,
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judgment regarding one’s size is common. This judgment could help explain why women with obesity, after completing responses to the self-report measure of Obesity Related Well-Being (ORWELL 97), reported having a low quality of life on the ORWELL 97-1 subscale, which assessed psychosocial factors, such as “feeling nervous” and “self-esteem” (Mannucci et al., 1999). So, individuals with obesity are unlikely to be avoiding treatment due to fear of others discovering their condition. Rather, stigma towards people with obesity seems to be linked to others doubting their ability to recover, which in turn may affect how an individual perceives his or her recovery. A study that examined how weight bias impacted health professionals’ attitudes revealed that those with greater weight biases predict that treatment for patients with obesity will not yield positive results (Puhl, Latner, King, & Luedicke, 2013). This study suggests that individuals with obesity may be less likely to partake in treatment due to a fear of failure.

It is evident that some of the negative consequences experienced by individuals with eating disorders and obesity are the direct result of stigma; in order to decrease these consequences, educational programs for the general public need to focus on reducing stigma. However, if programs address one condition without the other, an individual may be at risk for developing the other condition. Framing obesity as an epidemic may contribute to the extreme emphasis that is put on diet and exercise for the purpose of weight loss. This overemphasis on dieting and exercising can lead to the development of an eating disorder. A study conducted by Lebow, Sim, and Kransdorf (2015) found that 17% of adolescents with restrictive eating disorders used to be overweight. Thus, it is possible that behaviors these adolescents employed
in an attempt to lose weight, such as exercising and dieting, ultimately resulted in an eating disorder. A study conducted by Haines (2006) revealed that weight stigmatization can also put individuals at greater risk of engaging in maladaptive eating behaviors and experiencing eating disorder symptoms. The longitudinal study found that boys who experienced teasing due to their weight were more likely than those who were not teased to engage in maladaptive weight loss solutions, such as binge eating, five years after being teased (Haines). A similar finding existed for girls, as 18.2% of girls who were teased about their weight engaged in dieting often, while 11% of girls who were not teased engaged in dieting often (Haines). These findings are further supported by the fact that over a ten-year period (1995-2005), the chances of an individual having both eating disorder symptoms and obesity increased from 1% to 3.5% (Darby et al., 2009). Therefore it is necessary to discuss these contrasting medical conditions together, as they can feed into and affect one another.

Efforts to prevent obesity can contribute to and reinforce behaviors associated with AN. Regardless of condition, the costs of stigma can diminish quality of life by preventing an individual from taking the necessary steps to help him or herself and/or by negatively affecting one’s self-perception. Based on the literature, it appears that a number of factors, including societal beliefs regarding the causes of a condition, degree of personal responsibility, and definition and possibility of recovery may influence stigma. By understanding how beliefs about these factors differ according to condition and how they relate to stigma, educational programs can be devised and distributed to help reduce stigma, improve quality of life, and increase treatment utilization.
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**Causes**

The societal presumption that AN and obesity are linked to an individual’s behavior affects perceptions of what causes these medical conditions (Crisp, 2005; Chambers & Traill, 2011). For AN and obesity, research shows that individuals tend to perceive psychological factors as a primary cause of these conditions and that biological factors are rarely endorsed. For example, a study conducted by Salafia, Jones, Haugen, and Schaefer (2015) showed that individuals without eating disorders believed that “psychological and emotional problems” were the most important causes for AN and a study by Chambers and Traill similarly found that “individual attributions,” such as lack of willpower, were considered a more important cause of obesity than genetics. In contrast, a study by Stewart, Keel, and Schiavo (2006) revealed that participants saw biological factors as the least important cause for AN and the Chambers and Traill’s study showed that participants saw genetic factors as the least important cause of obesity. While psychological factors tend to be emphasized and biological factors minimized for both conditions, one point of deviation between AN and obesity is that there is some recognition of environmental/sociocultural causes for AN, while this is rarely the case for obesity. This point is evident in the Salafia et al. study in which participants without eating disorders identified “media and culture ideals” as the most important cause of eating disorders after “psychological and emotional problems.”

It is problematic that there is a lack of emphasis on biological causes for AN and obesity because evidence confirms that biology is crucial to the development of these conditions. A study by Lilenfeld et al. (1998) revealed that relatives of
individuals with eating disorders were 7 to 12 times more likely to have an EDNOS, as compared to relatives of those without eating disorders. This study suggests that there may be biological foundations in the formation of AN, as eating disorders are commonly found among family members. In fact, heritability predictions are somewhat comparable for those with AN and those with schizophrenia. A study by Wade, Bulik, Neale, and Kendler (2000) revealed that heritability rates for AN are 58%. And a study by Wray and Gottesman (2012) revealed that heritability rates for schizophrenia are 67%. Despite this fact, participants in a study that compared the two conditions ranked biological factors as a less influential cause for AN, compared to schizophrenia (Stewart et al., 2006). Furnham and Manning (1997) also discuss various potential biological causes of obesity related to genetic factors, difficulty in storing and maintaining fat, and stress. Yet, a study that compared how the news portrayed obesity over two time periods (1995-1999 and 2005-2009) revealed that there was a significant decrease in coverage of the genetic causes of obesity, as frequency dropped from 55% to 34% (Gearhart, Craig, & Steed, 2012). This change in media portrayal possibly reflects society’s own beliefs on the unimportance of genetic factors in the development of obesity, despite the fact that a study by Hjelmborg et al. (2008) revealed that BMI levels had an 80% heritability rate for males and an 82% heritability rate for females. Thus, the societally constructed hierarchy of causes for AN and obesity places biological factors at the bottom. By dismissing the biological factors that can contribute to the development of these conditions, society perpetuates the stereotype that these diseases are caused by the individual.
Stigmatization ratings of people with AN and obesity are influenced by what one cites as the causes of the condition. In a study examining stigmatization toward individuals with obesity, 23.5% of the 1,000 participants held stigmatizing beliefs (Hilbert, Rief, & Braehler, 2008). Two of the main predictors of higher stigmatization ratings in this study by Hilbert et al. included seeing the source of one’s obesity as a direct result of one’s behavior and not fully acknowledging the aspect of heredity. In a study conducted by Ebneter, Latner, and O’Brien (2011) individuals who located the causes of AN in one’s environment, caregivers, or a character flaw, were more inclined to stigmatize persons with AN. Similar findings held true for obesity; stigmatization was greater for persons with obesity when participants did not view genetic factors as a cause (Ebneter et al.). These studies support the idea that individuals who frame AN or obesity as the result of genetic and biological causes would be less likely to stigmatize those with AN or obesity.

**Personal Responsibility**

The minimization of biology’s role contributes to greater stigma and perpetuates a narrative of personal responsibility. The research on AN reveals that individuals with AN are held more personally responsible relative to other medical conditions and mental illnesses. For example, studies have shown that participants deem those with eating disorders more personally responsible than those with type I diabetes and those with asthma (O’Connor, McNamara, O’Hara, and McNicholas, 2016; Stewart et al., 2006). In addition, participants in several other studies deemed individuals with eating disorders as more personally responsible than those with depression, panic attacks, dementia, and schizophrenia (O’Connor, McNamara,
O’Hara, and McNicholas; Crisp, 2005; Stewart et al.). Stewart et al. also found that individuals with AN were perceived as having self-control. The perception that an individual with AN is in control of his or her behavior might contribute to the blame and personal responsibility that society often associates with persons who have AN. From this research it appears that the public categorizes eating disorders differently from other medical conditions and mental illnesses. The ascription of personal control seems to result in individuals viewing AN as a personal choice.

Society also seems to believe that personal responsibility is an important part of the development of obesity. A study in which health professionals who were experts in obesity completed an Implicit Attitudes Test revealed that these experts view people with obesity as lazy at a significant level (Schwartz, Chambliss, Brownell, Blair, & Billington, 2003). If health professionals who are knowledgeable about obesity reinforced the stereotype that persons with obesity are lazy, it is likely that the public would share a similar view. This view may contribute to the perception that people with obesity are responsible for their condition. In addition, Aston, Price, Kirk and Penney (2011) point out that obesity is often labeled a “lifestyle choice.” The word “choice” implies that an individual has complete control over his or her medical condition.

Comparing the two conditions, it seems that individuals with obesity may be held more personally responsible than those with AN. In a study conducted by Murakami, Essayli, and Latner (2016), participants blamed individuals with obesity significantly more for their condition than those with AN. The results of this study may be linked to commonly held beliefs that individuals with obesity are unmotivated
to make positive changes to their lifestyles, thereby perpetuating the stereotype of persons with obesity as lazy (Grant, Mizzi, & Anglim, 2016). In addition, given the aforementioned research on causal factors, individuals with AN may be held less personally responsible than people with obesity due to the recognition of external factors (e.g., “media and culture ideals”) for AN, which are largely outside of an individual’s control.

**Recovery**

Societal beliefs regarding causes and personal responsibility may influence perceptions of recovery. However, compared to studies on personal responsibility and causes, there is little research determining what society qualifies as recovery for individuals with AN and obesity. Recovery research for AN has focused on opinions of sufferers and clinicians and suggests that multiple factors are important in the process of recovery, which can make it difficult to define and in turn, work towards. Emanuelli, Waller, Jones-Chester, and Ostuzzi (2012) looked at the difference in recovery definitions between clinicians and people who have had an eating disorder. This study by Emanuelli et al. showed that there is an overlap in what sufferers and clinicians see as important factors in one’s recovery process, as they provided the same rankings of the following categories as essential to recovery: 1) weight-controlling behaviors, 2) evaluation of one’s appearance, 3) psychological-emotional-social criteria, 4) life-threatening consequences, and 5) non-life-threatening consequences. However, sufferers did disagree on the overall importance of several criteria (Emanuelli et al.). Sufferers rated psychological-emotional-social factors and evaluation of one’s appearance as more important to recovery than clinicians.
(Emanuelli et al.). Another study that evaluated how individuals with eating disorders perceive recovery illustrated that recovery is an elusive concept for sufferers and thus, difficult to see as a reality for themselves (Malson et al., 2010). This study reveals that sufferers of AN see recovery as unlikely. The absence of a clear and agreed upon definition for recovery from AN among sufferers and professionals suggests that there may also be a lack of consensus on whether an individual with AN can fully recover within the general public, therefore leading society to see recovery as unlikely for individuals with AN. If there is no clear idea of what recovery looks like for a person with AN, believing in recovery as possible is more difficult.

The gap in research on society’s understanding of the possibility and parameters of recovery exists for obesity as well. Recovery research for obesity may be framed by the assertion that obesity is a health crisis that is affecting more and more individuals (Chambers & Traill, 2011). The discourse on recovery as it relates to obesity often intersects with discussions of prevention programs and societal tools implemented to curtail this epidemic (Baranowski, Cullen, Nicklas, Thompson & Baranowski, 2002). The term “recovery” is less often applied to obesity than it is to AN; however, the framework of obesity as a health crisis might contribute to society’s desire to reduce the number of people with obesity in the United States. When recovery from obesity is discussed, it often entails eating healthier, slowing down the pace of one’s eating, and exercise (Tinker & Tucker, 1997). Although obesity treatment is an option, a study conducted by Tinker and Tucker revealed that individuals with obesity had reservations about treatment, including the cost. For individuals who cannot reach a healthy weight from the above approaches, some turn
to bariatric surgery. A review and analysis on the literature on bariatric surgery by Buchwald et al. (2004) revealed that bariatric surgery results in significant weight loss, while also helping to reduce the effects of comorbid conditions, such as diabetes. If bariatric surgery is used as a means of recovery, then recovery from obesity is centered on a decrease in weight and reduction in body mass index, as well as a reduction and or reversal of the effects of comorbid conditions. Based on these studies, weight-controlling behaviors, as well as life-threatening consequences, may be seen as most critical for recovery from obesity.

Furthermore, obesity is often seen through a medical lens, as obesity is a disease that is often comorbid with diabetes, hyperlipidemia, hypertension, and obstructive sleep apnea (Buchwald et al., 2004). The medicalization of obesity may frame the way in which recovery from obesity is defined, as it could entail preventing these related conditions (i.e., life-threatening consequences) and or reversing the development and effects of them. Therefore, the medical framework in which obesity is discussed may medicalize and in turn clarify the terms of recovery.

Despite the framework of obesity as a medicalized epidemic to be overcome, research shows that reservations still exist about the possibility of recovering from obesity. A study by Puhl et al. (2013) revealed that health professionals with greater weight biases did not feel confident about treatment’s effectiveness for persons who are overweight. Although it is unclear what the public believes about recovery from obesity, it is possible that the public shares similar views to the health professionals in this study and therefore doubts treatment’s effectiveness for people with obesity. Despite the varying routes and definitions of recovery mentioned above, this research
reveals that individuals have reservations about the likelihood of an individual recovering from obesity. No studies to date have directly compared beliefs about the likelihood of recovery from AN and obesity. Despite the lack of research on this topic, one can make assumptions regarding society’s beliefs about recovery based on research on personal responsibility and causes. If obesity’s causes are attributed more to internal factors than to external factors and if individuals with obesity are held more personally responsible than individuals with AN, then it follows that an individual with obesity may be seen as more likely to recover because he or she has more control over his or her condition than an individual with AN.

**Gender**

Studies show that although both individuals with AN and obesity are stigmatized for their condition, gender is a variable that affects this relationship. For individuals with AN, stigma seems to be greater for male individuals, while for obesity, stigma is greater for female individuals. AN’s label as a “female” disorder may result in a dismissal and stigmatization of males with AN. Research on eating disorders indicates that heterosexual men are significantly more satisfied than heterosexual women with their bodies (Conner, Johnson, & Grogan, 2004). If one views body image issues as a cause of AN, then this research may help to explain why AN may be perceived as a “female” disorder, as females may be more unhappy with their bodies than males are. However, this misconception does not account for the fact that men experience eating disorders as well; a study conducted by Eisenberg, Nicklett, Roeder, and Kirz (2011) on a college campus revealed that 3.6% of men had a positive SCOFF screen, which is a questionnaire used to assess the presence of an
eating disorder. Striegel-Moore, Leslie, Petrill, Garvin and Rosenheck (2000) examined the relationship between treatment and gender in a study that revealed that males are less likely to seek treatment and females spend a higher number of days in treatment than males. This lower rate of males seeking treatment could be a result of the labeling of AN as a “female” disorder. The above research supports why males with AN would be stigmatized more than females with AN.

The relationship between stigma and gender in obesity finds opposite effects than in AN. A study by White, O’Neil, Kolotkin and Bryne (2004) examined how quality of life among persons with obesity varied across gender and race and found that white and black women reported having a lower quality of life when it came to sexual life than white and black men and that white women reported having a lower quality of life when it came to self-esteem than black women, and white and black men. Although race also affects one’s experience with obesity, these findings suggest that being overweight more negatively affects females than males, perhaps due to the greater stigma that comes with being an overweight female in a society that values thinness, especially for females. The study carried out by Conner et al. (2004) adds to this finding by showing that social pressures that seek to enforce certain modes of eating and thin body types disproportionately affect heterosexual women.

Conclusion

Both AN and obesity are stigmatized. The literature discussed helps one to understand the similarities between these medical conditions, as well as the differences. For both AN and obesity, biological causes are often dismissed, despite scientific evidence that cites biology as an important etiological factor. Although
biological causes are not recognized for either condition, environmental factors are included when discussing the causes of AN. AN and obesity are also similar in the fact that an individual is likely to be held personally responsible for their condition, perhaps due to the emphasis on psychological causes of AN and obesity. Individuals with obesity, however, are often held more personally responsible than individuals with AN. In regards to recovery, both conditions lack a clear definition for what qualifies as “recovered” and are unclear about the likelihood of being able to fully recover. However, if an individual with obesity is seen as having this condition as a result of personal shortcomings rather than biological causes and is therefore held more personally responsible, then it follows that an individual with obesity will be more likely to recover than an individual with AN. Additionally, people tend to prioritize weight-controlling behaviors and medical criteria (i.e., life-threatening consequences) for recovery from obesity, whereas individuals focus on psychological-emotional-social criteria and evaluation of one’s own appearance for recovery from AN. Based on this literature, obesity seems to be more stigmatized overall compared to AN; however, this stigmatization seems to depend on gender, with AN being more stigmatized for males and obesity being more stigmatized for females. The literature discussing AN and obesity helps to illuminate the source and degree of stigmatization for both conditions. However, there is still minimal research directly comparing the two conditions, which makes it difficult to arrive at accurate conclusions.

Present Study
The primary purpose of this study is to investigate how condition and gender impact beliefs about causes, personal responsibility, and recovery, as well as the degree of stigmatization towards persons with AN or obesity. By conducting research that examines how individuals perceive and in turn, stigmatize those living with AN or obesity and how that differs across gender, a more comprehensive understanding of the sources and degree of stigma for AN and obesity will emerge. There is already an abundance of literature on stigma of AN and obesity, yet the variables examined in this study (i.e., causes, personal responsibility, recovery, and gender) will help to more specifically illuminate the beliefs and perceptions that contribute to the stigmatization of those with AN or obesity. Because previous research has not directly compared AN to obesity in this regard, this research will help to provide a better understanding of the similarities and differences in perceptions of those with these conditions in order to allow for a more explicit understanding of the ways in which these conditions are related.

First, I hypothesize that psychological causes will be identified as the most important cause compared to biological or environmental factors for both individuals with AN and obesity. However, I hypothesize that environmental factors will be considered more important for AN than obesity. Second, I hypothesize that in regards to personal responsibility, individuals with obesity will be blamed more for their condition. Building on the previous two hypotheses, I hypothesize that individuals will be more likely to indicate that recovery is possible for obesity than AN. In addition, I hypothesize that weight-controlling behaviors and life-threatening consequences will be considered more important to recovery for obesity and
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psychological-emotional-social factors and evaluation of one’s own appearance will be considered more important for recovery from AN. Lastly, I hypothesize that obesity will be stigmatized overall more than AN. In terms of gender, I hypothesize that males with AN will be stigmatized more than females with AN and females with obesity will be stigmatized more than males with obesity.
Methods

Participants

The study consisted of 76 participants from a small liberal arts college in the Northeast. Students were recruited via posters placed around campus, posts on Facebook, and email requests. Participants received $10 compensation for their participation. Additionally, students enrolled in the introductory psychology course (PSYC 105) completed the study for course credit. The mean age of the sample was 20 (SD = 1.42) and the majority of the sample (57.9%) identified as white. The remainder of the sample identified as Asian/Pacific Islander (26.3%), Hispanic or Latino (9.2%), Black/African American (3.9%), or other (2.6%). There were more female participants (56.6%) than male participants (43.4%).

Procedure

Before the study was administered, the Institutional Review Board at Wesleyan University approved it. The study was administered to participants in small groups consisting of three to 15 people via the Qualtrics online platform on personal laptops that participants were instructed to bring to the study location. Before the study commenced, participants read and signed an informed consent form (see Appendix A). They were given the chance to ask questions and discontinue the study at any time, if they felt it was necessary.

After completing a demographics survey that asked questions regarding age, ethnicity, biological sex, sexual orientation, gender identity, nationality, permanent residence, and language, participants read the vignette to which they were randomly assigned. The vignette depicted either a female or male individual with either AN or
obesity. This study used a 2x2 between subjects experimental design, with comparable groups for each condition: female AN (n = 20), male AN (n = 18), female obesity (n = 19), and male obesity (n = 19). To ensure that the participants read the vignette thoroughly, they were asked two manipulation check questions immediately following the vignette: “What was the name of the person in the vignette?” and “What condition was the person in the vignette diagnosed with?” Following this manipulation check, participants answered a series of counterbalanced questionnaires to assess the degree to which they stigmatized the character in the vignette and their beliefs about the causes, degree of personal responsibility, and recovery. On average, the study took participants 10 minutes and 34 seconds to complete.

Upon completion of the questionnaires, participants were offered the opportunity to complete other studies that were being conducted during the same time slot. These studies were also looking at eating disordered related topics. After the study (or multiple studies) was completed, one of the primary researchers or a member of the research team debriefed participants in a separate room (see Appendix B). After the participants were debriefed, they were provided with course credit or paid for their participation and invited to ask questions. They were thanked for their time and encouraged to contact the researcher at any point with further questions.

**Materials**

**Vignettes.** All participants were randomly assigned to one of the four vignettes. The vignette depicted either a female or male with either AN or obesity. The vignettes differed in terms of the implied gender of the character being described: a female named Amanda or a male named Matthew (see Appendix C). In addition,
the obesity vignettes had different weight and height descriptions depending on the gender of the person in the vignette. The AN vignette depicted a character engaging in restrictive eating and exercise who is underweight and fearful of becoming fat. The obesity vignette depicted a character that eats a regular diet consisting of many different types of snacks and high caloric foods, while maintaining a stable weight. Murakami et al. (2016) used the vignettes selected for this study in their own study. All participants passed the manipulation check.

**Stigma.** Three measures were used to assess stigma. The Affective Reaction Scale (ARS) measures the affective component of stigma by asking the participant how they would feel if they were to interact with someone like the character in the vignette (see Appendix D; Penn et al., 1994). The measure consists of 10 items assessed on a 6-point scale. Five of the items are reverse scored so that higher scores indicate greater affective stigma. Examples of items include “optimistic” vs. “pessimistic” and “comfortable” vs. “apprehensive.” This measure has been found to have excellent reliability ($\alpha = .86$).

The Social Distancing Scale (SDS) adaptation for college students served as a measure for the behavioral component of stigma by asking participants their “willingness” to engage with someone like the individual depicted in the vignette (see Appendix E; Borenstein, 2011). The measure consists of 6 items assessed on a 4-point scale. A higher score on this measure means greater behavioral stigma. Examples of items include “be roommates with Amanda/Matthew,” “make friends with Amanda/Matthew,” and “work closely on a group project with
Amanda/Matthew.” This measure has been found to have excellent reliability ($\alpha = 85$).

The last measure of stigma, the Characteristics Scale (CS), was used to determine the cognitive component of stigma (see Appendix F; Penn et al., 1994). This measure asks participants to rate the individual in the vignette on a variety of characteristics. The measure consists of 20 items assessed on a 7-point scale. Ten of the items are reserve scored so that higher scores indicate greater cognitive stigma. Examples of items include “strong” vs. “weak” and “intelligent” vs. “unintelligent.” This measure has been found to have excellent reliability ($\alpha = .87$).

**Causes.** The Causal Attributions Scale (CAS) was used to determine what participants saw as the most important causes of AN and obesity (see Appendix G). This scale asks participants to “rate the extent to which you believe each of the following factors contributes to the development of Anorexia Nervosa/Obesity.” This measure consists of 23 items on a 7-point scale. The items, divided into the categories of “biological,” “psychological,” and “environmental,” were compiled from several different studies in order to create the most comprehensive list of possible causes of AN and obesity. The first 13 items in the Causal Attributions Scale focused on causes frequently cited for AN (e.g., genes, poor living habits, parenting) and came from Crisafulli, Thompson-Brenner, Franko, Eddy, and Herzog (2010) and Salafia et al. (2015). The remaining items focused on causes frequently cited for obesity (e.g., metabolic defect, desire to be healthy, poor nutritional knowledge) and came from Foster et al. (2003). A higher score on this scale means more likely to be considered a
main contributing cause. Since this measure was compiled for this study, there is no prior information available on reliability.

**Personal Responsibility.** In order to assess personal responsibility, the Blame subscale of the Eating Disorder Stigma Scale (EDSS) was used (see Appendix H; Crisafulli et al., 2010). This measure helps to assess the degree to which participants blame Amanda or Matthew for their condition. This measure consists of 4 items assessed on a 7-point scale. Two of the items are reverse scored so that higher scores indicate greater blame. Examples of the items include “Negative consequences caused by Matthew’s anorexia nervosa are not his fault” and “Matthew is responsible for his anorexia nervosa.” This measure has been found to have excellent reliability ($\alpha = .80$).

**Recovery.** Participants were asked the question: “Do you believe it is possible for people like Amanda/Matthew to overcome Anorexia Nervosa/Obesity?” The options to respond to this question include “Yes” or “No.” Following this question, The Recovery Checklist (RC) was employed to determine what criteria participants viewed as most critical for recovery (see Appendix I; Emanuelli et al., 2012). This measure consists of 63 items related to recovery from AN assessed on a 7-point scale. Recovery items were divided into five factors: F1 = “psychological-emotional-social criteria,” F2 = “weight-controlling behaviors,” F3 = “non-life-threatening consequences,” F4 = “life-threatening consequences,” and F5 = “evaluation of one’s own appearance.” Examples of an item from each include: “not being depressed,” “not vomiting after a meal,” “skin being dry,” “heartbeat being normal,” and “not
feeling too fat,” respectively. Each subscale has been found to have high reliability: F1 ($\alpha = .96$), F2 ($\alpha = .90$), F3 ($\alpha = .93$), F4 ($\alpha = .92$), F5 ($\alpha = .78$).

Additional items were added to the checklist to include a greater number of items relevant to obesity, including: “maintaining healthy weight,” “eating balanced diet,” “engaging in recommended amount of exercise,” “increased physical mobility,” “decreased shortness of breath,” “decreased sweating,” “increased energy,” “improved stamina for physical activity,” “blood pressure being normal,” “cholesterol level being normal,” and “decreased diabetes symptoms or risk.” These additional items were added to F2 (“weight-controlling behaviors”), F3 (“non-life-threatening consequences”), and F4 (“life-threatening consequences”) based on how well the item fit into the subscale category. For example, “maintaining healthy weight” fell under the “weight controlling behaviors” subscale. A higher score on this measure means an item is more critical for recovery.
Results

Data Management

All statistical analyses performed for this study were done using IBM SPSS Statistics 24. A missing data analysis was conducted, revealing that there were 21 participants with missing data, who skipped between 1 and 3 questions on the ARS, CAS, and RC. Thus, missing data points were minimal and there were no questionnaires with large amounts of missing data. Missing data was replaced with regression imputation. In addition, the data were evaluated for significant outliers. One participant was removed from the data as an outlier, as this participant had a score on the CS that was more than three standard deviations away from the mean.

Preliminary Analyses

First, descriptive statistics were calculated for the entire sample. Means and standard deviations demonstrate a range of responses on each measure (see Table 1).

Correlations were also calculated between each of the measures (see Table 2). There was a significant positive correlation between cognitive stigma (CS) and affective stigma (ARS) \((r = .26)\) and a significant negative correlation between cognitive stigma (CS) and behavioral stigma (SDS) \((r = -.31)\). Generally, there were strong positive correlations among the different recovery subscales (RCF1, RCF2, RCF3, RCF4, RCF5). There were strong negative correlations between personal responsibility (EDSS) and some of the recovery subscales (RCF2, RCF3, and RCF4) \((r = .32, r = -.34, r = -.37)\). Lastly, generally, there were strong positive and negative correlations among the causes (CAS_Bio, CAS_Psych, CAS_Env).
Analyses were also performed to determine if the four groups were equivalent. A one-way ANOVA showed that groups did not differ significantly in age, $F(3,71) = .36, p = .78$. A chi-squared test showed that groups also did not differ significantly in ethnicity, $\chi^2(12, n = 76) = 9.06, p = .70$. A final chi-squared test showed that groups did not differ significantly in gender, $\chi^2(16, n = 76) = 3.18, p = .79$.

**Primary Analyses**

**Causes.** To test the first hypothesis regarding causes, a repeated measures ANOVA was performed to determine whether psychological factors (CAS_Psych) were considered more important causes for AN and obesity than biological (CAS_Bio) or environmental factors (CAS_Env). The repeated measures ANOVA revealed a significant interaction between condition (i.e., AN, Obesity) and cause (i.e., biological, psychological, environmental), $F(1,74) = 12.57, p < .05$. Post-hoc comparisons showed that there was a significant difference between psychological and biological causes for AN ($p = .01$). Psychological causes ($M = 4.39, SD = .82$) were rated as more important than biological causes ($M = 3.87, SD = 1.08$). There was also a significant difference between biological and environmental causes for AN, $p < .01$. Environmental causes ($M = 4.55, SD = .94$) were rated as more important than biological causes ($M = 3.87, SD = 1.08$). Lastly, there was a significant difference between biological and psychological causes for obesity, $p < .01$. Biological causes ($M = 5.28, SD = 1.13$) were rated as more important than psychological causes ($M = 4.61, SD = 1.19$).

A series of independent samples t-tests were performed to determine whether there were any significant differences in the rated importance of each cause based on
condition. There was a significant difference in importance of biological causes based on condition, \( t(74) = -5.60, p < .01 \). Biological causes were rated as more important causes of obesity \((M = 5.28, SD = 1.13)\) compared to AN \((M = 3.87, SD = 1.08)\).

There was no significant difference in importance of psychological causes based on condition, \( t(74) = -0.94, p = .36 \). There was also no significant difference in importance of environmental causes based on condition, \( t(74) = -1.88, p = .06 \).

**Personal Responsibility.** To test the second hypothesis regarding personal responsibility (EDSS), an independent samples t-test was performed. This test showed that there was no significant difference in personal responsibility ascribed based on conditions, \( t(74) = -1.25, p = .22 \).

**Recovery.** Since all participants, regardless of the condition to which they were assigned, responded, “yes” to the recovery question, no analyses were conducted regarding the hypothesis that individuals would indicate that recovery is more possible for individuals with obesity than individuals with AN.

To test the third hypothesis regarding specific recovery factors, a series of independent samples t-tests were performed. There were several factors that were rated significantly higher for AN compared to obesity. There was a significant difference in the importance of psychological-emotional-social criteria (RCF1) based on condition, \( t(74) = 1.99, p = .05 \). Psychological-emotional-social criteria was rated as more critical for recovery from AN \((M = 5.50, SD = .85)\) than recovery from obesity \((M = 5.09, SD = .95)\). The independent samples t-test for evaluation of one’s own appearance (RCF5) indicated that there was a significant difference in the importance of evaluation of one’s own appearance based on condition, \( t(74) = 4.67, p \)
Evaluation of one’s own appearance is significantly more important to the recovery of a person with AN ($M = 5.95$) than a person with obesity ($M = 4.97$).

There were also several factors that were rated significantly higher for obesity compared to AN. There was a significant difference in the importance of non-life-threatening consequences (RCF3) based on condition, $t(74) = -2.76, p = .01$. Non-life-threatening consequences were rated as more important for recovery from obesity ($M = 4.59, SD = 1.08$) than AN ($M = 3.88, SD = 1.16$). There was a significant difference in the importance of life-threatening consequences (RCF4) based on condition, $t(74) = -2.74, p = .01$. Life-threatening consequences were rated as more important for recovery from obesity ($M = 5.12, SD = 1.14$) than AN ($M = 4.31, SD = 1.41$).

The independent samples t-test for weight-controlling behaviors (RCF2) did not yield a significant difference based on condition, $t(74) = 1.27, p = .21$.

**Stigma.** To test the hypothesis regarding the relationship between stigma and condition, a series of independent samples t-tests were performed. For behavioral stigma (SDS), there was a significant difference based on condition, $t(74) = 2.30, p = .02$. Obesity ($M = 1.77, SD = .63$) was stigmatized more than AN ($M = 1.40, SD = .76$). For cognitive stigma (CS) there was a significant difference based on condition, $t(74)= 4.66, p < .01$. AN ($M = 89.45, SD = 8.28$) was stigmatized more than obesity ($M = 79.00, SD = 11.06$). For affective stigma (ARS), there was no significant difference based on condition, $t(74) = 1.88, p = .06$.

**Stigma & Gender.** To test the final hypothesis, a series of one-way ANOVA were performed to determine how stigmatization varied according to group (i.e., gender and condition). For cognitive stigma (CS) there was a significant difference
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based on group, \( F(3,72) = 7.93, p < .01 \). Female AN \((M = 91.20, SD = 7.30)\) was stigmatized more than female obesity \((M = 77.68, SD = 10.67)\) and male obesity \((M = 80.32, SD = 11.58)\). Male AN \((M = 87.50, SD = 9.06)\) was stigmatized more than female obesity \((M = 77.68, SD = 10.67)\). For affective stigma (ARS) there was no significant difference based on group, \( F(3,72) = 1.80, p = .16 \). For behavioral stigma (SDS) there was also no significant difference based on group, \( F(3,72) = 2.57, p = .06 \).
Discussion

Causes

The results from this study partially supported the first hypothesis regarding causes. The first part of the hypothesis, which predicted that psychological factors would be identified as most important for both conditions was not supported. Psychological causes were in fact rated as most important for AN, followed by environmental, and finally biological causes. This finding is consistent with the research conducted by Salafia et al. (2015) that found that 8% of the sample without eating disorders deemed “genetics and biology” a cause of AN as compared to 47% who cited “media and culture ideals” as a cause and 64% who stated psychological and emotional problems. However, in the present study, biological causes were seen as more important than psychological causes for obesity and biological causes were found to be rated as more important for obesity than AN, while environmental causes did not differ. These findings can be illuminated by research conducted by Ogden and Flanagan (2008) in which general practitioners beliefs on obesity’s causes were compared to non-general practitioners beliefs on obesity’s causes. The findings from this study by Ogden and Flanagan revealed that GPs had a more comprehensive understanding of obesity’s causes that included behavioral, structural, social, and psychological causes, while non-GPs were more likely than GPs to endorse biological causes (Ogden & Flanagan). These results reveal that the general public has a more limited understanding of obesity’s multiple, intersecting causes, which perhaps reveals a lack of knowledge on the causes of obesity. Thus, because this study also included a college-aged sample that likely had less knowledge on the topic of obesity
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(i.e., non-GPs), it makes sense that biological causes were highlighted over other causes.

In addition, in contrast to the original hypothesis, environmental causes were not rated as more important for AN than obesity. This could be related to the fact that individuals with AN are seen to have control over their behavior (Stewart et al., 2006). Environmental causes, such as “parenting” and “media and culture ideals” are largely outside of an individual’s control. This may explain why environmental causes were not seen as more important for AN than obesity.

The findings from this present study suggest that AN is seen as primarily caused by internal factors with some influence of external factors and little biological impact. In contrast, obesity is seen as being rooted in biological causes.

**Personal Responsibility**

This study did not support the second hypothesis, which predicted that individuals with obesity would be held more personally responsible for their condition. This finding could be explained by social desirability. This subscale consisted of only four items and thus it was evident that the scale was measuring the degree to which individuals with AN or obesity are held personally responsible. It is possible that in order to come off as a good person, participants underreported their actual beliefs on personal responsibility. The overall mean for the EDSS was 3.37, which shows that participants, on average, leaned toward the neutral response of “neither agree nor disagree.” In order to rectify this limitation, future research could use an implicit measure of bias to eliminate the potential for social desirability and in
turn better assess how personally responsible individuals perceive people with AN or obesity to be.

Another explanation for the lack of support for the second hypothesis could be related to what individuals labeled as the primary causes of each condition. Psychological causes were seen as most important for AN, and biological causes were highlighted for obesity. Although one could either make the argument that psychological problems, such as “poor living habits” and “emotional problems” are within the control of an individual (i.e., persons with AN have self-control) or not within the control of an individual, it is more difficult to assert that biological causes, such as “metabolic defect,” are within an individual’s control. If an individual does not have control over his or her emotional problems or metabolism, then it follows that an individual would not be held personally responsible for their condition.

Recovery

The results from this study regarding recovery did not support the hypothesis that people with obesity would be more likely to recover than people with AN. In fact, regardless of condition, all participants responded that it was possible for people to recover from these conditions. This finding could be due to the fact that it was obvious to participants what this measure was asking. It is possible that a more implicit measure to assess likelihood of recovery would reveal individuals’ doubts about recovery. In addition, the limitation of social desirability may have prevented individuals from answering this question honestly.

However, this study did reveal that recovery criteria differs depending on condition. As hypothesized, psychological-emotional-social criteria (i.e., having
adequate self-esteem and not being depressed) and evaluation of one’s own appearance (i.e., not feeling too fat and accepting one’s own appearance) were deemed more important for recovery from AN than obesity. This finding could be explained by what individuals in this study perceived as the causes of AN. If individuals see psychological causes as a more important cause of AN than obesity, then it follows that recovery from AN would involve psychological-emotional-social criteria, as well as evaluation of one’s own appearance. This finding is consistent with the research conducted by Emanuelli et al. (2012) in which sufferers ranked evaluation of one’s appearance and psychological-emotional-social criteria as more important factors for recovery from AN than clinicians. It is possible that the participants in this study would align more with sufferers’ opinions than clinicians’, as both participants and sufferers of AN may not have a medical perspective on the topic of recovery in the same way clinicians do. In addition, recovery is inextricably linked to how these conditions are defined. The criteria in the DSM-5 for being diagnosed with AN does not merely include a weight threshold, but also psychological components including, “intense fear of gaining weight” and “disturbances in the way in which one’s body weight or shape is experienced” (American Psychiatric Association, 2013). Thus, it makes sense that recovery would take into account psychological variables and those related to appearance. Also in line with the original hypothesis, life-threatening consequences were considered more important for recovery from obesity than AN. This finding may be explained by obesity being viewed as a health crisis that requires societal attention and policies designed to curb the growing trend of obesity (Chambers & Traill, 2011). If obesity
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elicits such a strong societal reaction in which obesity is seen as a serious condition requiring intervention, it would follow that people would see recovery through an equally serious lens that required the absence of any “life-threatening consequences.”

However, contrary to the hypothesis, weight-controlling behaviors were not found to be more important for recovery from obesity compared to AN. An analysis of narratives presented in a talk show by Giles (2003) revealed that people with obesity view recovery from different angles; one talk show participant focused more on dieting and weight, while another participant framed her body in more positive terms. This participant was focused on maintaining her figure (i.e., not losing weight), while still citing the importance of fitness (Giles). This analysis shows that recovery may be a self-defined path for individuals with obesity. If persons with obesity do not limit recovery to weight-related criteria, it is possible that the general public would do the same. In addition, both AN and obesity include weight/BMI as part of the diagnostic criteria in the DSM-5; thus, it makes sense that eliminating unhealthy behaviors associated with weight would be equally important for both conditions (American Psychiatric Association, 2013). In addition, non-life-threatening consequences were seen as more important criteria for recovery from obesity compared to AN, which was not expected. This finding can be explained by what individuals view as the causes of obesity. If obesity has its roots in biological causes, then it is logical that recovery from this condition would involve physical criteria, such as “having no intestinal disturbances” and “having healthy teeth.”

Stigma
With respect to stigma, the hypothesis that obesity will be stigmatized more than AN was partially supported. The difference in stigma ratings across conditions depending on the type of measure reveals that stigma manifests in different forms depending on condition. For the affective stigma, there was no difference between conditions. This measure looked at how individuals would feel if they interacted with a person with AN or obesity. It is possible that “interact” connotes a brief time of engaging with an individual and therefore this measure would not reveal a significant difference between conditions, as it is measuring how one would feel for only a brief “interaction.” Furthermore, it is possible that there was not a significant difference across conditions on the ARS, as affective stigma measures how one would feel, which may require greater self-reflection on behalf of the participant than behavioral stigma (i.e., “please rank your willingness to be roommates with Amanda/Matthew) or cognitive stigma (i.e., “based on your impression of Amanda/Matthew, rate him/her on the following characteristics”). Predicting how one might “feel” may be difficult to determine, as questions regarding “feelings” might be harder for a participant to access than questions regarding one’s willingness to be roommates with a person with anorexia nervosa or if one sees a person with obesity as “insecure” or “secure.” Therefore it is possible that the absence of a significant difference across conditions on the ARS scale is due to the difficult nature of answering questions that ask one to anticipate how he or she would feel. Furthermore, affective responses have a primitive nature and therefore are more likely to occur when in the presence of a person with AN or obesity, rather than when responding to questions regarding a
vignette depicting a person with AN or obesity, as was done in this study (Bento, White & Zacur, 2012).

However, there was a difference in behavioral stigma based on condition, as obesity was stigmatized more than AN on this measure. This measure assessed one’s willingness to engage with a person with AN or obesity for longer and more meaningful durations (i.e., “be roommates with Amanda/Matthew” or “eat meals with Amanda/ Matthew”). The fact that obesity was stigmatized more than AN in this measure may speak to a society that values thinness, while simultaneously being uncomfortable with individuals who are overweight and the associations that come with that, such as lazy and unmotivated (Grant et al., 2016). A study conducted by Lieberman, Tybur, and Latner (2012) looked at attitudes of undergraduate students and found that participants saw obesity as “disgusting” on questions that examined pathogen disgust, sexual disgust, and moral disgust. This research can be used to help explain why obesity is stigmatized on the behavioral level, as individuals might see persons with obesity as “disgusting” and therefore not want to associate with them in social settings.

For cognitive stigma, individuals with AN were stigmatized more than individuals with obesity. It is interesting that overall individuals felt more comfortable being roommates with an individual with AN, but rate individuals with AN more negatively on a scale that looks at internal characteristics. It is possible that this greater stigma for individuals with AN on this scale stems from the fact that people without AN see people with AN as different from themselves. The survey conducted by the UK Office for National Statistics in 2003 found that among the
general population, 33% of participants responded that people with eating disorders are “hard to talk to” and “feel different from us” (Crisp, 2005). It is possible that this “other-ing” of individuals with AN led participants to stigmatize individuals with AN more on the CS. Furthermore, it is possible that this higher stigmatization rating comes from the fact that participants of this study may have had limited previous contact with a person with AN. A study conducted by Wingfield, Kelly, Serdar, Shivy, and Mazzeo (2011) found that individuals who had experience with eating disorders and knew people with eating disorders saw the individuals in the scenarios they read as more similar to them and having greater self-control. This finding suggests that participants may have cognitively stigmatized individuals with AN more than obesity due to their lack of familiarity and contact with a condition that can go unnoticed and or is kept a secret by the person living with AN due to the shame and stigma that accompanies this condition.

This cognitive stigmatization of AN over obesity can also be understood through the lens of the self-interest hypothesis, which asserts that there are biological, social, and psychological benefits to one’s inclination to stigmatize the “other” (i.e., the individual with AN) (Crisp, 2005). The biological advantages include dissociating with the weaker, less biologically fit individual for the purpose of survival and successful evolution (Crisp). The social motivations behind stigmatization of persons with AN revolve around a desire to create an “us vs. them” dichotomy that enable group A (non-anorexic persons) to stigmatize and therefore dissociate from group B (people with AN) (Crisp). Lastly, if one feels they are in danger of or at risk for
developing an eating disorder, they will react more strongly and negatively when encountering individuals affected by eating disorders (Crisp).

**Stigma & Gender**

The final hypothesis of this study, which states that males with AN will be stigmatized more than females with AN and females with obesity will be stigmatized more than males with obesity, was not supported by the findings in this study. There was no significant difference in affective stigma based on group. Again, this could be due to the fact that the ARS asked about how one would feel if they interacted with Amanda or Matthew. It is possible there were not significant differences across gender and condition because “interact” signifies a brief moment, rather than a long period of time engaging with a person with AN or obesity. And furthermore, it is difficult to assess one’s own feelings. There was no difference in behavioral stigma based on group. This finding reveals that although obesity is stigmatized more than AN behaviorally, this stigmatization is not affected by the gender of the individual. These findings are consistent with the results of a study conducted by Puhl, Luedicke, and Heuer (2013) in which gender did not affect how adults responded to an online survey eliciting their reaction to positive and stereotypical images of persons with obesity. While there were differences in cognitive stigma according to group, these findings revealed that regardless of gender, AN is stigmatized more than obesity. The finding from the present study supports the idea that stigmatization of AN and obesity occurs independently of gender.

**Strengths**

Strengths of this study include the experimental design, the inclusion of a variety of variables, and the use of a college student sample. The experimental design
of this study allowed for direct comparisons to be made between AN and obesity and allowed for causal conclusions to be drawn from the results of the study. Randomization ensured that the participants in each of the four conditions were equivalent and constituted a non-biased sample, therefore preventing self-selection or other factors from affecting the results. The inclusion of various measures of stigma as well as other related variables allowed for more conclusions to be drawn regarding the specific reasons that individuals with AN and obesity are stigmatized. This research also added to a limited body of research that directly compares AN and obesity; most research on these topics either discusses these conditions separately or compares obesity and AN to other conditions, such as schizophrenia, depression, and other types of eating disorders (i.e., bulimia nervosa or binge eating disorder). In addition, the participants from this study consisted only of college students, which could be viewed as a limitation (i.e., a non-representative sample); however, the opinion of college students on the topic of eating disorders is important, as eating disorders are common among the college-aged population, as a study by Anstine and Grinenko (2000) revealed that 17% of the college-aged sample of women used for the study had an EAT-26 score above 20, which indicates the presence of an eating disorder.

**Limitations**

The relatively small and homogenous sample, lack of exclusionary criteria, reliance on self-report measures, and manner in which this study was conducted are potential limitations of this research. Although the sample size was relatively large, participants were divided among four groups. Therefore, each of the four conditions consisted of only 18 to 20 participants. With a smaller sample size, the results are less
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generalizable and the power of the statistical tests is lessened. This is problematic as the aim of this study is to look at societal perceptions of eating attitudes and behavior. This inability to generalize the results to the population at large is furthered by the fact that the sample comes solely from college students at a small liberal arts school located in the Northeast. As a result, the age and education level of the participants was largely homogenous, which prevents the results of this study from being applicable to the general public. Another limitation of the sample itself is the absence of exclusionary criteria provided prior to the start of the study; any individual who responded to partake in the study was automatically included. As a result, it is possible that there were participants who have or have had personal experience with an eating disorder and or obesity. Personal experience with these conditions could impact the degree to which participants stigmatized individuals. It is possible that empathy derived from their own experiences made them less inclined to stigmatize those individuals. This could explain some of the lower stigma ratings.

The remaining limitations of this study were a result of the structure of the study itself. Firstly, all the measures included in this study were self-reported and therefore it is possible that the participants were not always honest (whether consciously or not) in their responses. Also self-report measures are subject to demand characteristics. If during the study participants understood that the researchers were trying to show that individuals with AN or obesity are likely to be stigmatized, participants may have provided answers to fit this expectation or been affected by social desirability. It is possible that during the course of the study, the participants also understood that the study was comparing perceptions of AN to
obesity. During debriefing, some participants mentioned that questions from the recovery section did not seem to fit the condition in the vignette they had read. For example, for an individual who read the vignette with Amanda/Matthew with AN, it would seem unlikely that recovery criteria would include “decreased diabetes symptoms or risk.” If a participant did in fact understand the purpose of the study during the course of the study, it is possible that this realization would impact their responses to the questions. Lastly, many of the participants who completed this study also completed additional studies on the topic of eating behaviors/disorders within the same hour time slot. It is possible that the completion of multiple studies in a short time period made the participants less attentive to the content presented in this study and therefore the participants’ responses were either rushed or not fully developed.

Future Directions and Implications

In moving forward with research on perceptions of eating attitudes and behavior, it would be useful to use the framework of this study but replace AN with other eating disorders, such as bulimia nervosa, binge eating disorder, or eating disorder not otherwise specified. It would be interesting to see how stigma varies depending on the specific eating disorder or whether stigmatization of eating disorders is relatively stable regardless of the specific eating disorder. It would also be useful to see how obesity and binge eating disorder compare to one another in the degree to which these conditions are stigmatized, considering the overlap in physical characteristics and behavioral patterns of overeating that occur in both conditions. Another variation on this study could include replicating the study, but changing the participants to clinicians and or individuals with AN or obesity. Many of the studies
examined in the literature review include sample populations that consisted of those with eating disorders and or clinicians, which provided a unique perspective. Thus, by changing the participant make-up to clinicians who work closely with persons with AN or obesity, one would be able to see whether or not certain biases exist among clinicians. By changing the participants to individuals who have experienced or are experiencing AN or obesity, the study would help to reveal how self-perception, self-esteem, and self-image varies across condition and gender.

The results of this study also illuminate the ways in which AN and obesity are similar to one another, as what one sees as the causes of these conditions is very much related to the criteria for recovery that is prioritized for these conditions. In addition, recovery is seen as attainable for both conditions. And furthermore, both these conditions are stigmatized, even though the stigmatization manifests itself differently. Acknowledging the ways in which these conditions are similar to one another illuminates the need for future research to directly compare these conditions to further identify the ways in which these conditions relate to one another.

Thus, future research should also continue to look at the ways obesity rhetoric leads to AN and vice versa. Examining the ways in which behaviors implemented to lose weight, such as dieting and exercising, lead to AN behaviors can help prevent diet and exercise from being used in unhealthy ways. Instead of framing exercise as a weight loss method, for example, it could be viewed as a way to improve the health of one’s heart. This shift in emphasis may prevent weight-controlling behaviors from leading to AN. In addition, looking at how persons with AN develop obesity could
help recovery programs better understand how to help patients implement behaviors that allow them to return to a healthy, stable weight.

Stigma of AN is associated with perceiving persons with AN to have more negative traits, while stigma of obesity is associated with individuals being less desirous of spending time with persons with obesity. With this understanding of the ways in which individuals with AN and obesity are stigmatized, it will be easier to identify the ways in which education on AN and obesity can reduce stigma. Because it is evident that much of the stigma comes from ignorance (i.e., not knowing anyone who has AN or believing that obesity is equated with laziness), it would be beneficial to destigmatize these conditions through the tool of education. Thus, this research can help one to understand how to develop educational programs that target certain misconceptions regarding causes and recovery. An educational program for AN that focused on sharing stories of persons who had experienced AN would provide people with first-hand accounts and breed familiarity with the disorder. More specifically, the results of this study reveal that individuals do not acknowledge the biological causes of AN and in turn, do not see recovery from AN from a medical perspective. To that end, an educational program centered on individuals sharing their stories could help to illuminate how person’s developed their AN and how they recovered (or are in the process of recovering) from the disorder in order to highlight the role biology plays in AN (i.e., a person explaining that his or her parent also had the disorder), while also illustrating that recovery goes beyond psychological-emotional-social criteria and one’s self-image (i.e., a person discussing the weight they hope to be at once recovered). An education program for obesity should work to dissociate
obesity from stereotypes of laziness so that individuals are less quick to judge individuals with obesity and in turn feel more comfortable spending time with persons with obesity. In addition, this educational program should address the topics of causes and recovery to ensure that individuals perceive causes other than biological ones, and furthermore, include non-medical criteria in recovery from obesity.

Lastly, research conducted by Levine and Schweitzer (2015) revealed that when persons with obesity show “warmth,” individuals perceive them in a more positive, less judgmental way. This finding may be able to be used to better understand how to reduce stigma towards persons with obesity. It is possible that if there were more positive depictions of persons with obesity acting “warmly” in ads, television shows, etc., then stigma towards persons with obesity would be reduced.
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Table 1. *Descriptives and Reliability for Measures in Total Sample*

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<td>4.23</td>
<td>1.17</td>
<td>.89</td>
</tr>
<tr>
<td>7. RCF4</td>
<td>4.72</td>
<td>1.34</td>
<td>.93</td>
</tr>
<tr>
<td>8. RCF5</td>
<td>5.46</td>
<td>1.04</td>
<td>.72</td>
</tr>
<tr>
<td>9. EDSS</td>
<td>3.37</td>
<td>1.20</td>
<td>.82</td>
</tr>
<tr>
<td>10. CAS_Bio</td>
<td>4.58</td>
<td>1.31</td>
<td>.81</td>
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<tr>
<td>11. CAS_Psych</td>
<td>4.50</td>
<td>1.02</td>
<td>.81</td>
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<tr>
<td>12. CAS_Env</td>
<td>4.75</td>
<td>0.93</td>
<td>.75</td>
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</table>

*Notes. N = 76. ARS = Affective Reaction Scale; SDS = Social Distancing Scale; CS = Characteristics Scale; RC = Recovery Checklist; EDSS = Eating Disorder Stigma Scale; CAS = Causal Attribution Scale.*
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<tr>
<td>1. ARS</td>
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<td>2. SDS</td>
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<tr>
<td>3. CS</td>
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<td>-0.31*</td>
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<td>0.58**</td>
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<tr>
<td>5. RCF2</td>
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<td>0.11</td>
<td>0.75**</td>
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<td>6. RCF3</td>
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<td>-0.09</td>
<td>-0.06</td>
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<tr>
<td>7. RCF4</td>
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<td>-0.04</td>
<td>0.51**</td>
<td>0.53**</td>
<td>0.83**</td>
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<tr>
<td>8. RCF5</td>
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<td>-0.22</td>
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<td>0.68**</td>
<td>0.63**</td>
<td>0.22*</td>
<td>0.17</td>
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<tr>
<td>9. EDSS</td>
<td>0.16</td>
<td>0.10</td>
<td>-0.01</td>
<td>-0.11</td>
<td>-0.32**</td>
<td>-0.34**</td>
<td>-0.37**</td>
<td>0.01</td>
<td>--</td>
<td>--</td>
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<td>--</td>
</tr>
<tr>
<td>10. CAS_Bio</td>
<td>-0.15</td>
<td>0.12</td>
<td>0.33**</td>
<td>-0.02</td>
<td>0.13</td>
<td>0.43**</td>
<td>0.41**</td>
<td>-0.26*</td>
<td>-0.30**</td>
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</tr>
<tr>
<td>11. CAS_Psych</td>
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<td>-0.09</td>
<td>0.00</td>
<td>0.41**</td>
<td>0.55**</td>
<td>0.51**</td>
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<td>0.31**</td>
<td>-0.50**</td>
<td>0.49**</td>
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</tr>
<tr>
<td>12. CAS_Env</td>
<td>-0.16</td>
<td>0.07</td>
<td>0.04</td>
<td>0.31**</td>
<td>0.39**</td>
<td>0.43**</td>
<td>0.36**</td>
<td>0.18</td>
<td>-0.16</td>
<td>0.44**</td>
<td>0.64**</td>
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</tbody>
</table>

Notes: *p < .05; **p < .01.
Appendix A: Informed Consent

Research Informed Consent

Perceptions of Eating Attitudes and Behaviors

Primary Investigators: Sasha Stahl
Faculty advisor: Caitlin Shepherd, Ph.D.

Purpose
I am conducting a research study to examine students’ perceptions of eating-related issues. I feel that your responses and participation would be valuable for my research in understanding how individuals with eating-related issues are perceived.

Procedures
Participation in this study will involve completing a demographic questionnaire, reading a vignette, and completing an anonymous online questionnaire, based on the vignette read. I anticipate that your involvement will require approximately 60 minutes or less. We have no criteria for excluding anyone from participating in our study. If for any reason, however, the study makes you feel uncomfortable at any point, you are welcome to stop participating. If you are a student in PSYC105 participating through the psychology pool you will receive 1 research credit for this study. If you are not a PSYC105 student, you will be financially compensated for your participation ($10/hour).

Risks and Benefits
One potential risk is a breach of confidentiality. This is extremely unlikely due to efforts to maintain confidentiality, as described in the next section. Another potential risk is that participants may experience distress or discomfort due to the sensitive nature of the vignette and questions included in this study. You are welcome to decline to participate or discontinue participation at any time, if at any time you are experiencing distress. If you currently have or are dealing with eating-related issues, these questionnaires may be particularly sensitive and you are welcome to decline to participate in the study. After you complete the study, the researcher will explain how to get in touch with Counseling and Psychological Services if you feel these services would be helpful to you. The detailed contact information for CAPS will be included on the debriefing form, which you will get at the end of the study.

Confidentiality
Only the researchers involved in this study and those responsible for research oversight will have access to the information you provide. I am aware that it is possible for online data to be hacked and accessed by an outside party. For this reason, the only identifying information for this study will be your name on the hard copy of this form. This form will in no way be linked with the information you provide on the online questionnaire. Therefore, in the case of an online security
breach, no identifying details will be accessible. The researcher copy of this form will be stored in a locked cabinet accessible only to the researchers.

This means that not even the researchers in this study will know that the responses you provide came from you. Your anonymous responses will be stored in a password-protected database online and moved to a protected server for long-term storage.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

**Voluntary Participation**
Participation in this study is completely voluntary. You are free to decline to participate or to discontinue participation at any time for any reason without penalty.

**Questions**
If you have any questions about this study, you may contact the primary investigator, Sasha Stahl at sstahl@wesleyan.edu. If you would like to talk with someone other than the researchers to discuss problems or concerns, you may contact the Wesleyan University Institutional Review Board chair, Jennifer Rose, electronically at jrose01@wesleyan.edu or by phone at (860) 685-2406 or refer to www.wesleyan.edu/IRB.

**Agreement to Participate**
[I am at least 18 years of age.] I have read the above information, have had the opportunity to have any questions about this study answered and agree to participate in this study.

______________________________________________________________________________

*Printed name*  

______________________________________________________________________________

*Date*

______________________________________________________________________________

*Signature*
Appendix B: Debriefing

Perceptions of Eating Attitudes and Behaviors

Thank you for your participation in this study – I appreciate your time and contribution.

The data collected from this study are for research purposes only. The primary purpose of this study is to understand how assumptions about gender and eating-related diagnosis (i.e., Anorexia Nervosa, Obesity) influence perceptions. In particular, I am looking at how these factors impact potential stigma as well as beliefs about presumed causes, degree of personal responsibility, and recovery. The knowledge gained from this study will hopefully be used to inform the general public and university resources about potential barriers for individuals with eating disorders or obesity.

In this study, participants were asked to read one of four vignettes (J.M. Murakami et al., 2016). The vignettes differed according to the gender of the character (i.e., a woman or a man) and the individual’s diagnosis (i.e., Anorexia Nervosa or Obesity). Additionally, participants completed a series of questionnaires to better understand potential stigma (Affective Reaction Scale; Social Distancing Scale; Characteristics Scale) and beliefs about causes of eating-related diagnosis (Causal Attributions Scale), personal responsibility (Blame subscale of the Eating Disorders Stigma Scale), and recovery (Recovery Checklist).

I hope my results will provide insight into how perceptions of anorexia nervosa and obesity vary across gender. Additionally, I believe the results of this study will highlight misconceptions that students have about anorexia nervosa and obesity and point to specific attitudes and beliefs to target in educational programs to reshape societal perceptions. While there’s significant evidence that society often stigmatizes those with anorexia nervosa and obesity, there is less research that explores viable educational programs for reforming and reshaping societal perceptions of these eating-related diagnoses and the individuals who live with them. I hope these results will contribute to our understanding of attitudes towards anorexia nervosa and obesity and aid in the prevention of stigmatization of individuals with these conditions.

For PSYC105 students, further information regarding the content of this study can be found in Chapter 14: Psychological disorders of your course textbook (Gazzaniga, Psychological Science, 5th ed. (2015), W.W. Norton & Company, Incorporated).

Additionally, you may find the following resources and articles helpful for further information on these topics:

General Information:

Stigmatization of Eating Disorders and Obesity:


Please contact Sasha Stahl at ssstahl@wesleyan.edu if you have any further questions about the study or would like to receive a summary report with the results of this research when it is completed.

If you feel that you are experiencing distress as a result of this study, please contact Wesleyan’s Counseling and Psychological Services (CAPS). The Counseling Center provides free short-term services to all Wesleyan students and can connect students with community resources for long-term services. You may make an appointment with CAPS by phone at 860-685-2910 during business hours (Monday-Friday, 9AM-5PM) or electronically at any time by sending your availability to counseling@wesleyan.edu. If you are experiencing distress that requires immediate attention, same day appointments are available each afternoon (M-F) on a limited basis. You may call CAPS during business hours to request a same day appointment. If you are in need of urgent assistance after business hours, you may call CAPS at any time to speak with the on-call therapist. Below in the comprehensive information for the counseling center at Wesleyan as well as other resources that are available if you are experiencing distress:

**Counseling and Psychological Services**
Davison Health Center
327 High Street, 2nd Floor
*Telephone: 860-685-2910*
*Email: counseling@wesleyan.edu*
*Hours: Monday-Friday, 9 AM – 5 PM (with some evening appointments available)*
*Website: www.wesleyan.edu/caps/*

**Wesleyan 8-to-8:**
Online chat: [http://8-to-8.group.wesleyan.edu/](http://8-to-8.group.wesleyan.edu/)
Phone: 860-685-7789 (campus ext. 7789)

**National Eating Disorder Hotline:** 800-931-2237
**National Eating Disorder Association Website:** [http://www.nationaleatingdisorders.org/](http://www.nationaleatingdisorders.org/)
Thank you again for your participation.

Sasha Stahl
Caitlin Shepherd, Ph.D.
Appendix C: Vignettes

Participants were randomly assigned one of the following vignettes about an individual with Anorexia Nervosa or Obesity. Participants were either presented with the female character “Amanda” or the male character “Matthew.”

Anorexia Nervosa

Amanda is a 21-year-old second-year university student. Upon starting college, Amanda was unhappy with the size and shape of her body so she joined a fitness program at the gym and started running daily. Through this effort, she gradually began to lose weight. At the same time Amanda started to “diet,” avoiding all fatty foods, not eating between meals, and trying to eat set portions of “healthy foods” each day. On some days she doesn't eat anything at all. Through this combination of dieting and exercise, Amanda has been able to further reduce her weight to the point that she is now severely underweight. Despite her increasingly thin and gaunt appearance, Amanda denies that she is underweight. She is terrified of becoming “fat” and refuses to make any effort to put weight back on. As a result, the relationship between Amanda and her friends and parents has become strained and her grades at school have started to slip. Recently, Amanda has been diagnosed with Anorexia Nervosa.

Matthew is a 21-year-old second-year university student. Upon starting college, Matthew was unhappy with the size and shape of his body so he joined a fitness program at the gym and started running daily. Through this effort, he gradually began to lose weight. At the same time Matthew started to “diet,” avoiding all fatty foods, not eating between meals, and trying to eat set portions of “healthy foods” each day. On some days he doesn't eat anything at all. Through this combination of dieting and exercise, Matthew has been able to further reduce his weight to the point that he is now severely underweight. Despite his increasingly thin and gaunt appearance, Matthew denies that he is underweight. He is terrified of becoming “fat” and refuses to make any effort to put weight back on. As a result, the relationship between Matthew and his friends and parents has become strained and his grades at school have started to slip. Recently, Matthew has been diagnosed with Anorexia Nervosa.

Obesity

Amanda is a 21-year-old second-year university student. She reached her current height of 5 feet and 4 inches (1.62 m) at about 16 years of age and since then she has always weighed around 205 pounds (93 kg). Amanda's adult weight has remained stable over the past several years. Amanda's overall diet is generally regular, with three meals a day that consist of a wide variety of foods and snacks. Amanda sometimes eats foods that are high in calories such as chocolate and cheesecake. Recently, Amanda's doctor has told her that, based on her height and weight, she is Obese.
Matthew is a 21-year-old second-year university student. He reached his current height of 5 feet and 10 inches (1.78 m) at about 16 years of age and since then he has always weighed around 245 pounds (111 kg). Matthew's adult weight has remained stable over the past several years. Matthew's overall diet is generally regular, with three meals a day that consist of a wide variety of foods and snacks. Matthew sometimes eats foods that are high in calories such as chocolate and cheesecake. Recently, Matthew's doctor has told him that, based on his height and weight, he is Obese.
Appendix D: Affective Reaction Scale

If you were to interact with Amanda/Matthew, please indicate how you would feel:

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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pessimistic</td>
<td>Optimistic (R)</td>
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<tr>
<td>2.</td>
<td>Tranquil</td>
<td>Anxious</td>
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<tr>
<td>3.</td>
<td>Supportive</td>
<td>Resentful</td>
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<td>4.</td>
<td>Fearful</td>
<td>Confident (R)</td>
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<tr>
<td>5.</td>
<td>Empathic</td>
<td>Angry</td>
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<td>6.</td>
<td>Disgusted</td>
<td>Sympathetic (R)</td>
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<td>7.</td>
<td>Apprehensive</td>
<td>Comfortable (R)</td>
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<td>8.</td>
<td>Irritable</td>
<td>Patient (R)</td>
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<tr>
<td>9.</td>
<td>Relaxed</td>
<td>Tense</td>
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<tr>
<td>10.</td>
<td>Calm</td>
<td>Nervous</td>
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Appendix E: Social Distancing Scale

Please rank your willingness to do the following…

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<tbody>
<tr>
<td>Definitely unwilling</td>
<td></td>
<td></td>
<td>Definitely willing</td>
</tr>
</tbody>
</table>

1. Be roommates with Amanda/Matthew
2. Spending an evening socializing with Amanda/Matthew
3. Make friends with Amanda/Matthew
4. Work closely on a group project with Amanda/Matthew
5. Eat meals with Amanda/Matthew
6. Elect Amanda/Matthew to be head of a student organization
Appendix F: Characteristics Scale

Based on your impression of Amanda/Matthew, rate her/him on the following characteristics:

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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

1. Strong
2. Boring
3. Insensitive
4. Sophisticated
5. Bold
6. Sociable
7. Emotional
8. Cruel
9. Poised
10. Unintelligent
11. Sad
12. Unsuccessful
13. Enthusiastic
14. Insecure
15. Open
16. Cold
17. Untrustworthy
18. Interesting
19. Secure
20. Effective

<p>| | |</p>
<table>
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</thead>
<tbody>
<tr>
<td>Strong</td>
<td>Weak</td>
</tr>
<tr>
<td>Boring</td>
<td>Interesting (R)</td>
</tr>
<tr>
<td>Insensitive</td>
<td>Sensitive (R)</td>
</tr>
<tr>
<td>Sophisticated</td>
<td>Naive</td>
</tr>
<tr>
<td>Bold</td>
<td>Shy</td>
</tr>
<tr>
<td>Sociable</td>
<td>Unsociable</td>
</tr>
<tr>
<td>Emotional</td>
<td>Rational (R)</td>
</tr>
<tr>
<td>Cruel</td>
<td>Kind (R)</td>
</tr>
<tr>
<td>Poised</td>
<td>Awkward</td>
</tr>
<tr>
<td>Unintelligent</td>
<td>Intelligent (R)</td>
</tr>
<tr>
<td>Sad</td>
<td>Happy (R)</td>
</tr>
<tr>
<td>Unsuccessful</td>
<td>Successful (R)</td>
</tr>
<tr>
<td>Enthusiastic</td>
<td>Unenthusiastic</td>
</tr>
<tr>
<td>Insecure</td>
<td>Secure (R)</td>
</tr>
<tr>
<td>Open</td>
<td>Defensive</td>
</tr>
<tr>
<td>Cold</td>
<td>Warm (R)</td>
</tr>
<tr>
<td>Untrustworthy</td>
<td>Trustworthy (R)</td>
</tr>
<tr>
<td>Interesting</td>
<td>Boring</td>
</tr>
<tr>
<td>Secure</td>
<td>Insecure</td>
</tr>
<tr>
<td>Effective</td>
<td>Ineffective</td>
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Appendix G: Causal Attributions Scale

On a scale from 1 (does not contribute at all) to 7 (main contributing factor) rate the extent to which you believe each of the following factors contributes to the development of Anorexia Nervosa/Obesity.

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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not contribute at all</td>
<td>Main contributing factor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Biological**
1. Genes
2. Biology (e.g., chemical imbalance, brain structures)
22. Metabolic defect
23. Endocrine disorder

**Psychological/Behavioral**
7. Poor living habits
8. Emotional problems (e.g., anxiety, low self-esteem)
9. Self-discipline
10. Vanity
11. Body image
13. Desire to be healthy
14. Physical Inactivity
15. Overeating
18. Psychological problems
19. Repeated dieting (weight cycling)
21. Lack of willpower

**Environmental/Sociocultural**
3. Parenting
4. Family problems
5. Social and relationship problems (e.g., teasing, break-up)
6. Traumatic life events
12. Media and culture ideals
16. High fat diet
17. Poor nutritional knowledge
20. Restaurant eating
APPENDIX H: EATING DISORDER STIGMALE Scale-Blame Subscale

Please indicate the extent to which you agree with each statement:

1. **Strongly Agree**
2. **Agree**
3. **Somewhat agree**
4. **Neither agree nor disagree**
5. **Somewhat disagree**
6. **Disagree**
7. **Strongly disagree**

1. Negative consequences caused by their Anorexia Nervosa/Obesity are not their fault. (R)
2. They caused their Anorexia Nervosa/Obesity.
3. They are responsible for their Anorexia Nervosa/Obesity.
4. They are not to blame for their condition. (R)
Appendix I: Recovery Checklist

How important do you think each of the following are for overcoming Anorexia Nervosa/Obesity?

1  2  3  4  5  6  7
Not at all important Extremely Important

Factor 1- psychological-emotional-social criteria
5. Having adequate self-esteem
6. Not being depressed
7. Participating in social activities
9. Being sufficiently assertive
15. Being able to express one’s own emotions verbally
18. Being able to make contact with others
22. Being able to handle positive emotions
23. Having a realistic image of oneself
25. Being in touch with one’s own feelings
31. Not being very dependent on the opinion of others
37. Having no strong fear of failure
39. Being able to express one’s own emotions nonverbally
40. Having some friends
43. Not being extremely perfectionistic
45. Daring to express a different opinion
47. Being able to handle negative emotions
49. Not being isolated
51. Being able to handle conflicts

Factor 2-weight-controlling behaviors
10. Not using diuretics
16. Not vomiting after a meal
28. Not exercising excessively
34. Amount of calories eaten being normal
36. Not using slimming pills
41. Not bingeing
44. Not being obsessed by food and weight
46. Not taking laxatives
50. Feeling no need to slim excessively
53. Maintaining healthy weight*
54. Eating balanced diet*
55. Engaging in recommended amount of exercise*

Factor 3- non life-threatening consequences
17. Skin being dry
19. Having no constipation
20. Having no stomach complaints
21. Having no intestinal disturbances  
27. Having healthy teeth  
35. Not being often tired  
56. Increased physical mobility*  
58. Decreased sweating*  
59. Increased energy*  
60. Improved stamina for physical activity*

Factor 4 - life-threatening consequences  
26. Monthly periods coming regularly  
30. Electrolytes being normal  
33. Potassium values being normal  
38. Heartbeat being normal  
42. Having monthly periods  
52. Endocrinological values being normal  
57. Decreased shortness of breath*  
61. Blood pressure being normal*  
62. Cholesterol level being normal*  
63. Decreased diabetes symptoms or risk*

Factor 5 - evaluation of one’s own appearance  
2. Having a positive body experience  
13. Not feeling too fat  
14. Accepting one’s own appearance  
29. Self-esteem being no longer dependent on we

* Denotes items added based on obesity literature