Spring 5-17-2021

Examining Perceptions of Anorexia Nervosa

Polly McGonigle
University of San Diego

Examining Perceptions of Anorexia Nervosa

A Thesis

Presented to

The Faculty and the Honors Program

Of the University of San Diego

By

Polly B. McGonigle

Department of Behavioral Neuroscience

2021

Abstract

Anorexia nervosa (AN) is an eating disorder characterized by a restriction of energy intake, an intense fear of gaining weight, and often distorted body image. AN has the second highest mortality rate of all psychiatric disorders, due to high suicide rates and medical complications associated with malnutrition. An estimated 10% of those who have AN die because of the disorder (Insel, 2012). Interacting factors—genetic, biological, environmental, and psychosocial—contribute to the etiology and maintenance of AN. However, outside of research settings, AN is misunderstood as having primarily environmental roots (Salafia, et. al). Blame is placed on societal expectations and the disorder is stereotyped as predominantly affecting white, affluent women. Early intervention is crucial because a longer course of illness worsens AN recovery outcome. Individuals with AN do not often self-initiate treatment, so peers play an instrumental role in seeking help on behalf of those with AN (Becker et al., 2003; Price, et. al., 1990; Sala et. al., 2013; Walsh et. al., 2000). The proposed study examines whether stereotypes impact the ability of female undergraduates to detect AN in others. The study will be conducted through the administration of vignette paragraphs describing a high school student. Each vignette contains AN cues embedded among one of three types of contextual cues. Contextual cues indicate socioeconomic (SES), environmental, or biological factors. A questionnaire will assess the ability of subjects to identify AN. It is expected that subjects will be more likely to identify AN in vignettes containing environmental and high SES cues because these align with stereotypes surrounding AN.

Introduction

AN is often trivialized in the public eye and regarded as a self-inflicted disorder influenced by controlling parents, vanity, and cultural pressures.

This paper will review important developments in AN research while emphasizing the need for an integrative disease model that promotes a comprehensive understanding of AN. The paper will also propose a study that aims to evaluate if and how stereotypes of AN interact with framing thus impacting the ability of freshman and sophomore females to identify the presence of the disorder in others.

Historical Accounts

AN only affects approximately 1% of the population (NEDA, 2021). If eating disorders are primarily caused by environmental factors, such as Western beauty standards and diet culture, that number should be much higher. This does not negate the harmful nature of beauty ideals and diet culture, nor does it claim that eating disorders do not flourish with the help of certain environments, or that environmental factors do not play any role in their development. Rather, this fact points to a discrepancy between the common belief that environmental factors are the sole—or even primary—cause of AN and the actual results (Salafia, et al., 2015).

Although eating disorders have been on the rise for the last 50 years, history books indicate that AN--or at least some form of it-- may have existed long before the thin body was idealized in many societies (Treasure et al., 2020). AN was first described in France, in 1859, by Dr. Victor Marcé, though older accounts describe what appears to be a similar disorder (Silverman, 1989).

Accounts describing what is now referred to as “holy anorexia,” are documented among the context of a very religious late medieval world (Bell, 1988). St. Catherine of Siena, born in

1347 is commonly cited as a prominent example of "holy anorexia" (Bell, 1988). "Fasting and eucharist" were important and common Christian practices during this period but St. Catherine fasted to extreme and unhealthy levels (Bynum, 2010). In a letter to a Father of the Church, St Catherine described her inability to eat as an "infirmity," and felt that a higher power--God--had taken away her ability to eat (Catherine of Siena as cited by Bell, 1988). These descriptions indicate that St. Catherine was not entirely in control of her relationship with food. Fasting and eucharist were not mere lifestyle choices for St. Catherine, they were mechanisms through which St. Catherine's disordered relationship with food spiraled out of control. Her obsession with living solely from the eucharist led to her eventual death from the effects of starvation in 1380. Although a debate exists as to whether accounts of "holy anorexia" describe the same disorder that is known as AN, it is likely that St. Catherine of Sienna did indeed suffer from a form of anorexia that was not purely driven by the culture of her faith but rather expressed itself through it. Similarly, although AN today is influenced by environmental stressors and cultural values, its development involves complicated factors that exceed a desire to be thin, driven by society's promotion of slender bodies (Bell, 1988; Bynum, 2010).

Historical accounts of Empress Elizabeth of Austria (1837-1898) also imply underlying eating disorder pathology and reveal that stereotypes have plagued understandings of AN since the 19th century. Elizabeth, known by the nickname, "Sisi" was praised for her beauty and small waist, but was frequently described as vain. At a young age, Sisi was married off to Emperor Franz Joseph I and forced into a formal court life that she found stifling. Sisi suffered through periods of "melancholy," during this time which were punctuated by frequent "fasting cures" (Vandereycken & Van Deth, 1996). She was reclusive, and had a gymnasium installed in her room so that she could exercise in private whenever she liked (Vandereycken & Van Deth,

1996). Sisi also engaged in behaviors that suggest the presence of abnormal exercise and food rituals. When she travelled, Sisi had her own cows brought along on the journey because she would not consume dairy products produced by other cows. The need to eat only from her own cows—to the extent that these cows were brought along on long journeys—is indicative of problematic rituals and obsessions surrounding the preparation and consumption of food, which are common in individuals with AN (Calugi et al., 2019). Sisi's slenderness may have been a result of an underlying disorder, rather than the vanity she is so often remembered for.

St. Catherine of Sienna's illness appears to have channeled itself through her religion and culture, while Sisi's appeared to flare during many of the hardships she encountered in her life. Neither of these cases provides evidence to suggest that environmental factors do not play a role in AN etiology, but they do suggest that additional factors underlie the disorder.

Today, Westernization and the popularization of the thin body is often blamed for the emergence of AN (Salafia, et al., 2015). However, it may be more likely that environments contribute to the prominence and presentation of eating disorders by providing a channel through which AN develops in those already predisposed to the disorder. Although the disordered behaviors are channeled differently across time, cases of AN persist even as environmental pressures change. Historical accounts do not act as scientific evidence in their own right, but they do provide observations of potential interactions between genetic and environmental factors in AN that can be applied to a modern understanding of the disorder.

Twin Studies

Historical accounts hint at a long history of AN, one that exceeds the modern societal pressures associated with the disorder today. These observations provide a starting point for forming research questions and hypotheses which can then be examined with scientific research.

Twin studies are often one of the first steps in determining whether a disease is primarily influenced by nature (genetic factors) or nurture (environmental factors). Twin studies involve the study of both identical and fraternal twins and rely on the assumption that identical twins share 100% of their genome and fraternal twins share 50% of their genomes (Berrettini, 2004). In theory, if AN was caused solely by genetic factors, when one identical twin has AN the other would also have the disorder 100% of the time and if one fraternal twin has AN the other would have it about 50% of the time. In contrast, if AN was caused solely by environmental factors, there would not be any difference between identical and fraternal twins and the rate of the second twin developing AN. Meta-analysis of twin studies have reported an estimated 60-80% heritability for AN; this value represents what proportion of the reason why one person develops AN while another does not is due to genetic variation (Thornton et al., 2011).

Twin studies indicate the involvement of genetic variation in AN etiology and can be used to estimate heritability. However, twin studies rely on a few assumptions. It is assumed that twins share genomes, (regardless of epigenetic factors or age-related variations) and perfectly equivalent environments (Berrettini, 2004). Twin studies also do not provide details about the proposed genetic components.

New Developments in Genetic Research

New developments in genetic research have provided information about genetic variation in AN that exceeds that which is described by twin studies.

AN is a complex disorder; with a multifactorial inheritance pattern. A multifactorial inheritance pattern refers to traits (phenotypes) that are not caused by a single gene within a genotype, but by a combination of genes from each parent. These genes interact with one another and with environmental factors to produce a phenotype (in this case the phenotype is AN).

High rates of heritability estimated for AN, indicate a need for further genetic research on the disorder (Thorton et. al, 2011). One way to more closely examine the genetic contribution to the etiology of AN is through data from genome wide association studies (GWAS). GWAS use high-throughput genotyping methods to rapidly scan entire genomes of many subjects to identify single nucleotide polymorphisms (SNPs) associated with a disorder phenotype (Anholt & Mackay, 2010). SNPs refer to a location on a genome or gene where a single nucleotide base varies between members of a population. In GWAS, SNPs act as markers of genetic variation. When a specific variation is found to occur significantly more often in individuals with the disease of interest than in control participants, it indicates that there is an association between the disease and the SNP (Anholt & Mackay, 2010). GWAS have recently been used to identify genotypic variants associated with AN behavioral phenotypes (Wade, et. al., 2013). Behavioral phenotypes and traits associated with a disorder are called endophenotypes.

A recent study identified eight significant loci using data from the Anorexia Nervosa Genetics Initiative (ANGI), the Eating Disorders Working Group of the Psychiatric Genomics Consortium (PGC-ED), and a GWAS conducted by the researchers. The GWAS identified an AN locus on chromosome 12 which has also been reported as a locus for clusters of genes involved in metabolic disorders, such as type 1 diabetes, and some autoimmune disorders (Duncan, et al., 2017). Significant genetic correlations were also identified between AN and other psychiatric disorders, as well as metabolic and lipid traits, independent of common genetic variants associated with body-mass index. Genetic correlations between AN and metabolic and lipid traits are especially promising in understanding predisposition to the disorder. AN has a positive correlation with high density lipoprotein cholesterol (commonly referred to as the "good" kind of cholesterol) and a negative correlation with insulin, glucose, and lipid traits.

Negative correlation with insulin, glucose, and lipid phenotypes may help explain why individuals with AN typically have a low weight set-point—even upon recovery—and further emphasize potential genetic and metabolic disease components (Duncan, et al., 2017). Correlations between AN and these molecules, which are components of metabolic phenotypes, may help guide future research on molecular implications of genome-environment interactions.

Associations elucidated by GWAS do not guarantee that genetic variation at these loci are direct causes of AN, but they do indicate the importance of biogenetics in the development of the disorder. These results also encourage the consideration of AN as a potentially metabo-psychiatric disorder, one which involves genome, metabolic, psychiatric, and environmental interactions (Duncan, et al., 2017). Significant correlations between genetic loci and AN endophenotypes may provide a route for future research by identifying target areas of the genome where researchers can sequence DNA base pairs in narrow regions.

Despite progress in research, shared environmental factors, including family or household experiences, culture, and community take center stage in conversations about AN, while non-shared environmental factors and complex biological and genetic components are often overlooked.

Nationwide surveys of public opinion conducted from 1998 to 2003 reported that AN was viewed negatively (Crisp., 2005). Stereotypes and misperceptions about AN may contribute to negative public opinion. AN is largely associated with white, wealthy females, a belief that persists despite evidence that eating disorders occur at comparable rates across SES and racial groups (Mulders-Jones et al., 2017; Sala et al., 2013). These beliefs hinder recognition of AN among minority groups. One study found that individuals were significantly better at identifying AN in a white female than in a minority female. Another study evaluated perceived causes of

AN among a healthy control group and a group with AN. The group without AN over-endorsed media and cultural values as the main cause of AN, and stigma about AN was also noted among this group (Salafia, et al., 2015). Association with females, media, and cultural ideals interact with female gender stereotypes and reduce perceptions of AN as a voluntary and vain affliction and contributing to a "just eat" mentality that trivializes the complexity of eating disorders (Giles, 2006).

Recent discourse surrounding AN research has focused on a debate about how the disorder is understood (Easter, 2012). Many researchers are calling for a reframing--one that emphasizes the biological and genetic roots of the disorder. Others argue that biological framing may be harmful because it shifts the blame from toxic diet culture, trauma, and other environmental influences and promotes an idea of biological destiny which may cause patients to view recovery as impossible. The concerns of some researchers and patients that biogenetic framing will cause difficulties in recovery may be addressed by improved communication of what genetic risk and heritability mean. Biogenetic framing has been found to increase stigma surrounding some psychiatric disorders, especially those that are perceived as dangerous, such as schizophrenia. However, evidence suggests that the opposite is true for disorders like depression or anorexia. In the case of AN, a biogenetic framework may result in increased sympathy and understanding for those with eating disorders because it reduces perceptions of the disorder as voluntary (Easter, 2012).

In order to have fruitful discussion about how these different frameworks may be adopted in ways that accurately represent AN while maximizing awareness and reducing stigma surrounding the disorder, it is necessary to examine how framing interacts with perceptions of AN and influences detection ability.

Study Proposal

The proposed study will examine whether stereotypes and framing of AN impact the ability of female freshmen and sophomore undergraduates to detect the presence of the disorder in others. The study will use a between subjects design. Each participant will read one of four vignette paragraphs detailing the routine of a high school student. Each vignette contains seven AN cues embedded among one of three types of contextual cues; socioeconomic status, environmental, or genetic cues. Following the reading of the vignette, participants will be asked to complete a questionnaire. The questionnaire contains 26 items with the purpose of assessing whether the different cues impact the ability of the subjects to identify AN in the vignettes.

Methods

Participants

Participants were female freshman and sophomore undergraduates enrolled in PSYCH 101 at The University of San Diego. The population was chosen by considering age of onset, sex, and level of education. Anorexia can develop at any age, but most commonly affects females in late adolescence and early adulthood with a median age of onset around 18-19 years of age (Hudson et al., 2007, Rohde et al., 2017). Anorexia can also occur in any sex, but disproportionally affects females. An estimated 0.3-0.4% of young women will develop AN at some point during their life, while approximately 0.1% of men will develop the disorder. Some studies using more inclusive definitions of AN have reported higher percentages, with a range of 0.3-0.9% for women and 0.3% for men (NEDA, 2020). Female college freshmen and sophomores fall into the age and sex group most commonly affected by AN, however since AN is rare and since high school curriculum does not often cover eating disorder education, they

likely have not had extensive exposure or education about AN. This allowed for researchers to more accurately assess how stereotypes and perceptions of AN impacted the ability of an at-risk group to detect the presence of the disorder in a vignette describing a student close to their own age. Participants were recruited through SONA systems, an online research participation system that each student enrolled in PSYCH101 at The University of San Diego has access to. Participants were not compensated monetarily but were awarded 2 SONA participation credits to count toward the credits required by the university's PSYCH 101 course. The study was reviewed by the University of San Diego's Institutional Review Board. Consent was obtained from all subjects prior to their participation in the study.

Measures

The study was intended to collect information about the relationship of different contextual cues to the following variables: identification of a problem, correct diagnosis of the problem, and perceived severity of the problem. Participants were randomly assigned one of four vignette paragraphs. Following the reading of one of these four vignettes, participants were asked to answer one multiple choice question that asked about a detail in the vignette such as "How does Emily get home from school?" These questions assessed participant attention to the vignette. Following this single multiple-choice question, participants were given four minutes to review the vignette they had read before being directed to an eighteen-item questionnaire. All participants were given the same eighteen-item questionnaire.

Procedure

Students enrolled in PSYCH101 were asked to complete SONA credits by participating in research or complete an alternative assignment. Students who chose to participate in research, were able to pick from multiple studies listed on SONA systems. Students were given an option

to pick the studies they would like to participate in. Students enrolled in PSYCH 101 were able to sign up for the study via SONA systems, where an anonymous link to the Qualtrics survey was posted, along with a shortened version of the study title "Examining Perceptions." Study titles were not presented in alphabetical order. Contact information for the researcher was provided for interested participants. Once signed up, participants were awarded two SONA credits via SONA Systems. Participants were randomly assigned to read one of four vignettes using Qualtrics random assignment feature. Vignettes were modeled after several studies. Each vignette described the daily routine of a high school student named Emily and contained the same seven AN cues, embedded in one of four contextual cues.

Statistical Analysis

Robust statistical analysis was limited due to a small sample size. In the future, independent sample T-tests would be utilized with the objective of determining whether average survey responses differed significantly between each type of cue. The independent variable contained four levels: high SES cues, Low SES cues, environmental cues, and genetic cues. The dependent variable was the survey response. Questionnaire response data would be transferred from Qualtrics to SPSS. If a larger sample size was collected, independent sample T-tests would be used to determine any statistically significant relationships between responses and the vignettes. At the current stage, data from qualtrics was transferred into an Excel spreadsheet, and mean scores were calculated for responses to questionnaire items 14 and 17.

Results

It is expected that subjects will be more likely to correctly identify AN in vignettes containing environmental and high SES cues because these align with stereotypes surrounding

AN. It is also expected that participants will rate the severity of the problem higher in these vignettes and be more likely to recommend a clinical diagnosis of AN. In a sample size of 15, participant responses to the severity of the problem on a scale from 0-10 averaged a value of 9.69 for high SES cues, 9.54 for low SES cues, 10 for environmental cues, and 8.77 for genetic cues. Participant responses to the likelihood of providing a clinical diagnosis averaged 7.83 for high SES cues, 7 for low SES cues, 7.75 for environmental cues, and 6.83 for genetic cues. It is important to note that these mean values have not yet been used in a T-test and cannot be used to draw any conclusions that support or reject the hypotheses that subjects will be more likely to accurately detect AN in vignettes containing high SES and environmental cues. However, although the current sample size is too small to perform independent-sample t-tests to determine statistical significance, early preliminary responses do appear to follow the expected trend.

Discussion

Examining the impact of both environmental and genetic influences on the development of AN is essential in order to gain a more complete understanding of the disorder. Recent research points to a multifactorial genetic basis underlying AN etiology, but perceptions about AN outside of research settings do not reflect this new understanding of the disorder. Emphasizing the biological and genetic factors of AN development may help to destigmatize the disorder by highlighting its severity and by shifting blame away from the individuals suffering from it. In order to effectively communicate new frameworks of AN, it is important to examine how stereotypes and perceptions about AN interfere with the ability to detect the disorder. The proposed study utilizes a between-subjects design. Subjects were randomly assigned one of four vignette paragraphs which contain AN cues embedded among one of four types of contextual

cues. The subjects were then asked to complete a questionnaire asking them to make some assessments about what they had read. The proposed study design intended to provide a method with which researchers can investigate how varying contextual cues—SES, environmental, or biological—impact the ability of female college undergraduates to accurately identify disordered eating patterns and symptoms associated with AN in others.

If stereotypes and perceptions interact with different frameworks and influence the ability to detect AN in others, expected results will reflect the influence of common stereotypes. If this is the case, it is expected that subjects will be more likely to correctly identify AN in vignettes containing environmental and high SES cues because these align with stereotypes surrounding AN. It is also expected that participants will rate the severity of the problem higher in these vignettes and be more likely to recommend a clinical diagnosis of AN. If stereotypes of AN do not influence detection of the disorder under different frameworks, expected results will not indicate any significant differences between responses to the four vignettes. Early participant responses indicate no difference between ability to identify a problem with the routine of the student described in the vignette. However, responses tended to rank the severity of the problem higher on a scale of one to ten for vignettes containing high SES and environmental cues. Responses also indicate that students would be more likely to recommend a clinical diagnosis of AN for high SES and environmental vignettes. However, in order to identify whether these results are statistically significant, independent sample T-tests must be performed on responses of a larger sample size.

Methodological strengths of the proposed study design include the between subject design, cue matching, and the questionnaire. A between subjects design was used to ensure that participants were not able to make direct comparisons of vignettes, and prevent participants'

perceptions of Emily's diagnosis from being influenced by comparisons between vignettes. The between subjects design also minimizes threats to internal validity and limits potential carry-over effects from reading multiple vignettes and reduces participant fatigue. Assigning one vignette paragraph to each participant instead of requiring each participant to read all four, also reduces memory and retrieval effects from influencing participant responses and potentially interfering with the results. Cues were carefully matched between vignettes. AN cues remained constant and contextual cues involved subtle changes in matched sentences between vignette sets. The name of the student described in the Vignette, Emily, remained constant throughout all vignettes, ensuring that the name did not introduce varying confounding variables such as socioeconomic or cultural connotations. 1-2 sentence explanations following multiple choice questions on the questionnaire helped determine subjects' reasoning and clarified whether responses were reflective of cues or whether participants were blindly guessing. Weaknesses of the study design include potential uneven cuing between the environmental and genetic vignette. The length of the study may also affect participant completion, and the between-subject design requires a much larger sample size than a within-subject design would.

Future research may utilize this study design. If results indicate significant differences in detection of AN between cue types, data could be used to propose educational efforts that focus on the gaps in understanding as determined by participant responses. Future studies may expand the study design to examine interaction with other factors including gender and racial stereotypes. Representation of AN in groups of different genders, and sexual identities, as well as in different ethnicities is important in ensuring accurate diagnosis and access to treatment. Further research is needed to determine differences in clinical presentations and develop targeted

educational programs that help bolster rates of early intervention and effective treatment programs.

In the short term, the proposed study will provide insight into the effects of stereotypes on the ability of female college undergraduates to detect the presence of AN in others based on environmental, genetic, or SES cues. The results of this study will inform discussions about shifting frameworks surrounding AN. Understanding how framing interacts with misperceptions of the disorder to impact peer detection will highlight areas in which educational programs should concentrate their efforts. In the long term, the benefits of the proposed study include a contribution to future research, education, and awareness surrounding AN. Since AN is extremely dangerous, but largely misunderstood, increased awareness and education about the disorder will benefit both those who suffer from the disorder, and those who know them.

Vignettes

High SES Cuing

Emily is a senior at a private high school. Emily typically drinks black coffee from her favorite coffee shop as her mom drives her to school. Receiving good grades is important to her, so she usually studies in the library instead of joining her friends for lunch. After school, Emily attends field hockey practice. After practice, Emily usually goes for a cool down run before her mother picks her up to take her home. At home Emily watches a YouTube video and then studies for a few hours before she sits down for dinner with her family. Emily isn't that hungry, so she has a small helping of fresh green beans before heading upstairs to her room. Before bed Emily scrolls through her favorite foodie Instagram page for an hour.

Low SES Cuing

Emily is a senior at a public high school. Emily typically drinks black coffee from a thermos on her bus ride to school. Receiving good grades is important to her so she usually studies in the library instead of joining her friends for lunch. After school, Emily attends soccer practice. After practice, Emily goes for a cool down run before taking the late bus home. At home Emily watches a YouTube video and then studies for a few hours before her parents come home from work and she sits down for dinner with her family. Emily isn't that hungry, so she has a small helping of frozen green beans before heading to her room. Before bed Emily scrolls through her favorite foodie Instagram page for an hour.

Environmental Cuing

Emily is a senior in high school. Emily typically wakes up early to get ready for school because her mother emphasizes the importance of a good appearance. After getting ready, Emily and her stepsister meet in the kitchen. They have been raised together since birth and they go to the same school. Emily and her stepsister typically drink black coffee on the way to school. Receiving good grades is important to her, so she usually studies in the library instead of joining her friends for lunch. After school, Emily attends cross country practice. When she gets home, she watches a YouTube video by her favorite fashion model and then studies for a few hours before she sits down for dinner. At dinner, Emily is not that hungry, so she has a small helping of green beans. Before bed, Emily's mother helps her pick out her outfit for the next day. Then Emily scrolls through her favorite fashion or foodie Instagram accounts for an hour.

Genetic Cuing

Emily is a senior in high school. Emily typically wakes up early to get ready for school. After getting ready, Emily meets her stepsister in the kitchen. They have been raised together since birth and they go to the same school. Emily's stepsister grabs a bagel with cream cheese for breakfast, but Emily typically drinks black coffee on the way to school. Receiving good grades is important to Emily, so she usually studies in the library instead of joining her friends for lunch. After school, Emily attends cross country practice. When she gets home, she watches a YouTube video and then studies for a few hours before she sits down for dinner. At dinner, Emily is not that hungry, so she has a small helping of green beans. Then Emily scrolls through her favorite fashion or foodie Instagram accounts for an hour.

Vignette Questionnaire

Question 1 "Which range do you believe likely reflects Emily's grade-point-average?" Multiple choice response options included 2.0-2.5, 3.6-4.0, 3.0-3.5, or 2.6-3.0

Question 2 "In 1-2 sentences, please explain why you chose the gpa range you did."

Response was short answer

Question 3 Which of the descriptions do you feel likely describes Emily's hair?"

Multiple choice Response options included: "Thick hair" or "thin hair"

Question 4 "In 1-2 sentences, please explain why you chose the descriptor you did."

Response was short answer

Question 5 "Which descriptor do you believe most accurately represents Emily's family income level?"

Response options included: "High family income," "Moderate family income," or "Low family income"

Question 6 "In 1-2 sentences, please explain why you chose the income level you did."

Response was short answer

Question 7 Do you believe Emily faces many environmental stressors? Examples of environmental stressors could include pressure from parents, peers, etc."

Multiple choice response options included: "Yes" or "No"

Question 8 "In one to two sentences, please explain why you chose the answer you did."

Response was short answer

Question 9 "What kind of clothes do you believe Emily typically wears? Please briefly explain your answer."

Response was short answer

Question 10 "Which description do you believe accurately represents Emily's level of self-consciousness?**"**

Multiple choice response options included: "Very self-conscious," "moderately self-conscious," or "Not very self-conscious"

Question 11 "In 1-2 sentences, please explain why you chose the answer you did."

Response was short answer

Question 12 "How likely do you believe it is that Emily carries around a sweatshirt in case she gets cold?"

Multiple choice response options included: "Very likely," "moderately likely," or "Not very likely"

Question 13 "Do you believe that Emily has a problem?"

Multiple choice response options included: "Yes" or "No"

If participants answered yes to question 13, they were shown question 14-16

Question 14 "If you answered yes to the above question, please rank the degree you think Emily has a problem."

Response was a sliding scale with values 0-10. A value of 0 indicates no problem, a value of 5 indicates a moderate problem, a value of 10 indicates a serious problem.

Question 15 "If you answered yes, what problem do you believe Emily has?"

Response was short answer

Question 16 "What do you think might be the cause of Emily's problem?"

Response was short answer

Question 17 "Imagine that you are a clinician assigned with assessing Emily. Please rank the likelihood that you would formally diagnose Emily with Anorexia Nervosa."

Response was a sliding scale with values 0-10. A value of 0 indicates that you would not diagnose Emily with anorexia and a value of 10 indicates that you would definitely diagnose Emily with anorexia

Question 18 "Which questions, if any, were difficult or frustrating to answer?"

Response was short answer

References

Bell, R. M. (1988). *Holy anorexia*. Univ. of Chicago Pr.

Berrettini, W. (2004, November). *The genetics of eating disorders*. Psychiatry (Edgmont (Pa. : Township)). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3010958/.

Bynum, C. W. (2010). *Holy feast and holy fast: the religious significance of food to medieval women*. Univ. of California Press.

Calugi, S., Chignola, E., & Dalle Grave, R. (2019). A Longitudinal Study of Eating Rituals in Patients With Anorexia Nervosa. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.00015

Crisp, A. (2005). Stigmatization of and discrimination against people with eating disorders including a report of two nationwide surveys. *European Eating Disorders Review*, *13*(3), 147–152. https://doi.org/10.1002/erv.648

Easter, M. M. (2012, July 4). *"Not all my fault": genetics, stigma, and personal responsibility for women with eating disorders*. Social science & medicine (1982). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3495131/.

Giles D. Constructing Identities in Cyberspace: The Case of Eating Disorders. *British Journal of Social Psychology.* 2006;45(3):463–477.

Gordon, K. H., Joiner , T. E., & Perez, M. (2002). *The impact of racial stereotypes on eating disorder recognition*. The International journal of eating disorders. https://pubmed.ncbi.nlm.nih.gov/12210665/.

Hudson J. I., Hiripi E., Pope H. G. Jr., & Kessler R. C. (2007). *The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication.* Biological Psychiatry, 61, 348-358.

Husni, M., Koye, N., & Haggarty, J. (2001). Severe Anorexia in an Amish Mennonite Teenager. *The Canadian Journal of Psychiatry*, *46*(2), 183–183. https://doi.org/10.1177/070674370104600219

Insel, T. (2012, February 24). *Post by Former NIMH Director Thomas Insel: Spotlight on Eating Disorders*. National Institute of Mental Health. https://www.nimh.nih.gov/about/directors/thomas-insel/blog/2012/spotlight-on-eating-disorders.

Mulders-Jones, B., Mitchison, D., Girosi, F., & Hay, P. (2017, January 31). *Socioeconomic Correlates of Eating Disorder Symptoms in an Australian Population-Based Sample*. PloS one. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5283666/.

Rohde, P., Stice, E., Shaw, H., Gau, J. M., & Ohls, O. C. (2017, August). *Age effects in eating disorder baseline risk factors and prevention intervention effects*. The International journal of eating disorders. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5745064/.

Sala, M., Reyes-Rodríguez, M. L., Bulik, C. M., & Bardone-Cone, A. (2013). *Race, ethnicity, and eating disorder recognition by peers*. Eating disorders. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3779913/.

Salafia, E. H. B., Jones, M. E., Haugen, E. C., & Schaefer, M. K. (2015, September 15). *Perceptions of the causes of eating disorders: a comparison of individuals with and without*

eating disorders. Journal of Eating Disorders. https://jeatdisord.biomedcentral.com/articles/10.1186/s40337-015-0069-8.

Silverman, J. A. (1989) 'Louis-Victor Marce: anorexia nervosa's forgotten man', Psychological Medicine, 19(04), pp. 833-835.

Statistics & Research on Eating Disorders. National Eating Disorders Association. (2020, May 8). https://www.nationaleatingdisorders.org/statistics-research-eating-disorders.

Thornton, L. M., Mazzeo, S. E., & Bulik, C. M. (2011). *The heritability of eating disorders: methods and current findings*. Current topics in behavioral neurosciences. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3599773/.

Treasure, J., Duarte, T. A., & Schmidt, U. (2020, March 14). *Eating Disorders*. The Lancet. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30059-3/fulltext.

Vandereycken, W., & van Deth, R. (1996). The anorectic empress: Elisabeth of Austria. (cover story). *History Today*, *46*(4), 12–19.)

Wade, T. D., Gordon, S., Medland, S., Bulik, C. M., Heath, A. C., Montgomery, G. W., & Martin, N. G. (2013, September). *Genetic variants associated with disordered eating*. The International Journal of Eating Disorders. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3775874/.