Race, Ethnicity, and Eating Disorder Recognition by Peers

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Abstract

We investigated racial/ethnic stereotyping in the recognition and referral of eating disorders with 663 university students. We explored responses to problem and eating disorder recognition, and health care referral after reading a vignette concerning a patient of different race/ethnic background presenting with eating disorders. A series of three 4×3 ANOVAs revealed significant main effects for eating disorder across all three outcome variables. There were no significant main effects across the four different race/ethnicity conditions and no significant race by condition interactions. Lack of general eating disorder recognition and health care referral by student participants were found.

Introduction

Historically, eating disorders have been perceived as disorders that affect only white women (Gordon, Perez, & Joiner, 2002). Although the prevalence of eating disorders in diverse populations is often disputed due to limited research and inconsistencies in methodology (Franko, Becker, Thomas, & Herzog, 2007; Wildes, Emery, & Simons, 2001), it has been found that at least some eating disorders presentations exist across all races and diverse ethnic groups (Cachelin, Rebeck, Veisel, & Striegel-Moore, 2001; Gordon, Perez, & Joiner, 2002; Smolak & Striegel-Moore, 2001). Pooled epidemiological data suggests more similarities than differences in terms of prevalence of eating disorders among different race/ ethnic groups (Marques, Alegria, Becker, Chen, Fang et al., 2011).

The literature on eating disorders among Hispanic/Latinos in the United States is scarce; however, some studies (Alegria, Woo, Cao, Torres, Meng et al., 2007; Granillo, Jones-Rodriguez, & Carvajal, 2005; Robinson, Killen, Litt, Hammer, Wilson et al., 1996) suggest that Hispanic/Latina women have similar or higher prevalence of eating disturbances than white women. Other studies suggest that the prevalence of any binge eating and binge eating disorder (BED) is high in Hispanic/Latina women while the prevalence of anorexia nervosa

(AN) and bulimia nervosa (BN) is low (Alegria, et al., 2007). Research is also limited in regards to eating disorders in African Americans. Women from this specific race background show fewer eating disturbances and tend to be more satisfied with their appearance than white women (Crago, 1996; Gillen & Lefkowitz, 2012; Gluck & Geliebter, 2002; Wildes et al., 2001). African Americans of both sexes are less likely to get diagnosed with AN than whites (Walcott, 2003), but may experience the condition for a longer period of time (Taylor, Caldwell, Baser, Faison, & Jackson, 2007). African American women were significantly less likely than white women to meet lifetime criteria for BN (Striegel-Moore, Dohm, Kraemer, Taylor, Daniels et al., 2003) and exhibit rates of binge eating similar to or lower than white females (Franko et al., 2007; Regan, 2006; Striegel-Moore et al., 2003; Striegel-Moore, Wilfley, Pike, Dohn, & Fairburn, 2000). Napolitano and Himes (2011) found that African American college students were less likely to have BED than white students and had less severe binge eating symptomatology. Other studies found that African American women have similar rates of BED compared to white women (Mullholand & Mintz, 2001; Smith,Marcus, Lewis, Fitzgibbon, & Schreiner, 1998). Some researchers argue that low prevalence is due to diagnostic biases (Ham, Iorio, & Sovinsky, 2012). Few studies have been conducted on eating disorders in Asian Americans and it is unclear whether eating disorders are more frequent or less frequent among Asian Americans than among whites. Lee and Lock (2007) suggested that eating disorders appear to be less frequent among Asian Americans than among whites. On the other hand, Wildes and collaborators (2001) found through a meta-analysis that Asian Americans tend to report similar or higher levels of eating disturbances than whites.

Although eating disorders occur in both sexes and in all ethnic and racial groups, several studies have documented lower rates of treatment for eating disorders among some specific diverse populations (Becker, Franko, Speck, & Herzog, 2003; Cachelin et al., 2001; Marques et al., 2011; Pike, Dohm, Striegel-Moore, Wilfley, & Fairburn, 2001). Lower treatment rates among some specific diverse populations may be due several factors: (1) there are differences in clinical presentation which cannot be captured by traditional instruments that were developed primarily for white populations (Alegria et al., 2007); (2) differences in treatment rates may occur due to different help seeking patterns (Becker et al., 2003) and (3) both the individual and the clinician might not recognize the eating disorder (Cachelin et al., 2001). For example, the individual and clinician may believe that ethnic minorities do not suffer from eating disorders (Cachelin et al., 2001). Thus, clinician error or bias in diagnosing and referring eating disorders may also account for lower treatment rates (Becker et al., 2003).

Individuals often believe that certain health problems are associated with a specific population (Gordon, Perez, & Joiner, 2002). For example, individuals may hold the stereotype that eating disorders affect only white females because eating disorders have historically been perceived as disorders that affect only that racial and sex demographic, thus leading to suboptimal detection of eating disorders in diverse populations (Gordon et al., 2002). Individuals are more likely to recognize AN in a white female than a minority female (defined as Hispanic/Latina or African American) (Gordon et al., 2002). Even more concerning, clinicians are more likely to conclude that someone with AN did not need to seek help when she is portrayed as African American than when she is portrayed as white or Hispanic/Latina (Gordon, Brattole, Wingate, & Joiner, 2006). Other research, however, is more encouraging. Clinicians appear to attend to eating disorder symptoms regardless of race—at least in a similar study in which they were asked to complete the Eating Disorder Inventory (EDI) as if they were a patient in a vignette who had disturbed eating patterns (Becker et al., 2003; Gordon et al., 2006). Clinicians' EDI ratings did not differ depending on the race/ethnicity of the patient in the vignette.

Little is known about the impact of stereotypes on eating disorder recognition. Awareness of stereotypes among peers is particularly important because peers are important in recognition and referral (Price, Desmond, Price, & Mossing, 1990), since many individuals with eating disorders do not initiate treatment for their eating disorder (Becker et al., 2003; Walsh, Wheat, & Freund, 2000). Long duration of illness predicts poor outcome for AN and BN, and delayed detection can contribute to longer duration of illness (Herzog, Nussbaum, & Marmor, 1996).

Therefore, the objective of this study was to examine whether recognition of eating disorder symptoms (AN, BN, and BED) differs depending on the racial/ethnic background of the sufferer. We hypothesized that participants would be more likely to recognize a problem, recognize the problem as an eating disorder, and make a health care referral for vignettes representing Caucasian women than vignettes representing African American, Asian American, or Hispanic/Latina women.

Methods

Participants

Participants were students at a large southern public university, recruited through a university listserv (a service which emails the entire university system, unless students have opted to be excluded) during February 2010. Approximately 29,278 students are enrolled at the university. However, it is important to clarify that some students might have opted out of the university listserv. All participants who received the email were eligible. The initial sample consisted of 759 participants. Ninety-six participants (12. 6%) had data missing from one or more questions and were excluded from the analysis yielding a final sample of 663 participants. Participants were not compensated monetarily but had the opportunity to enter into a drawing to win one of three $100 gift cards for completion of the survey. The study was approved by the university's Institutional Review Board and informed consent was obtained from all participants.

Measures

Demographic Survey Questionnaire—Demographic information about age, race/ethnicity, sex, expected graduation date, major, and perceived socioeconomic status (SES) was obtained via questionnaire. For the ethnicity question, participants were asked whether they were of Hispanic/Latino or not. For the race question, participants were asked to define their race as Caucasian, Asian American, American Indian / Native Alaskan, African American, Native Hawaiian or Pacific Islander, "More than one race", or "Other." For the SES question, participants were asked whether they believed their family was lower, middle, or upper class.

Vignette Questionnaire—After reading each of the three vignettes (e.g., vignettes of AN, BN, and BED for a Hispanic/Latina young woman), participants were asked whether they believed the in the vignette had any problems, whether she should see a doctor about them, and what problem the participant thought the patient had. These three questions were adapted from a study conducted by Gordon et al. (2002).

The response option to question 1 (Q1), "Do you think Amanda has a problem?" was a 5-point scale with the following answer choices: (1) Definitely Yes, (2) Probably Yes, (3) Not Sure, (4) Probably No, and (5) Definitely No.

For question 2 (Q2), "If yes, what problem do you think Amanda has?," participants provided a free-text-response. Responses were coded to reflect degree of accuracy of

response: (1) the correct eating disorder portrayed in the vignette (i.e., AN, BN, or BED), (2) recognition of an eating disorder but an incorrect eating disorder, (3) recognition of disordered eating, and (4) other responses.

The response option to question 3 (Q3), "Do you think Amanda should see a health professional?" was a 5-point scale, with the following answer choices: (1) Definitely Yes, (2) Probably Yes, (3) Not Sure, (4) Probably No, and (5) Definitely No.

Procedure

Participants received an email with a link to an online survey via Survey Monkey. Participants were randomized by birth month to receive only one of the four experimental conditions, which were four different races/ethnicities of the patient in the vignette (African American, Asian American, Caucasian, and Hispanic/Latino). Participants born in February, June, and October received the African American vignettes ($n = 161$). Participants born in March, July, and November received the Asian American vignettes (n =148). Participants born in January, May, and September received the Caucasian vignettes ($n = 176$). Participants born in April, August, and December received the Hispanic/Latino vignettes ($n =178$).

In each condition, participants were given three vignettes describing three different females of the same race/ethnicity presenting with different eating disorders (AN, BN, BED). The AN vignette was adapted from a study by Gordon and collaborators (2002), with minor modifications in sentence structure. The BN and BED vignettes were modeled after the AN vignette (see Appendix). The vignettes were designed to address DSM symptoms that a peer might witness. Each of the three vignettes included information about a young woman's eating patterns.

Statistical Analyses

Original data were downloaded from Survey Monkey into Excel, and were later entered into SPSS. SPSS for Mac (SPSS, 2008) was used for data analysis. Descriptive statistics were applied to demographic information. We conducted three separate 4 (race/ethnicity) x 3 (eating disorder) ANOVAs for the outcome variables: problem recognition, eating disorder recognition, and health care referral. For each analysis, we report main effects for race/ethnicity condition (African American, Asian American, Caucasian or Hispanic/Latino), main effects for eating disorder (AN, BN, BED), and interaction effects. For all statistical tests, p values < 0.05 were considered statistically significant. Bonferroni post hoc tests were performed on eating disorder main effects. For the analysis of the free text variable (Q2), we included only those participants in the analysis who identified a definite or probable problem in Q1.

Additional exploratory analyses included addressing whether participant sex affected results, whether rates of endorsement of the correct eating disorder differed with respect to the race/ethnicity of the participant and whether there was an interaction between participant race and race in the vignette. This was analyzed with a series of regression models predicting responses to the nine individual questions (ANQ1, ANQ2, ANQ3, BNQ1, BNQ2, BNQ3, BEDQ1, BEDQ2, BEDQ3) from participant races (Caucasian vs. racial/ethnic minorities) and condition (race of vignette). Given the small group size for some races/ethnicity other than Caucasian, we collapsed all other races/ethnicities into one category of minorities. The racial-ethnic minorities category included individuals who defined their race as Caucasian and their ethnicity as Hispanic/Latino.

Results

Demographic Information

Based on self-report, 77.1% of the participants were female ($n = 511$) and 22.9% of the participants were male ($n = 152$). Of the 663 participants, 79.0% identified their race as Caucasian ($n = 524$), 8.4% as Asian American ($n = 56$), 5.9 % as African American ($n = 39$), 3.9% as More than one race ($n = 26$), 1.1% as Native Alaskan or American Indian ($n = 7$), 0.2% as Native Hawaiian or Pacific Islander ($n = 1$), and 1.5% as Other ($n = 10$). In terms of ethnicity, 4.5% ($n=30$) self-classified as Hispanic/Latino. In terms of SES, 82.7% ($n = 548$) participants identified their family as middle class, 6.8% ($n = 45$) as lower class, and 10.6% ($n = 70$) as upper class. Approximately 58% of the university student population is female and 42% is male. The university student population is 65% Caucasian, 8% African-American, 7% Asian American, <1% Native Hawaiian or Pacific Islander, <1% American Indian or Native Alaskan, 4% of unknown race / ethnicity, 3% of two and more races, 6% of another race / ethnicity, and 7% Hispanic/Latino of any race.

Differences across Eating Disorders

For problem recognition, 85.0% identified a definite or probable problem in the AN vignette, 50.7% identified a definite or probable problem in the BN vignette, and 64.8% identified a definite or probable problem in the BED vignette. For eating disorder recognition, of those who identified a definite or probable problem (Q1), 41.8% identified a definite or probable eating disorder in the AN vignette, 48.9% in the BN vignette, and 24.3% in the BED vignette. For health care referral, 77.1% identified a definite or probable need for health care in the AN vignette, 37.5% in the BN vignette, and 56.5% in the BED vignette. A detailed description of the responses to the questions in the vignettes is presented in Table 1.

Race/Ethnicity Effects, Eating Disorder Effects, and Interaction

A 4×3 ANOVA for *problem recognition* revealed a significant main effect for disorder (AN and BED more recognized than BN and AN more recognized than BED) [$F = 224.23$, $df = 2$, $p < .0001$]. A 4×3 ANOVA for *eating disorder recognition* revealed a significant main effect for disorder (BN more recognized than AN and BED; $F = 20.04$, $df = 2$, $p < .0001$). A 4×3 ANOVA for *health referral* revealed a significant main effect for disorder (AN more likely to be referred than BN and BED; and BED more likely to be referred than BN; $F = 262.34$, $df = 2$, $p < .0001$). There were no significant main effects across the four different race/ethnicity conditions and no significant race/ethnicity by condition interactions. Table 2 summarizes race/ethnicity condition and eating disorder main effects, as well as their interactions. Mauchly's sphericity test, which is a test that measures whether sphericity assumptions were met, showed that the assumption of sphericity had not been violated for any of the three questions. Mauchly's sphericity test was done because sphericity is an important assumption of repeated measures ANOVA, as it shows that the levels of the independent variable are equal (Mauchly, 1940).

Influence of Race/Ethnicity of the Participant

For eight of the nine questions, the race/ethnicity of the participant did not significantly influence the responses to the questions in the vignette. The exception to this was BED Q2 (eating disorder recognition of the BED vignette). Caucasian participants were more likely than racial/ethnic minority participants (p=0.01) to identify BED in the patient portrayed in the vignette. There was no interaction between participant race/ethnicity and race/ethnicity in the vignette.

Influence of Sex of the Participant

In the BN vignette, males were less likely than females to recognize a problem ($p < .0001$), identify an eating disorder ($p < .0001$), and suggest health care referral ($p < .0001$). In the AN vignette, males were less likely than females to recognize a problem ($p = .003$), identify an eating disorder ($p < .0001$), and suggest health care referral ($p < .0001$). In the BED vignette, the sex of the participant did not significantly influence problem recognition ($p = .054$), but male were less likely to recognize an eating disorder ($p = .02$) and suggest health care referral ($p = .011$).

Discussion

The purpose of this study was to examine whether recognition and awareness of referral needs differ when symptoms of different eating disorders (AN, BN, and BED) are presented in vignettes about individuals from varying racial and ethnic backgrounds. The results indicated that race/ethnicity of the vignette did not significantly influence a participant's recognition of an eating disorder or their recommendation for referral to a health-care professional.

However, recognition and health care referral, regardless of race/ethnicity, differed significantly depending on which eating disorder was portrayed. Symptoms of AN were significantly more recognizable as problems and were more likely to elicit perceived need for referral than symptoms of BN or BED. Once a problem was acknowledged, symptoms of BN were more likely to be recognized as an eating disorder. Regardless of eating disorder, a high percentage of participants failed to recognize an eating disorder and failed to suggest health care referral. These results support previous studies indicating a lack of eating disorder recognition across the different symptom profiles (Gordon et al., 2006; Gordon et al., 2002).

This study suggests that AN is more recognizable as a problem than BN and BED to university students. This could be because AN symptoms are often more dramatic, visible and considered as life threatening in comparison with others eating disorder sub-types. Furthermore, BN and BED symptoms might be more normalized on college campuses, as BN and BED are more prevalent than AN (Hudson, Hiripi, Pope, & Kessler, 2007). The failure to recognize BN and BED as a problem is concerning, as BN and BED are serious eating disorders and 28.2% of individuals with BN of the purging type (BN-P) and 36% of individuals with BED still meet criteria for an eating disorder diagnosis 12 years after beginning treatment (Fichter, Quadflieg, & Hedlund, 2008). Also, many patients cross over to another eating disorder, with BED patients crossing over to other forms of Eating Disorder Not Otherwise Specified (EDNOS) and BN-P, and with BN patients crossing over to AN, BED, and EDNOS (Fichter et al., 2008).

Participants self-identified as Caucasian were more likely to recognize BED than racial/ethnic minority participants. This is of particular concern given data suggesting that this eating disorder may be more prevalent in individuals from racial and ethnic diverse groups (Pike et al., 2001). Although we were underpowered to determine which racial/ethnic groups contributed to this under recognition, future studies, with larger samples of minority students should take care to determine factors influencing BED recognition across racial and ethnic groups.

Male participants were less likely to identify a problem in the AN and BN vignettes, and less likely to identify an eating disorder and suggest health care referral for all three eating disorders. This is concerning because all three eating disorders exist in both sexes (Hudson et al., 2007). Lifetime prevalence of AN, BN, and BED in males is 0.3%, 0.5%, and 2.0%

respectively (Hudson et al., 2007). Furthermore, men with AN or BN symptoms report difficulties admitting they have an eating disorder and difficulties with eating disorders being seen as a female problem (Robinson, Mountford, & Sperlinger, 2013).

The lack of racial/ethnic stereotyping in eating disorder recognition differs from past research on stereotypes in eating disorders (Gordon et al., 2006; Gordon et al., 2002). However, it is important to note that the study conducted by Gordon and collaborators (2002) differed from ours in several ways: it collapsed the race/ethnicity of the African American and Hispanic/Latino individuals in the vignette into one minority category, the research study was done in a different geographic location, and response options to Q1 and Q3 were "yes" or "no" as opposed to a 5-point scale. The other study conducted by Gordon and collaborators (2006) was a study of clinicians. Clinicians, who are knowledgeable about eating disorders, might also vary in their application of stereotypes compared to the general population, based on the clientele of their practices. Given that treatment seeking differs by racial and ethnic group (with whites more likely to seek treatment) (Becker et al., 2003), clinicians could be biased towards expecting eating disorders in white individuals based on their own clinical experience. Alternatively, had clinicians with experience in eating disorders been assessed, one might have expected them to be more enlightened than those holding more "lay" stereotypes. Another explanation for the different findings may be the passage of time; the earlier work with college student participants occurred about a decade earlier and it is possible that greater psychoeducation in this time period has reduced racial/ethnic stereotypes related to eating disorders.

Limitations

There are several limitations to this study. First, there is a possibility that participants did not attend to the race/ethnicity of the individual in the vignette when responding. Ideally, a manipulation check asking participants to indicate the race/ethnicity of the patient in the vignette would have been implemented. Future research would also benefit from a photographic representation of the vignette character's race/ethnicity. Second, although not unexpected given the nature of the topic and the sex distribution of the university, the majority of participants were female. Future studies could expand on our findings by including a larger sample of male participants. Third, all characters portrayed in the vignettes were female. A parallel investigation with vignettes of male patients would be of value to understand the extent to which eating disorders are recognized in males. Fourth, when analyzing the effect of the race/ethnicity of the participant on results, all racial/ethnic minorities were grouped into one group due to the small number of racial/ethnic minorities. Fifth, there was no reliability check on the coding of the free-text responses to Q2. Although the investigator coded the responses according to strict criteria, a reliability check would have been beneficial. Sixth, in this sample, BN was less frequently recognized as a problem than BED, even though participants were more likely to recognize BN as an eating disorder if they identified a definite or probable problem. One possibility for the lack of problem recognition in BN is that the vignette portraying BN appears to be less severe than the vignette portraying BED. In an attempt to only include symptoms that a peer might witness, we avoided behaviors that are clearly associated with BN, but typically not observed by others, such as vomiting. Seventh, 12.6% of the participants had missing data and were excluded. However, we found no statistically significant differences between the included and excluded group on variables where data were provided. Eighth, recruitment was non-random since there was a raffle as an incentive to participate, all participants were recruited through mass mail, and participation was voluntary. Ninth, there was no control group. The study could have been strengthened by including a control vignette.

We acknowledge the complexity of the terms for race and ethnicity and the limitations of the classification system that we used. The conceptualization of race as a biological construct, the ambiguity of the boundaries of ethnicity, and the lack of understanding of the concept of ethnicity in the general population are some of the challenges faced by researchers who seek to accurately assess both concepts (Ford & Kelly, 2005). A framework of race as a socio-political construct, and a comprehensive data collection approach (e.g., biological parents' race/ethnic background, language, level of acculturation, among others) could enhance the current data collection system (Ford & Kelly, 2005).

Conclusion

Varying racial and ethnic background of a vignette character did not appear to influence eating disorder recognition or referral; however, a high percentage of college students failed to recognize eating disorders and failed to recommend referral of the person with an eating disorder to a health care professional.

These results underscore the importance of health campaigns that educate and increase awareness of all eating disorders in both sexes and across all races/ethnicities to enhance early detection and referral. Early detection and referral of an eating disorder is important because eating disorders have serious medical consequences including cardiovascular complications, pulmonary problems, severe electrolyte abnormalities, osteoporosis, dermatologic changes, endocrine abnormalities, and gastrointestinal complications (Mitchell & Crow, 2006). Furthermore, eating disorders are often associated with other psychological disorders (Hudson, 2007). This issue is complicated because eating disorders are often unreported by individuals suffering from them (Hill, 2002), with less than 50% of individuals with BN and BED ever seeking treatment for their eating disorder (Hudson, 2007).

Thus, this study underscores the importance of increasing awareness of eating disorders in order to enhance peer recognition and result in earlier detection and referral of eating disorders, thus leading to better prognosis (Herzog et al., 1996). Peer recognition is important for eating disorder referral (Price et al., 1990), and based on our results, peer recognition has considerable room for improvement. Secondary prevention campaigns for eating disorders may be helpful in this regard. Peer support programs aim to educate students about identifying and supporting someone struggling with an eating disorder. Embody Carolina is an example of such a program (website: www.facebook.com/UncEmbody). A meta-analysis of eating disorder prevention studies revealed that several programs were found to decrease current eating pathology as well as the risk for future eating pathology (Stice & Shaw, 2004). Educational and screening programs that coach peers in how best to address the topic, that enhance awareness of the medical seriousness of eating disorders, and that provide guidelines for treatment referrals may be a promising strategy for detection and referral of disordered eating (Becker, Franko, Nussbaum, & Herzog, 2004).

Acknowledgments

APPENDIX

Vignette 1 (BN Vignette)

Amanda, 16 year old, Caucasian

Monday: Amanda woke up, got dressed, and took a shower. For breakfast, she had a banana and cereal. After breakfast, she went to school. During lunch, she ate a slice of pizza and a salad. After school, Amanda spent time with her friends and then went home. When she got home, she ate dinner with her family, which included roasted chicken and roasted potatoes with broccoli: her favorite. She had seconds and thirds. Her sister baked cookies. She had one and they tasted so good. Before she knew it she had eaten 4.

Tuesday: She woke up early and went for a long 7 mile run. She had coffee for breakfast. Amanda went to school. During lunch she ate a big salad, soda, and an apple. After school, Amanda had track practice. When she got home, she was tired so she took a nap. Her mom woke her up for dinner, and she had pasta. She later did her homework and went to sleep.

Wednesday: She woke up and got dressed. She had a bagel and fruit for breakfast. She had a sandwich she brought from home for lunch. When she got home, she found nobody else was home so she watched a movie and had two big bags of popcorn. She made a pizza from scratch for dinner. She said she was just going to have two pieces, and that she would leave the rest for her family, but she just couldn't stop. She ate the half of the pizza.

Thursday: She woke up early and went to the gym for two hours. She didn't have time to shower or eat breakfast afterwards, and she was almost late for school. For lunch, she had a granola bar and a nectarine. After school, she had track practice. Then she went shopping with her mom. Her mom made pasta for dinner, and she had two big plates of pasta. Her sister baked brownies for desert, which her family had with vanilla ice cream. She had seconds and thirds. She then watched TV and did her homework. While doing her homework, she felt a bit too full from dinner, so she drank a laxative tea.

Friday: She woke up and went for a 6 mile run. She then got dressed and had cereal for breakfast. She went to school and was excited that it was Friday. During lunch she had tuna salad with fruit and crackers. After school, she went to get pizza with her girlfriends. When she came home, her mom had made her favorite casserole, so she had a little of that too. She went for a long walk with her sister after dinner.

Vignette 2 (AN Vignette)

Mary, 16 year old, Caucasian

Monday: Mary woke up and took a shower. Mary tried on three different outfits before choosing what she was going to wear. She did her hair twice before leaving to school. For breakfast, she had a banana. Mary went to school. During lunch she ate three rice cakes and drank an apple juice. After school, Mary had soccer practice for two hours and then went home. When she got home she took a shower. Then she did her homework. For dinner Mary ate salad and a plain baked potato. She watched TV for two hours and then went to bed.

Tuesday: She woke up and took a shower. Mary tried on several different shirts before choosing which one she was going to wear. She spent half an hour curling her hair. She didn't have time for breakfast so she drank some orange juice. Mary went to school. During lunch she ate some pretzels, a diet soda, and a pear. After school, Mary had soccer practice for two hours and a one-hour meeting for Key Club. When she got home, she drank some

water and took a shower. Then she did her homework. For dinner, Mary ate a small cup of vegetable soup with crackers and drank a diet soda. She studied for a test for two hours, picked out her clothes for the next day for half an hour and then went to bed.

Wednesday: She woke up and took a shower and got dressed. She did her hair for twenty minutes. She had a piece of toast and some apple juice for breakfast. Mary had a test in the morning on which she felt she did poorly on and was upset. Instead of eating lunch, she did her homework. After school, Mary had soccer practice for two hours and then went home. When she got home she drank some diet soda. She then took a shower and watched TV. For dinner, Mary ate some crackers, a salad, and drank some water. Mary watched TV for two hours, talked on the phone for an hour and half and then went to bed.

Thursday: She woke up and took a shower. She took an hour to get dressed and did her hair for twenty minutes. For breakfast, she ate an apple. She went to school. For lunch, she had a granola bar, an orange, and some diet soda. She gave a two-minute presentation in an afternoon class. After school she had soccer practice for two hours and then went home. When she got home she didn't eat anything and just took a shower. She talked on the phone for two hours and watched some TV. For dinner, Mary drank some water and had a bag of chips. She then watched TV and had some raisins before going to bed.

Friday: She woke up and took a shower. She took half an hour to get dressed and just brushed her hair. For breakfast she had a grapefruit. She went to school and found out she did poorly on the test she took on Wednesday and was upset. During lunch she ate an egg salad and some grape juice. After school, Mary had soccer practice for two hours and then went home. She went home and took a shower. She watched TV. For dinner she ate some black beans and rice with water. She then went to the movies with her friends.

Vignette 3 (BED Vignette)

Michelle, 16 year old, Caucasian

Monday: Michelle woke up late and had to rush to class. She didn't have time to eat breakfast. Because she was planning on doing homework for lunch, she had to eat a few granola bars for lunch. For dinner, her mom made lasagna, which she had with a salad. She had seconds and thirds. After she finished eating dinner, she had two bowls of ice cream. After dinner, she tried to do her homework but couldn't concentrate, so she went to sleep early instead.

Tuesday: Michelle woke up early and made pancakes for herself and her family for breakfast. She ate breakfast with her family, and then went to school. During lunch, she bought a salad from the cafeteria. After school, she spent a few hours in the library studying. Her parents had gone to see her younger brother's school play. She finished yesterday's lasagna (about half a pan) and salad, as well as the leftover ice cream. After dinner, Michelle watched a movie. She had three pieces of fruit and went to bed.

Wednesday: She woke up and took a shower and got dressed. She still felt full so she skipped breakfast. For lunch, she was famished so Michelle bought a hamburger and fries from the cafeteria. Her boyfriend broke up with her at school today, and Michelle was upset all day. She stopped at Blockbuster on her way back home and got a few breakup movies, as well as four chocolate bars and a pint of Ben & Jerry's ice cream. She spent the evening watching movies and chocolate and ice cream.

Thursday: Michelle woke up feeling sorry for herself after the breakup, but also telling herself she should move on. She had a Starbucks latte for breakfast. She had a test in school,

which she was happy to get over with. For lunch, she got a big salad with a soda and crackers. She had choir after school. She had chicken, potatoes, and broccoli for dinner. She then tried to go to sleep, but couldn't fall asleep. She then got up and had milk, a banana with peanut butter, and a bowl of ice cream to help her fall asleep. She couldn't stop at a bowl so she finished the whole carton. Then she fell asleep.

Friday: She woke up and took a shower, and got dressed. She skipped breakfast because she still felt disgusting from the night before. She went to school and found out she did well on yesterday's test. Her boyfriend also told her he wanted to get back together. She was very happy for the rest of the day. She had pizza for lunch. After school, her boyfriend and her went out to the movies and to a nice Italian restaurant for dinner.

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Table 1

Responses to the questions in the vignettes about a young woman with symptoms of an eating disorder

Eating Disorder	Caucasian n(%)	African American n(%)	Asian n(%)	Hispanic n(%)	Average (%)
1. Percent of university students who identified a definite or probable problem (Q1)					
AN	145 (82.4%)	139 (87.4%)	122 (84.1%)	153 (86.0%)	85.0%
BN	83 (47.2%)	88 (54.7%)	70 (47.3%)	95 (53.4%)	50.7%
BED	107(60.8%)	104 (64.6%)	95 (64.2%)	124 (69.7%)	64.8%
2. Percent of university students who identified a definite or probable eating disorder in the vignette (Q2) *					
AN	57 (39.3%)	57 (41.0%)	50 (41.0%)	70 (45.8%)	41.8%
BN	39 (50.0%)	28 (42.4%)	26 (57.8%)	28 (45.2%)	48.9%
BED	31 (29.0%)	25 (24.0%)	22 (23.2%)	26 (21.0%)	24.3%
3. Percent of university students who identified a definite or probable necessity of health care referral (Q3)					
AN	132 (75.0%)	126 (78.3%)	104 (77.0%)	139 (78.1%)	77.1%
BN	57 (32.4%)	55 (34.2%)	60 (40.5%)	76 (42.7%)	37.5%
BED	87 (49.4%)	90 (55.9%)	86.1 (58.1%)	112 (62.9%)	56.5%

*Frequency distribution of participants who identified a "definite" or "probable" problem in Q1.

Table 2

Eating disorder and race/ethnicity condition main effects and interactions on problem recognition, eating disorder recognition, and health care referral of a young woman with symptoms of an eating disorder.

Effect	Df	F	P	Bonferroni post-hoc
1. Percent of university students who identified a definite or probable problem (Q1)				
Eating Disorder	2	224.23	<0.0001	AN, BED> BN AN>BED
Race/Ethnicity Condition	3	1.77	0.15	
Eating Disorder × Race/Ethnicity Interaction	6	0.33	0.91	
2. Percent of university students who identified a definite or probable eating disorder in the vignette (Q2) [a]				
Eating Disorder	2	20.04	<0.0001	BN> AN,BED
Race/Ethnicity Condition	3	0.25	0.86	
Eating Disorder × Race/Ethnicity Interaction	6	0.59	0.73	
3. Percent of university students who identified a definite or probable necessity of health care referral (Q3)				
Eating Disorder	2	262.34	<0.0001	AN> BN,BED BED>BN
Race/Ethnicity Condition	3	2.20	0.09	
Eating Disorder × Race/Ethnicity Interaction	6	0.77	0.59	

[a]Analysis of all participants who identified a "definite or probable" problem in Q1.