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## SOCIAL PSYCHOLOGY | RESEARCH ARTICLE

# Appearance issues, depression, and disordered eating among college females

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**Abstract:** The purpose of this study was to examine how various appearance issues and depression may relate to disordered eating among female college students. The appearance issues analyzed in this study were: level of body dissatisfaction, body mass index (BMI), social appearance anxiety (SAA), and social-cultural attitudes toward appearance. The questionnaire was distributed to volunteer students during regularly scheduled classes. Students, both study participants and non-participants, were furnished with information on where to get help if they had concerns about disordered eating behavior, appearance-related anxiety, or depression. Participants were 370 female undergraduate students enrolled at one Midwestern University in the United States. This study provided statistical evidence that college females at risk of acquiring an eating disorder had significantly larger differences between their current body shape and their ideal body shape, scored significantly higher in the sociocultural attitudes toward appearance, had more SAA, and depression compared to those less at risk of acquiring an eating disorder. However, the BMI of college females at risk of acquiring an eating disorder did not differ significantly from the BMI of college female students less at risk. This study contributes to a better understanding of disordered eating and how it relates to appearance issues, and depression.

### ABOUT THE AUTHORS

All authors, except one, are professors at Youngstown State University, in Youngstown, Ohio, USA. This study is the synergy of seven faculty who aspire to make valuable contribution in understanding how appearance and depression may influence disordered eating behavior among college females.

Priscilla Gitimu and Taci Turel are both associate professors of Fashion Studies, and they have an in-depth knowledge of body image and appearance issues. Molly Jameson is Assistant Professor of Psychology at the University of Northern Colorado, and has in-depth understanding of statistics and psychological issues and measures.

Rachel Pohle-Krauza, Jeannine Mincher, and Zara Rowlands are all Associate Professors of Nutrition and they have in-depth knowledge on disordered eating and eating disorders.

Janice Elias is a Family and Consumer Sciences professor with background in gender studies and in psychological and cultural aspects of appearance.

### PUBLIC INTEREST STATEMENT

A 2015 “Choose Beautiful Dove Campaign” revealed that 96% of the women surveyed would not use the word “beautiful” to describe themselves! (Stampler, 2015). One’s opinions of what constitutes a beautiful appearance are often based on unrealistic media images. This study scrutinized how anxiety about one’s appearance and unhappiness is associated with unhealthy eating habits among college females. Identifying and curbing unhealthy eating behavior, before it leads to an eating illness, is crucial.

Various appearance concerns among students at risk of acquiring an eating disorder were compared with those not at risk. The study shows evidence that college females at risk of acquiring an eating disorder were more discontent about their body shape and size, more anxious about their appearance in a social setting, more influenced by society’s standards of beauty, and were unhappy compared to those less at risk of acquiring an eating disorder.

**Subjects: Behavioral Sciences; Gender Studies - Soc Sci; Health & Development; Mental Health; Psychological Disorders; Psychological Disorders - Adult; Psychological Science; Social Sciences; Sociology; Women's Studies**

**Keywords: appearance issues; depression; disordered eating; college females; appearance anxiety**

## 1. Introduction

One's beliefs in what constitutes a beautiful appearance develop in the context of several sociocultural factors, such as unrealistic media images of female attractiveness (Clay, Vignoles, & Dittmar, 2005) that promote singular ideals of beauty. There is extensive evidence that sociocultural pressure and appearance insecurity can predispose one to disordered eating behavior (Clay et al., 2005; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004; Tiggemann, Verri, & Scaravaggi, 2005; White & Halliwell, 2010). Social appearance anxiety (SAA) is a significant predictor of appearance dissatisfaction, disordered eating behavior, and concerns about shape and weight (Levinson & Rodebaugh, 2012). Additionally, depression is a significant predictor of disordered eating behavior, and the incidence is high among women (Liechty & Lee, 2013).

It is crucial to identify and curb disordered eating behavior before it leads to an eating disorder. Eating disorders are a set of severe illnesses in which one is excessively concerned about body shape, appearance and weight, and as a result, is immersed in extreme dieting habits which prevent sufficient food intake. Before one fits the diagnostic criteria of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) (American Psychiatric Association, 2013) for an eating disorder, one may engage in a disordered eating behavior, which encompasses unhealthy eating habits that may include restrictive dieting, skipping meals, or compulsive overeating. (Fitzsimmons-Craft, Ciao, & Accurso, 2016).

The purpose of this study was to examine how appearance issues and depression relate to disordered eating among female college students. Appearance issues are the stimuli that cause individuals to view their physical looks negatively. The appearance issues analyzed in this study were level of body dissatisfaction, body mass index (BMI), SAA, and social-cultural attitudes toward appearance.

### 1.1. Theoretical perspective

The current study looked at appearance issues, depression, and disordered eating through the lenses of three theories and their modern day interpretations: social comparison theory by Festinger (1954), self-discrepancy theory (Higgins, 1987), and the normative discontent theory (Rodin, Silberstein, & Striegel-Moore, 1984).

#### 1.1.1. Social comparison theory

The social comparison theory (Festinger, 1954) conveys a base for the discourse factors that impact women's appearance issues and disordered eating behavior. The social comparison theory proposes that humans always strive to improve their lives and they do so by comparing themselves with other individuals. The theory discriminates between downward and upward comparisons. The downward comparison is when the comparison is with one considered lower than oneself. Hence, the downward comparison becomes a source of inspiration and feeling superior to others. The upward comparison is when the appraisal is based on a higher standard than the individual's. Thus, the upward comparison can lead to one feeling inferior. Upward comparison can be useful if used for self-improvement, but if the upward standard is unattainable, then it leads to frustration and even to feelings of anxiety and depression.

According to Festinger (1954), individuals are more likely to compare themselves with similar others. Regarding appearance, however, women often compare themselves with unrealistic images of other women portrayed in the media. Appearance-based social comparison may lead to appearance-based anxiety and even depression as well as a disordered eating behavior as one attempts to

approximate the superior standard portrayed in media and in the culture (Myers, Ridolfi, Crowther, & Ciesla, 2012).

### 1.1.2. *Self-discrepancy theory*

Jung-Hee, Lennon, and Rudd (2001) suggest application of the self-discrepancy theory (Higgins, 1987) in understanding more about females and appearance issues. According to the self-discrepancy theory, differences may exist between the actual (real) and the ideal (desired) appearance. These discrepancies may lead to an unfavorable mental state, which again may lead to a decline in recognition of apparent self-discrepancies. When the discrepancy is large, it may yield to a mental condition such as depression (Higgins, 1987). The more a woman has perceptual discrepancy between actual and ideal appearance, the greater is her risk of body dissatisfaction, disordered eating behaviors, and depression (Cash, Wood, Phelps, & Boyd, 1991).

### 1.1.3. *Normative discontent theory*

The normative discontent theory proposes that dissatisfaction with one's weight has become so widespread among females that feeling negatively about one's appearance is alleged to be the "norm" rather than the exception (Tantleff-Dunn, Barnes, & Larose, 2011). The theory has been used by researchers to explain the phenomenon in which women generally have overwhelming body dissatisfaction (Rodin et al., 1984). Since the cultural thin ideal for women is achieved by only a small percentage of women, many women acquire a discrepancy between their actual appearance and the ideal appearance. The media images in the culture have provided a backdrop from which appearance is assessed.

## 1.2. *Pertinent literature*

### 1.2.1. *Body dissatisfaction*

According to Wood-Barcalow, Tylka, and Augustus-Horvath (2010), individuals have a favorable body image (perception of their appearance) when they possess an appreciation and respect for how their body looks. Women who possess a positive body image resist internalization of negative media information, are less prone to disordered eating behavior, have better self-esteem and social support, and delight in bodily activity (Wood-Barcalow et al., 2010).

A study by Wendell, Masuda, and Le (2012) proposed that rigid body image has associations with disordered eating behavior. An understanding of the appearance flexibility concept may be useful in handling disordered eating behavior complications. Vartanian and Dey (2013) reasoned that poor self-concept contributed to appearance issues because it increased women's susceptibility to thin internalization and appearance comparison propensities. In a study by Ahern, Bennett, and Hetherington (2008), females who had an established intellectual schema that associated being thinner with positive attributes reported more disordered eating behavior symptoms. They found that thin internalization significantly correlated with body dissatisfaction, drive for thinness, and restrained eating.

### 1.2.2. *Body mass index*

Regardless of a woman's body size and BMI, the tendency to practice restrictive dieting has been found to be the same (Hill, Masuda, & Latzman, 2013; Robinson, Kosmerly, Mansfield-Green, & Lafrance, 2013; Tod, Edwards, & Hall, 2013). This phenomenon concurs with the normative discontent theory (Cash & Henry, 1995). On the other hand, in other studies, BMI was a significant predictor of body dissatisfaction, with a higher BMI projecting greater dissatisfaction (Gardner, Brown, & Boice, 2012; Xu et al., 2010). According to Ferreira, Pinto-Gouveia, and Duarte (2013), disordered eating behavior does not necessarily result directly from dissatisfaction with one's current weight. Rather, it is the perception of a low social status based primarily on physical appearance that makes one vulnerable to an eating disorder. Therefore, prospective research, like the current study, ought to investigate the roles of body dissatisfaction and BMI in the development of eating disorders.

### 1.2.3. Sociocultural attitudes toward appearance

Sociocultural pressures regarding ideal body types are important influences on appearance dissatisfaction and the use of body change behaviors (Xu et al., 2010). The social comparison theory proposes that people have a tendency to compare themselves to others, especially to those they consider superior, which explains why females self-compare with ultra-thin models. This upward comparison often produces negative feelings, especially for those who are heavier than the model (Homan, McHugh, Wells, Watson, & King, 2012; Swami, Taylor, & Carvalho, 2011; Thompson et al., 2004; Xu et al., 2010). For example, an analysis of tweets before and after a Victoria's Secret fashion show evidenced upward social comparison to the models. The tweets contained thoughts about appearance, disordered eating behavior, weight, desire for food, and thoughts about self-harm (Chrisler, Fung, Lopez, & Gorman, 2013).

Body dissatisfaction and/or disordered eating behavior have also been linked to watching television (Schooler & Trinh, 2011) and Internet addiction (Rodgers, Melioli, Laconi, Bui, & Chabrol, 2013). Reading of fashion magazines was shown to have an impact on internalization of the thin ideal, but not necessarily an impact on body dissatisfaction and disordered eating behavior. The authors suggest that family structure, eating environment, and cultural norms are additional factors that may impact vulnerability or resistance to media images (Tiggemann et al., 2005).

Intervention programs ought to challenge the desire to be thin while incorporating the desire to be fit, considering the fact that exposure to fit models does not increase body dissatisfaction (Homan et al., 2012). Disordered eating behavior interventions should encourage females to acquire meaningful autonomy, so as to have rational and minimal pressure. Autonomy as a strategy can encourage females to internalize healthy eating, instead of a thin ideal, and will consequently ensure lasting benefits to their appearance and eating habits (Mask & Blanchard, 2011).

Exposure to healthy images and accurate information about media images may have a positive influence on one's body image (Owen & Spencer, 2013). Wood-Barcalow et al. (2010) purport that women with healthy body images shield themselves from media by having an understanding that media images are often computer-modified, unattainable, impractical, and atypical.

Body dissatisfaction has been strongly predicted by two aspects of the Sociocultural Attitudes Toward Appearance Questionnaire (SATAQ-3): (1) pressure (pressure from various media to strive for ideals of attractiveness) and (2) internalization-general (the support and acceptance of media messages concerning unrealistic esthetic ideals) (Thompson et al., 2004). Additional research like this current study is needed to further examine the particular processes by which sociocultural pressures influence one's appearance.

### 1.2.4. SAA and depression

SAA is a dread that one will be undesirably evaluated based on one's appearance (Hart et al., 2008). SAA differs from social physique anxiety (Martin Ginis, Murru, Conlin, & Strong, 2011) because the latter is concerned with self-evaluation of one's body form and structure, e.g. body size. SAA is a broader domain that integrates all of one's appearance and is not restricted to physique (Levinson & Rodebaugh, 2012; Martin Ginis et al., 2011). SAA is a significant predictor for appearance dissatisfaction, disordered eating behavior, and concerns about shape and weight (Levinson & Rodebaugh, 2012). According to Rosser, Moss, and Rumsey (2010), individuals with high levels of concern over their physical appearance also perceive more components of their environment as appearance-related and negative.

There are common associations between depression and disordered eating behavior (Fink, Bodell, Smith, & Joiner, 2013; Liechty & Lee, 2013; Ostrovsky, Swencionis, Wylie-Rosett, & Isasi, 2013; Robinson et al., 2013). Individuals who displayed high anxiety had a self-worth that relied more on appearance, had numerous appearance dialog, as well as disordered eating behavior patterns, the

most frequent being binge eating (Bardone-Cone, Brownstone, Higgins, Fitzsimmons-Craft, & Harney, 2013).

This link between anxiety and disordered eating behavior has implications for interventions in that a therapist can focus on the anxiety and probably prevent development of eating disorders (Levinson & Rodebaugh, 2012). Emotional difficulties combined with a higher BMI have been related to higher dieting tendencies. Individuals were likely to participate in restrained and disordered eating behavior in an attempt to alleviate unregulated distress (Robinson et al., 2013; Swami et al., 2011). The strong association between depression and disordered eating behavior implies that teaching skills for managing negative emotions may possibly be an effective aid for the prevention of disordered eating behavior (Liechty & Lee, 2013).

#### 1.2.5. *Disordered eating vs. eating disorders*

It is important to note that disordered eating is defined as a wide range of irregular eating behaviors that do not warrant a diagnosis of a specific eating disorder. Persons who have disordered eating may have characteristics that overlap a medically diagnosed eating disorder. While failure to fulfill all of the criteria for these may not qualify for a formal eating disorder diagnosis, the affected individual still does not have a healthy relationship with food and body weight, may suffer depression (Puccio, Fuller-Tyszkiewicz, Ong, & Krug, 2016) and other emotional and physical risks (Fairweather-Schmidt, Lee, & Wade, 2015).

*The Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* (American Psychiatric Association, 2013) has highly specific criteria that patients must fulfill in order to receive formal diagnoses for an eating disorder, which would include anorexia nervosa, bulimia nervosa, binge eating disorder, or eating disorder not otherwise specified. The United States officially recognizes the DSM-5 for use in identifying codes for International Statistical Classifications of Diseases, which are used for health care reimbursement, underscoring the need for specificity in diagnoses.

#### 1.2.6. *Eating attitude test (EAT)-26*

The eating attitude test (EAT) is one of the most widely used measures for evaluating eating behaviors. The EAT-26 has demonstrated sufficient internal consistency and test-retest reliability. For example, the EAT-26 has demonstrated an internal consistency ranging from 0.76 to 0.92 (Ahmadi, Moloodi, Zarbaksh, & Ghaderi, 2014). The EAT-26 scale has been correlated with other scales to assist in establishing validity, particularly in regard to its usefulness in identifying eating disorders (ED). Although many studies examine a variety of variables and their association with EAT-26, depression scores (as evidenced by the Beck Depression Inventory (BDI)) appear to be the most commonly utilized. Research has revealed a significant positive relationship between depressive symptoms (using BDI) and eating disorders as demonstrated by positive/higher scores (using EAT-26) (Ahmadi et al., 2014; Erol, Toprak, & Yazici, 2006; Juarasico, Perone, & Timko, 2011; Kaplan, 2006; Thompson, 2016).

In a congruent study, individuals who exhibited frequent disordered eating also displayed high anxiety, combined with appearance-dependent self-worth, and frequent appearance conversations (Bardone-Cone et al., 2013). Likewise, MacNeill and Best (2015) demonstrated that EAT-26 scores correlated with discontent appearance (marked difference between perceived current body size and ideal body size). The study also reported that those with higher body dissatisfaction tended to report a smaller ideal body size when viewing body figures. Similarly, in the Andreea-Elena (2015) study, EAT-26 exhibited significant correlations between the risk of eating disorders and all facets of social-cultural attitudes concerning appearance. Other studies have demonstrated a relationship between disordered eating behaviors (as measured by EAT-26) in college women and social physique anxiety (which is related to SAA) (Lanfranchi, Maïano, Morin, & Therme, 2015; White & Warren, 2014).

### 1.3. *Hypotheses*

This study was guided by five hypotheses and one major research question:

#### Hypotheses:

H1: College females at risk of acquiring an eating disorder (EAT-26 score  $\geq 20$ ) will have significantly larger difference between their ideal body shape and their current body shape, as measured by the Stunkard Body Figural Scale (SBFS), compared to the students who are at less risk of acquiring an eating disorder (EAT-26 score  $< 20$ ).

H2: The mean BMI of college females at risk of acquiring an eating disorder (EAT-26 score  $\geq 20$ ) will not differ significantly from the mean BMI of college female students at less risk of acquiring an eating disorder (EAT-26 score  $< 20$ ).

H3: College females at risk of acquiring an eating disorder (EAT-26 score  $\geq 20$ ) will score significantly higher in sociocultural attitudes towards appearance as measured by the Sociocultural Attitudes Toward Appearance Questionnaire (SATAQ-3) compared to college female students at less risk of acquiring an eating disorder (EAT-26 score  $< 20$ ).

H4: College females at risk of acquiring an eating disorder (EAT 26 score  $\geq 20$ ) will have significantly higher SAA as measured by the Social Appearance Anxiety Scale (SAAS) compared to college female students at less risk of acquiring an eating disorder (EAT-26  $< 20$ ).

H5: College females at risk of acquiring an eating disorder (EAT-26 score  $\geq 20$ ) will have significantly higher depression as measured by the BDI compared to college female students at less risk of acquiring an eating disorder (EAT-26  $< 20$ ).

#### 1.3.1. The culminating inquiry

Which of the variables (appearance issues, depression) considered in this study is the greatest predictor of risk for disordered eating behavior?

## 2. Materials and methods

The *ex post facto* research design was used; hence, there was no treatment of the variables, but attempts were made to understand the cause, or reason, for existing differences in the behavior or status of groups of individuals (Tuckman, 1999). In this study, the researchers investigated how appearance issues and depression related to disordered eating behavior among female college students.

The researchers obtained human subjects' approval from the institutional review board of their university before collecting any data. After obtaining informed consent from the participants, investigators distributed the questionnaires to volunteer students during regularly scheduled classes. Students, both study participants and non-participants, were furnished with information on where to get help if they had concerns about disordered eating behavior, appearance-related anxiety or depression. Participants were recruited from undergraduate students enrolled at one Midwestern University in the United States. Subjects were not offered any compensation for participating in the study.

The questionnaire was composed of five scales plus demographic items (i.e. age, gender, major, ethnicity, level of education, current and desired weight, and height). The first scale was the Stunkard Body Figure Scale (SBFS) by Stunkard, Sorensen, and Schulsinger (1983). This survey is widely used in research regarding body dissatisfaction. For this particular study, participants were asked to compare a set of nine drawings of increasing body size and to circle their perceived current body shape and ideal body shape (desired body shape). Body-shape drawings were assigned a series of ascending scores, and "body dissatisfaction" was calculated based on the difference between the number of the current shape and the number of the ideal shape. If the difference between the number of the current shape and the number of the ideal shape was greater than zero, then the individual had some level of body dissatisfaction; a larger differential was indicative of high body dissatisfaction.

The SBFS has a concurrent validity of .99, a test-retest reliability of the current size of 0.90 and 0.88 for ideal size (Gardner & Brown, 2010).

The second scale was the EAT-26 by Garner, Olmsted, Bohr, and Garfinkle (1982). It has been used extensively in research as a reliable measure of identifying the presence of symptoms that are consistent with either a possible eating disorder or disordered eating behavior. Individuals who score 20 or greater ( $EAT-26 \geq 20$ ) are considered to be at risk of having an eating disorder (Garner et al.). When used clinically, the EAT-26 is interpreted continuously, but in non-clinical samples such as in the current study, it is appropriate to dichotomize participants into at-risk and not at-risk for group comparisons (Anstine & Grinenko, 2000; Jones, Bennett, Olmsted, Lawson, & Rodin, 2001). The EAT-26 scale comprises four dimensions, which include dieting, bulimia, food preoccupation, and oral control. An example of a question in EAT-26 is "I have gone on eating binges where I feel that I may not be able to stop." Each item is rated on a scale of 0–3 as follows: never = 0, rarely = 0, sometimes = 0, often = 1, usually = 2, and always = 3. Only item 25 was reverse coded.

The third scale was the Social-cultural Attitudes Toward Appearance Questionnaire (SATAQ-3) validated by Thompson et al. (2004). SATAQ-3 is a measure of one's agreement with societal appearance standards (Calogero, Davis, & Thompson, 2004). The SATAQ-3 subscales have exhibited excellent convergent validity with measures of body image and eating disturbance (Thompson et al., 2004). SATAQ-3 has also exhibited strong psychometric properties in a sample of Caucasian, African-American, Asian, and Hispanic college women from the USA. SATAQ-3 showed excellent reliability, reporting Cronbach's alpha values for the total score of .97 for all four groups (Warren, Rakhkovskaya, & Gleaves, 2013). The SATAQ-3 is a 30-item questionnaire that assesses four aspects of media influence on individuals. The four subscales are: (1) internalization-general (the support and acceptance of media messages concerning unrealistic esthetic ideals); (2) Internalization-Athlete (approval and acceptance of an athletic body ideal); (3) Pressure (apparent pressure from various media to strive for ideals of attractiveness); (4) Information (the level to which various media are reflected as a significant source of information about appearance). The subscales of the SATAQ-3 have been considerably associated with appearance disorder (Thompson et al., 2004). An example of a question in SATAQ-3 is "I compare my appearance to the appearance of TV and movie stars." Participants responded to each question using a five-point scale (5 = definitely agree, 4 = mostly agree, 3 = neither agree nor disagree, 2 = mostly disagree, 1 = definitely disagree). Higher scores on the SATAQ-3 indicate that there are higher levels of involvement in social-cultural attitudes toward appearance.

The fourth scale was SAAS by Hart et al. (2008). SAAS is a distinctive predictor and a psychometrically valid assessment of SAA regarding one's overall appearance (Hart et al., 2008). The SAAS was created to assess anxiety about being undesirably assessed by others based on one's overall appearance, including body shape. SAAS assesses feelings of unattractiveness, an obsession with being overweight, and the belief that one's looks are fundamentally imperfect and socially intolerable. The SAAS has an established high test-retest reliability and internal consistency. An example of a question in SAAS is "I am frequently afraid I would not meet others' standards of how I should look." Participants responded to each question using a five-point scale (5 = extremely, 4 = very, 3 = moderately, 2 = slightly, 1 = not at all). Higher scores on the SAAS indicate higher levels of SAA.

The original psychometric work designated SAAS as a single-factor scale and SAAS exhibited excellent internal consistency, test-retest reliability, and convergent validity (Hart et al., 2008). Levinson and Rodebaugh (2011) offered supplemental support for the use of the SAAS as a valid measure of SAA. In Hart et al. (2008), SAAS scores were positively related to depression as measured by BDI. Nevertheless, in the Levinson and Rodebaugh (2011) study, SAAS scores were not significantly correlated with BMI.

The fifth instrument was the BDI. The BDI is used to evaluate cognitive indicators of depression. BDI is a widely used measure of depression with an internal consistency of  $\alpha = .88$  for nonclinical populations (Beck, Steer, & Garbin, 1988). Scores on this self-reported, 21-item scale range from 0 to

**Table 1. Demographic and descriptive information for sample**

	Total sample	At-risk	Not at-risk
Total N	342	65	277
<i>Race</i>			
Caucasian	276	59 (21%)	217 (79%)
African-American	46	4 (9%)	42 (91%)
Hispanic	6	0 (0%)	6 (100%)
Asian	3	0 (0%)	3 (100%)
Native American	1	0 (0%)	1 (100%)
Other	11	3 (27%)	8 (73%)
<i>Age</i>			
18–22 years	236	51 (12%)	185 (78%)
23–30 years	65	7 (11%)	58 (89%)
31–40 years	17	2 (12%)	15 (88%)
41–50 years	6	0 (0%)	6 (100%)
50 and over	11	2 (18%)	9 (82%)
Body satisfaction *	102	11 (11%)	91 (89%)
Body dissatisfaction *	240	54 (22%)	186 (78%)

\*Body satisfaction and dissatisfaction were determined by the Stunkard Body Figural Scale.

63, with a score of 10 used to discriminate between asymptomatic and symptomatic individuals. Each item on the BDI scale is framed within a range of 0–3: 0 = I do not feel sad; 1 = I feel sad; 2 = I am sad all the time and I can't snap out of it; 3 = I am so sad or unhappy that I can't stand it. Participants are directed to select only the most representative response.

Finally, logistic regression was conducted to examine which of the appearance issues significantly contributed to the model fit and therefore had greatest prediction of disordered eating behavior.

The total sample included 370 undergraduate women from a mid-sized Midwestern State University in the US. After removing data from participants who did not complete all scales, the final sample included 342 female college students between the ages of 18–66 ( $M = 22.96$ ;  $SD = 8.96$ ). Participants were drawn from all levels of preparation, with attempts made to equally sample freshman (27.6% of sample), sophomore (27.6%), junior (26.8%), and senior (16.5%) students. A complete description of participant characteristics is available in Table 1.

### 3. Results

Prior to running analyses for the purpose of hypothesis testing, internal consistency analyses were conducted on all scales used. All measures had strong or excellent internal consistency (see Table 2 for Cronbach's alpha for all scales); further, examination of the "alpha if item deleted" analyses of all scales reveals that no items are serving as a drag on reliability. Therefore, the results of all subsequent inferential analyses can be considered robust.

**Table 2. Internal consistency of scales**

Scale	Number of items	Cronbach's alpha
EAT-26	26	.87
SATAQ	30	.95
SAAS	16	.97
BDI	21	.92

### 3.1. Body dissatisfaction and BMI

A large number of the participants, 68.6% ( $N = 254$ ), reported an ideal body shape smaller than their current body shape, and of these 21.3% ( $N = 54$ ) reported EAT-26 scores that would characterize them as at-risk for acquiring an eating disorder (i.e. scores of 20 or higher). Furthermore, an independent sample  $t$ -test revealed that women with body dissatisfaction (as measured by having a smaller ideal body shape than current body shape) were significantly more likely to be at-risk for disordered eating behavior than women with body satisfaction,  $t(116) = -2.91$ ,  $p = .004$ ,  $d = .37$ . According to Cohen (1992), this effect size is approaching moderate, indicating that the differences in appearance between women at-risk and those not at-risk for developing an eating disorder are meaningful. Levene's test reported unequal variances ( $F = 40.97$ ,  $p < .001$ ), so degrees of freedom were adjusted from 342 to 116.

These results support H1: college females at risk of acquiring an eating disorder (EAT-26 score  $\geq 20$ ) had a significantly larger difference between their ideal body shape and their current body shape, as measured by the SBFS, compared to the students who are at less risk of acquiring an eating disorder (EAT-26 score  $< 20$ ).

Independent sample  $t$ -test results indicated no significant difference in the BMI of college females at-risk of acquiring an eating disorder and those not at-risk of acquiring an eating disorder,  $t(335) = -0.69$ ,  $p = .49$ , ns. The average BMI of women not at-risk was 24.94 ( $SD = 7.28$ ), while the average BMI of women at-risk was 25.64 ( $SD = 7.63$ ). These results support H2: the mean BMI of college females at risk of acquiring an eating disorder (EAT-26 score  $\geq 20$ ) did not differ significantly from the mean BMI of college female students at less risk of acquiring an eating disorder (EAT-26 score  $< 20$ ).

### 3.2. Sociocultural attitudes toward appearance

To explore the differences between those at-risk and those not at-risk for acquiring an eating disorder on their sociocultural attitudes toward appearance, an independent sample  $t$ -test was conducted for the SATAQ Total score, as well as for each of the four subscale scores (Internalization-General, Internalization-Athlete, Pressure, and Information). For the SATAQ Total, women at-risk for acquiring an eating disorder had significantly higher scores than women not at-risk,  $t(316) = -6.06$ ,  $p < .001$ ,  $d = .84$ . This effect size is large, indicating a significant magnitude of difference between the groups. Examination of the subscale scores shows that women at-risk for acquiring an eating disorder scored significantly higher on all subscales of the SATAQ than women not at-risk for acquiring an eating disorder. These results support H3: college females at risk of acquiring an eating disorder (EAT-26 score  $\geq 20$ ) scored significantly higher on the Sociocultural Attitudes Toward Appearance Questionnaire compared to college female students at less risk of acquiring an eating disorder (EAT-26 score  $< 20$ ).

### 3.3. SAA and depression

To examine SAA between the women at-risk and not at-risk for acquiring an eating disorder, an independent sample  $t$ -test was conducted. The results of this test indicate that women at-risk for acquiring an eating disorder have significantly higher SAA than women not at-risk,  $t(81) = -5.30$ ,  $p < .001$ ,  $d = .79$ . Again, this effect size is large, indicating a substantial difference between the two groups. Levene's test reported unequal variances ( $F = 18.30$ ,  $p < .001$ ), so degrees of freedom were adjusted from 342 to 81. These results support H4: college females at risk of acquiring an eating disorder (EAT-26 score  $\geq 20$ ) had a significantly higher SAA compared to college female students at less risk of acquiring an eating disorder (EAT-26  $< 20$ ).

Women at-risk for acquiring an eating disorder reported significantly higher levels of depression than women not at-risk,  $t(78) = -3.87$ ,  $p < .001$ ,  $d = .59$ . Those at-risk had a mean BDI score of 13.3 ( $SD = 10.77$ ), while women not at-risk for developing an eating disorder had a mean score on the BDI of 7.59 ( $SD = 8.31$ ). The magnitude of the difference between the two groups is moderate (Cohen, 1992), indicating noticeable differences in depression levels between the two groups. Levene's test

**Table 3. Descriptive and inferential statistics for participants at-risk and participants not at-risk for disordered eating**

		<i>M</i>	<i>SD</i>	<i>t</i> -value	<i>p</i> -value	Cohen's <i>d</i>
EAT-26 total	At-risk	29.15	9.65			
	Not at-risk	7.33	4.68			
Body dissatisfaction (current body size-ideal body size)	At-risk	1.45	1.42	-2.91	.004	.37
	Not at-risk	0.87	1.22			
BMI	At-risk	25.64	7.63	-0.69	0.49	NA
	Not at-risk	24.94	7.28			
SATAQ total	At-risk	103.21	22.25	-6.06	<.001	.84
	Not at-risk	83.63	24.5			
SATAQ internalizing subscale-general	At-risk	30.55	9.18	-5.06	<.001	.69
	Not at-risk	24.58	8.15			
SATAQ internalizing subscale-athlete	At-risk	18.43	5.16	-5.19	<.001	.70
	Not at-risk	14.9	4.87			
SATAQ pressure subscale	At-risk	25.88	6.57	-7.15	<.001	1.00
	Not at-risk	19.18	6.78			
SATAQ information subscale	At-risk	27.77	8.71	-2.82	.005	.37
	Not at-risk	24.72	7.56			
SAAS	At-risk	46.69	20.06	-5.30	<.001	.79
	Not at-risk	32.68	14.89			
BDI	At-risk	13.33	10.77	-3.87	<.001	.59
	Not at-risk	7.59	8.31			

again reported unequal variance ( $F = 8.85, p = .003$ ), so degrees of freedom were adjusted from 311 to 78. These results support H5: college females at risk of acquiring an eating disorder (EAT-26 score  $\geq 20$ ) had a significantly higher depression compared to college female students at less risk of acquiring an eating disorder (EAT-26 < 20).

See Table 3 for all descriptive and inferential statistical information.

#### 4.4. The culminating inquiry

Prior to analyzing the culminating inquiry, correlations between all study variables were analyzed. As seen in Table 4, EAT-26 scores were significantly correlated with all study variables except participants' BMI. In fact, most study variables were significantly and moderately correlated with one another.

**Table 4. Correlation analyses among all variables**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
1. EAT-26	1	.017	.458**	.375**	.346**	.321**
2. BMI	-	1	.458**	-.069	.176**	.093*
3. Body dissatisfaction	-	-	1	.200**	.316**	.206**
4. SATAQ	-	-	-	1	.485**	.351**
5. SAAS	-	-	-	-	1	.565**
6. BDI	-	-	-	-	-	1

\*Level of Significant at  $p < .05$ .

\*\*Level of Significant at  $p < .01$ .

**Table 5. Logistic regression analysis**

Predictor	$\beta$	SE $\beta$	Wald's $\chi^2$	df	p	Odds ratio
Constant	-5.37	.966	30.937	1	<.001	.005
Model 1						
Body dissatisfaction	.478	.466	1.051	1	.305	1.613
BMI	-.013	.024	.319	1	.572	.987
Sociocultural attitudes toward appearance	.028	.009	10.088	1	.001	1.029
Social appearance anxiety	.027	.012	5.122	1	.024	1.028
Depression	.014	.019	.594	1	.441	1.015

Among the four appearance issues and depression considered in this study, which was the greatest predictor of disordered eating behavior? To examine the quality of these factors as predictors of disordered eating behavior in female college students, a logistic regression was completed. The dichotomized risk of disordered eating behavior as measured by EAT-26 scores and categorized as at-risk or not at-risk according to said scores was the outcome, and body dissatisfaction, BMI, scores on the SATAQ, scores on the SAAS, and scores on the BDI were predictor variables. Results of this regression analysis indicate that the combination of these variables is a strong predictor of disordered eating behavior. The Hosmer and Lemeshow goodness-of-fit test indicates a non-significant statistic ( $\chi^2 (8) = 10.56, p = .226$ ), suggesting that the model estimates fit the data well. Furthermore, the classification table indicates that this model would correctly predict a female's risk for disordered eating behavior 83.6% of the time. Additional examination of the logistic regression revealed that two of the five predictors are significantly contributing to this model fit. Namely, participants' scores on the SATAQ; the measure of sociocultural attitudes toward appearance, and scores on the SAAS; the measure of SAA were significant predictors of female college students' risk for disordered eating behavior. The other predictors did not significantly add to the model. See Table 5 for full logistic regression statistics.

#### 4. Discussion

This study examined depression and four appearance issues and how they relate to disordered eating among female college students. The results from this study gave evidence that college females at risk of disordered eating behavior differed significantly from those less at risk in body dissatisfaction, social-cultural attitudes, SAA, and depression, but not in BMI. About 70% of participants reported an ideal body shape smaller than their current body shape, indicating that most participants had some level of body dissatisfaction. More precisely, the present study found that for college females at risk of acquiring an eating disorder, the difference between current body shape and ideal body shape was significantly larger than for those less at risk of acquiring an eating disorder. However, Ferreira and colleagues (2013) cautiously noted that the dissatisfaction with one's current weight did not lead to disordered eating behavior, but that it is the label of an inferior social status centered entirely on bodily appearance that may be linked with disordered eating behavior.

This study found that the BMI of college females at risk of acquiring an eating disorder does not differ significantly from the BMI of college female students less at risk of acquiring an eating disorder. This finding differed from the studies by Gardner et al. (2012) and Xu et al. (2010), which indicated that BMI was a significant predictor of body dissatisfaction, with a higher BMI projecting greater body dissatisfaction. There is the possibility that the self-report for the BMI in the current study may account for the failure to find positive BMI findings reported in other studies. Rather, the current study concurred with studies (Hill et al., 2013; Robinson et al., 2013) which contended that, regardless of a woman's BMI, the tendency to diet was the same for all women. The current study findings also support the normative discontent theory, which claims that it is common for women to be discontent about their weight despite their BMI (Cash & Henry, 1995). Our study reveals that while discontentment (i.e. body dissatisfaction) is "normative" and an important hazard for eating disorder

risk, it alone does not predict disordered eating behavior. Our results indicate that contentment (i.e. body satisfaction) is also common as approximately one-third of our participants report satisfaction with their body. However, though the normative discontent theory views body dissatisfaction as prominent in women, it does not prohibit the use of other important variables such as weight, body dissatisfaction, and dieting behaviors in seeking to understand individuals who are at risk.

The present study found that college females at risk of acquiring an eating disorder scored significantly higher in the sociocultural attitudes toward appearance compared to college females less at risk of acquiring an eating disorder. Notably, this finding concurs with the White and Halliwell (2010) study that claims that there is extensive knowledge that social-cultural pressures and appearance issues can lead to disordered eating behavior. Similarly, several studies have endorsed that thin internalization due to sociocultural influence significantly correlated with body dissatisfaction, drive for thinness, and restrained eating (Ahern et al., 2008; Griffiths et al., 2000; Swami et al., 2011; Thompson et al., 2004). The current study findings support the social comparison theory that people tend to compare themselves with others, especially those they consider superior (upward comparison) (Homan et al., 2012). On the contrary, Mask and Blanchard (2011) noted some females displayed an autonomous perception, which aided as a defensive factor from the media examples of thinness. Additionally, Homan et al. (2012) argued that not all media had negative impact on body dissatisfaction; for instance, exposure to sports media is linked with more positive feelings about the body.

The current study results indicate that college females at risk of acquiring an eating disorder had significantly higher SAA compared to college female students less at risk of acquiring an eating disorder. This finding concurs with studies by Levinson and Rodebaugh (2012) and Ostrovsky et al. (2013), which claimed that SAA is a significant predictor of appearance dissatisfaction, disordered eating behavior, and concerns about shape and weight.

The present study also found that college females at risk of acquiring an eating disorder had significantly higher depression compared to college female students less at risk of acquiring an eating disorder. Congruently, Liechty and Lee (2013) found that depression was a significant predictor of disordered eating behavior. Similarly, Robinson et al. (2013) claimed that individuals participated in restrained and disordered eating behavior in an attempt to alleviate unregulated distress. The current study findings are comparable with Fink et al. (2013) who found common associations between depression, anxiety sensitivity, and disordered eating behavior symptoms.

Finally, logistic regression revealed that two of the five factors investigated, namely, scores on the SATAQ: the measure of sociocultural attitudes toward appearance, and scores on the SAAS: the measure of appearance anxiety, were significant predictors of female college students' risk for disordered eating behavior. The other predictors did not significantly add to the model, suggesting that the combination of adherence to sociocultural attitudes and having high appearance anxiety best predicts female college students' disordered eating behavior. This finding regarding the influence of sociocultural attitudes supplements previous evidence that sociocultural pressure can predispose to disordered eating behavior (Clay et al., 2005; Thompson et al., 2004; Tiggermann et al., 2005; White & Halliwell, 2010). The role of SAA in predicting risk for disordered eating behavior is consistent with Levinson and Rodebaugh (2012) who found that social anxiety, which is found to be a predictor of SAA (Hart et al., 2008; Levinson & Rodebaugh, 2011), and eating disorders tended to coexist. This study adds unique information in that our sample was not singularly affected by sociocultural attitudes or SAA, but by the combination of the two constructs, and further refines the link between SAA and eating disorders by showing more precisely that SAA was an important predictor.

#### **4.1. Practical implications**

This study provides a basis for practical suggestions that practitioners can employ to identify appearance apprehensions that relate to disordered eating among college females. BMI was not shown to differ significantly between those at risk for disordered eating behavior and those less at risk. Therefore, it is important to educate instructors, advisors, health professionals, and others who

interact with college females that women with a healthy body weight can nevertheless be at risk for the development of an eating disorder.

Since sociocultural attitudes toward appearance and SAA were shown to be the two best predictors of disordered eating behavior risk, efforts that focus on those two appearance issues may be the most effective in prevention. The effort to change sociocultural attitudes as transmitted by the media is a broad approach to prevention, whereas the connection between SAA and eating disorders has implications for interventions with individuals.

In an ideal world, the media could promote a positive appearance by using models that more accurately represent the assortment of shapes and sizes among females in society (Diedrichs & Lee, 2010). There should be campaigns, slogans, and deliberate efforts in society to ascribe value to women on attributes other than physical appearance, such as character. In Western cultures, girls' self-images decline considerably during mid-adolescence, hence the need to start early education interventions that help girls critique rather than internalize unrealistic media images (Clay et al., 2005) and form their own more flexible physical goals. It is important to encourage individuals to be autonomous in their absorption of negative social-cultural attributes portrayed in the media as recommended by Mask and Blanchard (2011). There should be an emphasis that the media images are often unrealistic and unattainable. Practitioners can help clients reduce appearance-related thoughts and conversations which may cause SAA (Bardone-Cone et al., 2013).

#### 4.2. Limitations

The current study's sample is composed of mostly white females and this limits its generalizability. This limitation leads to the suggestion that future studies should preferably look at other specific racial groups or compare various racial groups. Secondly, self-report was relied upon to appraise the study variables; hence, some of the responses could have been biased. Future studies could employ other techniques (e.g. observation, or experimental techniques) to more fully understand the interplay of these constructs to disordered eating behavior. Additionally, since the BMI in the current study was self-reported, this could have led to the failure to find a relationship between BMI and eating disorder risk.

#### 5. Conclusion

This study makes a valuable contribution in understanding how various appearance apprehensions and depression may influence disordered eating behavior among college females. The findings of this study can be beneficial for deterrence of disordered eating among female college students so that prevention and timely intervention can be possible before the disordered eating develops into an eating disorder.

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