Summer 2021

Does Feminine Gender Role Stress Moderate the Relationship Between Disordered Eating and Depression?

Paige Nichols
Western Kentucky University, pmnichols235@gmail.com

DOES FEMININE GENDER ROLE STRESS MODERATE THE RELATIONSHIP BETWEEN DISORDERED EATING AND DEPRESSION?

A Thesis Presented to
The Faculty of the Department of Psychological Sciences
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

By
Paige Nichols

August 2021

DOES FEMININE GENDER ROLE STRESS MODERATE THE RELATIONSHIP BETWEEN DISORDERED EATING AND DEPRESSION?

Date recommended July 22, 2021

Dr. Amy Brausch Digitally signed by Dr. Amy Brausch Date: 2021.07.30 15:00:58 -05'00'

Amy Brausch , Director of Thesis

Jenni Teeters Digitally signed by Jenni Teeters Date: 2021.07.30 15:38:54 -05'00'

Jenni Teeters

Matthew Woodward Digitally signed by Matthew Woodward Date: 2021.07.31 08:31:08 -05'00'

Matthew Woodward

Associate Provost for Research and Graduate Education

ACKNOWLEDGMENTS

I would first like to thank my research mentor, Dr. Amy Brausch, for all of her assistance with analysis, editing, and interpretation, as well as her continued support and encouragement. I would also like to thank my committee members, Drs. Jenni Teeters and Matthew Woodward, for their patience and assistance. Lastly, I would like to thank my friends, family, and coworkers for their endless love and support.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

DOES FEMININE GENDER ROLE STRESS MODERATE THE RELATIONSHIP BETWEEN DISORDERED EATING AND DEPRESSION?

Paige Nichols August 2021 53 Pages

Directed by: Amy Brausch, Jenni Teeters, and Matthew Woodward

Department of Psychological Sciences Western Kentucky University

The purpose of this investigation was to examine the moderating effect of feminine gender role stress on disordered eating behaviors and depression. It was hypothesized that feminine gender role stress would significantly moderate the relationship between disordered eating and depression, such that disordered eating behaviors would be more strongly associated with depression when FGRS total and subscale scores were high. These hypotheses were tested by surveying a sample of 334 university students (mean age = 20.54 years), all of whom were cisgender women. Participants completed self-report measures including the Eating Attitudes Test-26, Beck Depression Inventory, Feminine Gender Role Stress Scale, and Demographics. Results suggest that feminine gender role stress moderates the relationship between disordered eating and depression such that the association is stronger at low levels of feminine gender role stress.

Keywords: disordered eating, depression, feminine gender role stress

Introduction

Disordered eating behaviors and depression are conditions for which women are particularly at risk; anorexia nervosa (AN) and bulimia nervosa (BN) are far more common in women than in men (Hudson et al., 2007; Woodside et al., 2001), and the same effect is observed in depression (Marcus et al., 2005; Nolen-Hoeksema, 1990). In particular, college women are more likely to experience disordered eating and depression than women in the general population (Eisenberg et al., 2011; Favaro et al., 2003; Gonzalez et al., 2010; Peden et al., 2000). And while past research has demonstrated the frequent comorbidity between disordered eating behaviors and depression in women (Gadalla & Piran, 2008; Santos et al., 2007), the exact mechanisms which underlie this relationship have not yet been established. One potential explanation for the comorbidity is feminine gender role stress (FGRS), or the cognitive appraisal of threats and challenges to stereotypical feminine gender role behavior (Gillespie & Eisler, 1992). High appraisal of stressors that are particularly salient for women has been endorsed in samples of women who experience depression, and in those who engage in disordered eating behaviors (Gillespie & Eisler, 1992; Martz et al., 1995); however, no study to date has examined the interaction between these three variables. Therefore, the goal of the present study will be to examine the moderating effect of feminine gender role stress on the relationship between disordered eating behaviors and depression in a sample of college women.

Disordered Eating and Depression Prevalence and Incidence

Disordered eating in college-aged women

Eating disorders, including anorexia nervosa (AN), bulimia nervosa (BN), and other-specified feeding/eating disorders (OSFED), are complex, severe, and sometimes chronic disorders that often first present in adolescence or young adulthood for women (Lewinsohn et al., 2000; Woodside & Garfinkel, 1992). Stice and colleagues (2013) estimate that the lifetime prevalence rates of AN, BN, and OSFED are 0.8%, 2.6%, and 11.5%, respectively. However, these rates may be elevated among women attending college; for example, the most recent American College Health Association's National College Health Assessment (ACHA-NCHA III; 2020) suggests that 6% of female college students have been diagnosed with an eating disorder such as AN or BN. Other research suggests that up to 13.5% of college women meet clinical criteria for AN, BN, or OSFED (Eisenberg et al., 2011). Research indicates that these rates are much higher than among the general population; in a prevalence study of young women in the general population, lifetime rates of AN and BN were 2.0% and 4.6% respectively (Favaro et al., 2003). However, eating disorders include a wide range of symptoms and severity; even if an individual is not diagnosed with an eating disorder, some disordered eating behaviors may be indicative of serious psychological distress. Disordered eating behaviors are prominent among female college students, including those who do not have a clinical diagnosis of an eating disorder; one study found that nearly two-thirds of college women reported dieting behavior that was "intense" or classified the women as "at-risk" for an eating disorder (Krahn et al., 2005). In another study, 60% of college women reported chronic dieting or binge eating, and among these women 69% reported using compensatory behaviors (i.e. purging, diet pills, diuretics, fasting) in order to control weight (Tylka & Subich, 2002). Many have speculated as to why this population is

particularly vulnerable; one explanation for the high rates of disordered eating behaviors in college women is that risk factors for disordered eating, such as depression, develop as women enter young adulthood (Herzog, 1992; Oldehinkel et al., 1999). Another explanation is that disordered eating behaviors and eating disorders typically develop in adolescence and continue during the time that many young women are attending college, and incidence rates do not tend to decrease until young adulthood (Lewinsohn et al., 2000). Still, others argue that environmental factors, such as the unique social and academic stressors associated with attending college may put students at increased risk for disordered eating behaviors (Compas et al., 1986). Thus, research is still vague in regard to understanding the exact factors and mechanisms which influence disordered eating behaviors in college women.

Depression in college-aged women

Depression refers to a continuum including depressed mood, symptoms of psychological distress, and diagnosable disorders such as Major Depressive Disorder (MDD). For the purposes of this paper, depression will refer to symptoms associated with MDD. Affective, cognitive, behavioral, and physiological disturbances associated with depression include depressed mood, inability to concentrate, diminished interest and activity in activities, and fatigue or loss of energy (American Psychiatric Association, 2013). The ACHA-NCHA III (2020) report suggests 25% of college women have been diagnosed with MDD. Absent a diagnosis of MDD, depressive symptoms are still high among college women; previous research found 35% of college women had severe depressive symptoms (Peden et al., 2000). Compared to the general population, these rates are much higher; in an examination of MDD and depression in the general

population, 4.0% of women had been diagnosed with MDD, while 6.1% experienced depressive symptoms (Gonzalez et al., 2010). College students endorse a number of variables which contribute to their development of depression, including internal factors such as hopelessness and helplessness, and external factors such as relationship problems with a partner (Furr et al., 2001). College students also endorse variables that are specific to or particularly salient for individuals attending college, including grade problems, loneliness, and money problems (Furr et al., 2001). It is imperative that we understand the development of depression in college students, due to its documented relationship to other psychiatric disorders, like eating disorders (Ward & Hay, 2015), as well as its relationship to suicide (Furr et al., 2001). Depression has consistently been identified in the literature as a risk factor for eating disorders; between 20-80% of individuals with AN and 20-76% of individuals with BN report at least one lifetime major depressive episode (Bulik, 2002; Garfinkel et al., 1995; Hudson et al., 2007). In a nonclinical sample of college women, depression was significantly higher among individuals with eating disorder risk than individuals who did not present eating disorder risk (Fragkos & Frangos, 2013). While it is evident that the relationship between depression and disordered eating in college women is robust, understanding which variables contribute to this relationship is an important direction for research to follow.

Disordered eating and depression comorbidity

It should be noted that although research has determined that disordered eating and depression frequently co-occur, determining the temporal relationship between the two is much more difficult. Research has found that both patterns of onset may occur; that is, depression before disordered eating and vice versa (Bulik, 2002). In a sample of

individuals with eating disorders, 34.5% reported MDD onset prior to ED onset, while the remainder either reported MDD onset after ED onset or contemporaneous onset (Fernandez-Aranda et al., 2007). Determining the temporal onset of these disorders may be difficult, or even irrelevant, given that this same study found that 67% of individuals experienced the onset of both ED and MDD within the same 3-year window (Fernandez-Aranda et al., 2007). Given that these disorders frequently develop simultaneously or near simultaneously, determining the risk factors that contribute to this relationship are of utmost importance.

Feminine Gender Role Stress

Gender differences in ED

It has been well established that the incidence and prevalence of eating disorders differs by gender; epidemiological studies have demonstrated AN and BN are far more prevalent in women than in men (Hoek, 2006; Striegel-Moore & Bulik, 2007). Stice and Bohon (2012) found that 0.9% - 2.0% of women and 0.1% - 0.3% of men will develop AN, and 1.1% - 4.6% of women will develop BN, compared to 0.1% - 0.5% of men. Even among nonclinical populations, disordered eating behaviors occur more frequently in women than in men. In a sample of 1,709 adolescents, female participants scored significantly higher than male peers on measures assessing drive for thinness, bulimia, body dissatisfaction, and inappropriate compensatory behaviors (Lewinsohn et al., 2002). Further, in a sample of 2,448 undergraduate students who were administered the Eating Disorders Examination Questionnaire (EDE-Q; Fairburn & Beglin, 2008), college women scored significantly higher on total score as well as each subscale score (i.e. restraint and eating, weight, and shape concerns) than college men (Quick & Byrd-

Bredbenner, 2013). Additionally, college women in this same sample tended to engage in inappropriate compensatory behaviors, such as dietary restraint, self-induced vomiting, and excessive exercise more frequently than male counterparts (Quick & Byrd-Bredbenner, 2013).

Gender differences in depression

One of the most robust findings in previous research is the different rates of depression by gender. In a systematic review of studies published between 1993 and 2002, depressive symptoms were more prevalent in women than in men at a ratio of about 2:1 (Kuehner, 2003). This same review found that depression rates between males and females begin to diverge mid-puberty, and the difference in rates between gender continues to increase with age into young adulthood (Kuehner, 2003). This trend is also captured among nonclinical samples. In a study of depressive symptoms and risk factors in adolescents, girls endorsed significantly more depressive symptoms than boys, and girls were more likely to experience a major depressive episode than boys at a ratio of about 2:1 (Galambos et al., 2004). Furthermore, Marcus and colleagues (2005) demonstrated that depressive symptoms vary by gender in presentation; in a sample of 1500 outpatients (62.8% women) diagnosed with major depressive disorder (MDD), women had a significantly earlier age of onset of MDD than men, and reported that their current major depressive episode was significantly longer than male counterparts (Marcus et al., 2005). Women also experienced greater severity of symptoms, with significantly higher scores on the Inventory of Depressive Symptomatology (IDS-C30; Rush et al., 1996) than men (Marcus et al., 2005). Moreover, while men were more likely to endorse symptoms associated with obsessive compulsive disorder and substance use disorder,

women were more likely to endorse symptoms associated with generalized anxiety disorder, somatoform disorders, and bulimia (Marcus et al., 2005).

Feminine gender role stress

In order to explain gender differences in the rates of mental disorders like depression and eating disorders, it has been theorized that the salience of and adherence to gender roles may impact the development of psychopathology (Wethington et al., 1987). Wethington and colleagues (1987) propose that psychologically taxing events and stimuli may affect men and women differently based upon the event or stimuli's relevance to traditional gender roles. For example, experiences related to weight control, lack of high-quality emotional support, and stressors in the lives of significant others are consistently rated as more stressful for women than for men (Almedia & Kessler, 1998; Wethington et al., 1987). For those who adhere to traditional gender role norms, certain situations and the responses that they elicit may be experienced as stressful if these situations and responses threaten specific gender role norms; for instance, failing to provide adequate emotional support in a close personal relationship may be particularly stressful for women who adhere to traditional feminine gender role standards for nurturant behavior (Eisler & Skidmore, 1987). It has been proposed that cognitive appraisal and coping are influenced by gender role socialization, which in turn creates different vulnerabilities for men and women to particular stressors (Eisler & Skidmore, 1987). Gillespie and Eisler (1992) empirically and comprehensively identified specific feminine gender role stressors and their dimensions. The Feminine Gender Role Stress scale (FGRS; Gillespie & Eisler, 1992) contains five subscales based on stress responses to situations that are particularly salient for women; fear of unemotional relationships,

fear of physical unattractiveness, fear of victimization, fear of behaving assertively, and fear of not being nurturant.

The fear of unemotional relationships subscale contains items that reflect emotional detachment in intimate relationships, and stressors on this factor reflect a fear of failing to develop emotionally close relationships to others (Gillespie & Eisler, 1992). Stressors include items such as "being taken for granted in a sexual relationship," "having an intimate relationship without any romance," and "not being able to meet family members' emotional needs" (Gillespie & Eisler, 1992). Items in this subscale may be particularly salient for college women; college, and the first year in particular, is an important developmental time when young adults transition to environments with less parental monitoring, less structure, increased flexibility in schedules, and increased sexual exploration. "Hookups," or sexual interactions that occur outside of committed relationships (Claxton & van Dulmen, 2013), are an increasingly common form of sexual exploration among young adults. Hookups include a variety of sexual behaviors (i.e. kissing, oral sex, vaginal sex), occur between individuals who are not in a committed relationship, and future romantic interaction is not necessarily implied (Holman & Sillars, 2011; Lewis et al., 2012). Among college students, it is estimated that lifetime prevalence rates range from 60%-80% (Garcia et al., 2012).

The fear of physical unattractiveness subscale emphasizes stressors associated with traditionally unfeminine physical attributes, such as obesity and maturity. These items reflect stressors related to achieving and maintaining society's idea of what a female body should look like, and include items such as "being perceived by others as overweight," "being heavier than your mate," and "being unable to change your

appearance to please someone" (Gillespie & Eisler, 1992). This subscale is of particular interest to the present study. Notable pathology of eating disorders includes excessive preoccupation with body shape or weight, and self-evaluation is influenced unduly by these factors (American Psychiatric Association, 2013). Studies have confirmed correlations between eating pathology and drive for thinness. Garner and colleagues (1987) identified high drive for thinness as predictive of later development of disordered eating behaviors. In a sample of adolescent girls, an item assessing fear of fatness predicted development of disordered eating behaviors over time (Button et al., 1996). Moreover, in a study of female students enrolled in university, high drive for thinness was related to more severe anorexic and bulimic symptoms at a four month follow up (Dobmeyer & Stein, 2003). Because a drive for thinness is related to a fear of physical unattractiveness, and excessive preoccupation with body shape or weight is essential to eating disorder pathology, it is expected that this subscale of the FGRS will be particularly important in this study of disordered eating behaviors.

Fear of victimization is concerned with situations in which women are exposed to harm or potential violence, and women who score high on this factor may view themselves as unable to prevent victimization (Gillespie & Eisler, 1992). Most of the items on this subscale emphasize helplessness and include items such as "having your car break down on the road," "feeling that you are being followed by someone," and "hearing that a dangerous criminal has escaped nearby" (Gillespie & Eisler, 1992). As campus crime has remained a top safety concern over recent years, items on this subscale may be particularly salient for college women. Between 1995 and 2004, college students

reported an average of over 463,000 incidences of violence each year, including more than 106,000 aggravated assaults and 284,000 simple assaults (Hart, 2007).

The fourth subscale, fear of behaving assertively, describes interpersonal confrontations and situations that require assertive coping behavior and includes stressors such as "negotiating the price of car repairs," "supervising older and more experienced employees at work," and "talking with someone who is angry at you" (Gillespie & Eisler, 1992). Situations such as these may be particularly threatening or stressful for women because they require a violation of traditional feminine norms of passivity and acquiescence (Gillespie & Eisler, 1992).

The fifth and final subscale, fear of not being nurturant, involves situations that reflect a fear of having inadequate nurturing skills compared to traditional feminine gender role standards (Gillespie & Eisler, 1992). Stressors include "your mate is unemployed and cannot find a job," "a very close friend stops speaking to you," and "losing custody of your children after a divorce" (Gillespie & Eisler, 1992). High scores on items related to a significant other, referred to as a mate, may indicate a perceived failure to fulfill the traditional feminine gender role of being both a helpmate and a nurturer (Gillespie & Eisler, 1992).

Since its inception, the FGRS has demonstrated a strong positive relationship between endorsement of traditional feminine gender role stress and disordered eating behaviors. In one study, women with a clinical diagnosis of BN reported significantly higher levels of feminine gender role stress than the control group of college women (Bekker & Boselie, 2002). In another sample of inpatient women diagnosed with eating disorders, psychiatric female inpatients with other diagnoses, and non-hospitalized

college women, the FGRS scale was able to discriminate ED diagnosis from the groups without an ED diagnosis (Martz et al., 1995). Moreover, women with ED in this study scored significantly higher on the subscales of fear of unemotional relationships, fear of physical unattractiveness, fear of victimization, and fear of behaving assertively compared to individuals with other psychiatric diagnoses or female college students (Martz et al., 1995). Results from these studies suggest that FGRS may be an important component in the development of psychiatric disorders that are theorized to have a gender role component, like eating disorders.

Facets of the FGRS have also demonstrated a relationship with depression; total FGRS scores were significantly related to self-reported depression in a sample of college women, with the fear of physical unattractiveness and fear of behaving assertively subscales as the most significant predictors of depression (Gillespie & Eisler, 1992). This correlation between FGRS and depression scores supports previous research that suggests traditional feminine gender role standards may be linked to maladaptive or depressive coping strategies (Nolen-Hoeksema, 1987).

Rationale and Hypotheses

Given that eating disorders and depression are pervasive disorders that are increasing in prevalence (Currin et al., 2005; Hidaka, 2012; Twenge et al., 2010), and given the high comorbidity between the two disorders (Hudson et al., 2007; Santos et al., 2007), it is imperative to understand the relationship between disordered eating behaviors and depression. And considering women experience both eating disorders and depression at higher rates than men (Kuehner, 2003; Stice & Bohon, 2012), it is important to consider how factors related to traditional gender roles may influence the development of

these disorders. Although previous research has demonstrated that endorsement of traditional feminine gender roles correlates with disordered eating and depression (Bekker & Boselie, 2002; Gillespie & Eisler, 1992), no study to date has examined whether the comorbid development of disordered eating and depression may depend on endorsement of traditional feminine gender roles. That is, higher feminine gender role stress may moderate the relationship between disordered eating and depression. Additionally, although previous research has demonstrated the relationships between disordered eating and depression, disordered eating and feminine gender role stress, and depression and feminine gender role stress (Gillespie & Eisler, 1992; Martz et al., 1995; Santos et al., 2007), the relationship between the three factors has not yet been examined. The current study sought to fill a gap in the literature by examining the relationship between disordered eating behaviors, depression, and feminine gender role stress.

In a sample of college women, it was expected that feminine gender role stress would be significantly positively associated with disordered eating behaviors and depression. We also expected that FGRS would moderate the relationship between disordered eating behaviors and depression, such that disordered eating behaviors would be more strongly associated with depression when total FGRS scores are high. It was predicted that disordered eating behaviors would be more strongly associated with depression when FGRS subscale scores (i.e. fear of unemotional relationships, fear of physical unattractiveness, fear of victimization, fear of behaving assertively, fear of not being nurturant) are high. It was also predicted that among these subscale scores the fear of physical unattractiveness score would account for most of the variance. Additionally,

given the difficulty in determining the temporal development of disordered eating behaviors and depression (Bulik, 2002), we also sought to explore whether FGRS would moderate this relationship if the predictor and outcome variables were reversed; that is, we predicted that feminine gender role stress would moderate the relationship between disordered eating behaviors and depression, such that depression would be more strongly associated with disordered eating behaviors when total FGRS scores are high, and when FGRS subscale scores are high.

Method

Participants and Procedure

Participants were recruited from the student population at Western Kentucky University through a university-wide mass email. Inclusion required that individuals were cisgender women; that is individuals who were assigned the female gender at birth, who identify as female, and who have female reproductive organs (Aultman, 2014). Participants were excluded based on missing data. Participants completed the study online via Qualtrics. Prior to the questionnaire, participants completed an informed consent document and confirmed that they were between 18-25 years of age and a cisgender woman. Individuals then completed a demographics form and the measures relating to depression, disordered eating, and feminine gender role stress.

One question on the BDI-II asks about suicidal thoughts; if participants rated a 2 ("I would like to kill myself") or 3 ("I would kill myself if I had the chance"), a pop-up window appeared in Qualtrics containing information about available crisis services. Participants who received this pop-up message acknowledged that they read the crisis information before they were able to complete the study. At the completion of the

survey, all participants regardless of whether or not they indicated suicidal ideation, received information about mental health and emotional support services available to students on campus, in the community, and information about national crisis lines.

Measures

Disordered Eating Behaviors. The Eating Attitudes Test-26 (EAT-26; Garner, Olmstead, Bohr & Garfinkel, 1982) is a 26-item, self-report questionnaire designed to measure disordered eating pathology. The measure yields a total score and three subscale scores based on dieting (i.e. "I engage in dieting behavior"), bulimia and food preoccupation (i.e. "I vomit after I have eaten," "I find myself preoccupied with food"), and oral control (i.e. "I avoid eating when I am hungry"). Responses are scored on a 6-point Likert scale ranging from 6 (*always*) to 1 (*never*). Although the EAT-26 is not intended as a diagnostic tool for eating disorders, higher scores indicate more disordered eating behaviors, and denote concerns regarding body shape, body weight, and eating (Garner et al., 1982). A total score of 20 or higher is considered to be significant and may suggest a clinically significant level of disordered eating (Dotti & Lazzari, 1998; Garner et al., 1982; Patton, Johnson-Sabine, Wood, Mann & Wakeling, 1990). The EAT-26 is a valid tool for assessing total disordered eating behaviors, and has demonstrated good internal consistency (αs = .78 - .86); likewise, the subscales have also demonstrated good internal consistency (α = .80 for dieting, α = .67 for bulimia and food preoccupation, and α = .56 for oral control) (Garner et al., 1982; Gleaves, Pearson, Ambwani & Morey, 2014; Lee et al., 2002). In the current sample, the reliability coefficient for the EAT-26 was .899.

Feminine Gender Role Stress. The Feminine Gender Role Stress scale (FGRS; Gillespie & Eisler, 1992) is a 39-item, self-report questionnaire designed to assess the cognitive appraisal of threats and challenges to stereotypical feminine gender role behavior. The measure yields a total score and five subscale scores based on fear of unemotional relationships (i.e. "Feeling pressured to engage in sexual activity"), fear of physical unattractiveness (i.e. "Being perceived by others as overweight"), fear of victimization (i.e. "Hearing a strange noise while you are home alone"), fear of behaving assertively (i.e. "Bargaining with a salesperson when buying a car"), and fear of not being nurturant (i.e. "A very close friend stops speaking to you"). Responses are scored on a 6-point Likert scale ranging from 0 (*not at all stressful*) to 5 (*extremely stressful*). Previous research found that women appraise situations on the FGRS as significantly more stressful than men, indicating that these stressors are particularly salient for women (Gillespie & Eisler, 1992). The FGRS has demonstrated good test-retest reliability (r = .82), and the subscales have demonstrated good internal consistency (α = .83 for fear of unemotional relationships, α = .81 for fear of physical attractiveness, α = .77 for fear of victimization, α = .80 for fear of behaving assertively, and α = .73 for fear of not being nurturant) (Gillespie & Eisler, 1992). In the current sample, the reliability coefficient for the FGRS was .896. The reliability coefficients for the subscale scores are as follows: *fear of unemotional relationships,* .768; *fear of physical unattractiveness,* .829; *fear of victimization,* .732; *fear of behaving assertively,* .723; and *fear of not being nurturant,* .785.

Depressive Symptoms. The Beck Depression Inventory, second edition (BDI-II; Beck, Steer & Brown, 1996) is a 21-item self-report questionnaire designed to measure

the severity of depressive symptoms in adolescents and adults. Respondents indicate which statement best describes how they felt during the past two weeks on a 4-point Likert scale ranging from 0 to 3 (i.e. 0 for "I do not feel sad" and 3 for "I am so sad and unhappy that I can't stand it"). The measure yields a total score which indicates severity of depressive symptoms; scores ranging from 0 to 13 are indicative of minimal depression, scores ranging from 14 to 19 are indicative of a mild level of depression, scores ranging from 20 to 28 are considered moderate, and scores ranging from 29 to 63 are considered severe (Beck et al., 1996; Dozois, 2010). The BDI-II has been found to be a psychometrically sound instrument for assessing depressive symptoms and has demonstrated excellent internal consistency ($\alpha = .91 - .93$) and good test-retest reliability ($r = .72$) (Beck et al., 1996; Dozois & Covin, 2004; Yin & Fan, 2000). In the current sample, the reliability coefficient for the BDI-II was .931.

Demographics. Demographics were assessed in a questionnaire with questions asking the participants age, gender identity, sexual orientation, race/ethnicity, year in school, and relationship status. Participants were also asked to indicate if they were currently in therapy or seeing a counselor.

Results

Data were collected from 334 college students who met the inclusion criteria of identifying as a cisgender woman between the ages of 18-26. The mean age was 20.54 years ($SD = 1.86$). The majority of individuals were white (83.9%), followed by Black/African-American (6.4%), Asian (4.3%), Hispanic/Latino(a) (2.7%), Multi-ethnic (2.4%), and Native American (0.3%). Additionally, the majority of individuals identified as Heterosexual/straight (63.5%), followed by Bisexual (26.1%), and

Gay/lesbian/homosexual (3.3%). Bivariate correlations were run between all variables, and all associations were significant except for those between BDI total score and fear of victimization, EAT total score and fear of unemotional relationships, EAT total score and fear of victimization, and EAT total score and fear of not being nurturant. Pearson's correlations were used to determine if FGRS was significantly positively associated with disordered eating behaviors and depression. See Table 1 for descriptive data on all study measures and correlations between variables.

Table 1
Means, Standard Deviations, and Correlations Between All Study Variables

Variable	*M*	*SD*	Range	1	2	3	4	5	6	7	8
1. BDI Total	23.825	12.697	0–60	–							
2. EAT Total	16.420	13.346	0–58	.467**	–						
3. FGRS Total	140.184	24.365	22–194	.396**	.306**	–					
4. Fear of Unemotional Relationships	36.336	8.053	4–50	.226**	.095	.741**	–				
5. Fear of Physical Unattractiveness	27.349	8.161	3–40	.536**	.583**	.712**	.369**	–			
6. Fear of Victimization	22.063	5.151	5–30	.109	.034	.667**	.361**	.289**	–		
7. Fear of Behaving Assertively	24.444	5.924	2–35	.313**	.164**	.730**	.359**	.409**	.529**	–	
8. Fear of Not Being Nurturant	29.729	6.810	6–40	.165**	.121	.740**	.434**	.381**	.439**	.452**	–

** Correlation is significant at the .01 level (2-tailed).

Moderation analyses using the PROCESS Macro for SPSS (Hayes, 2013) were used to test our hypotheses. In the first hypothesis which predicted that FGRS would

moderate the relationship between disordered eating behaviors and depression, total disordered eating behaviors score from the EAT-26 was entered as the independent variable, total depression score from the BDI-II was entered as the dependent variable, and total FGRS score was entered as the moderator. The overall model was significant and accounted for 30.4% of the variance, $F(3, 240) = 34.972$; $p < .001$. EAT total score and FGRS total score were significantly associated with BDI total score; the interaction was also significant, B = –.006, $t = –2.461$, $p = .015$ (Figure 1). Simple slopes analyses of the interaction found that the relationship between disordered eating behaviors and depressive symptoms was significant when FGRS scores were low, coeff = .515, $t = 6.209$, $p < .001$, 95% CI [.351, .678], as well as when FGRS scores were high, coeff = .235, $t = 3.24$, $p = .001$, 95% CI [.092, .379]. Notably, the association is strongest at low levels of FGRS.

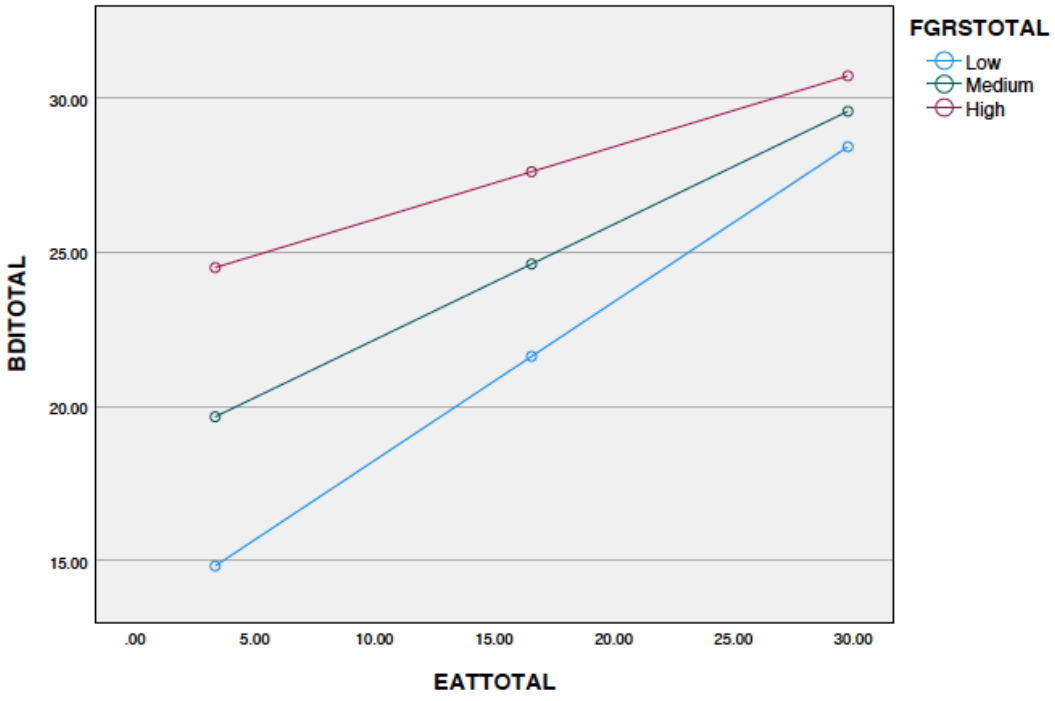

Figure 1. FGRS total score moderates EAT total score and BDI total score.

For the second hypothesis which predicted that disordered eating behaviors would be more strongly associated with depression when specific FGRS subscale scores are high, five moderation analyses were run; one for each subscale of the FGRS (fear of unemotional relationships, fear of physical unattractiveness, fear of victimization, fear of behaving assertively, and fear of not being nurturant). In each, total disordered eating behaviors score from the EAT-26 was entered as the independent variable, total depression score from the BDI-II was entered as the dependent variable, and the respective FGRS subscale was entered as the moderator.

In the model using the fear of unemotional relationships subscale, the overall model was significant and accounted for 25.7% of the variance, $F(3, 242) = 27.955$; $p < .001$. EAT total score and the fear of unemotional relationships subscale score were significantly associated with BDI total score. However, the interaction was not significant, B = –.006, $t = –.902$, $p = .368$. In the model using the fear of physical unattractiveness subscale, the overall model was significant, and accounted for 33.4% of the variance, $F(3, 246) = 41.204$; $p < .001$. The EAT total score and fear of physical unattractiveness subscale score were significantly associated with BDI total score; the interaction was not significant, B = –.012, $t = –1.308$, $p = .192$. In the model using the fear of victimization subscale, the overall model was significant and accounted for 24.5% of the variance, $F(3, 251) = 26.994$; $p < .001$. In this model, the EAT total score, but not the fear of victimization subscale score, was significantly associated with BDI total score; the interaction was not significant, B = –.007, $t = –.797$, $p = .426$. In the model using the fear of behaving assertively subscale, the overall model was significant and accounted for

29.4% of the variance, $F(3, 250) = 34.775$; $p < .001$. EAT total score and the fear of behaving assertively subscale score were significantly associated with BDI total score; the interaction was also significant, B = –.022, $t = –2.702$, $p = .007$ (Figure 2). Simple slopes analyses of the interaction found that the relationship between disordered eating behaviors and depressive symptoms was significant when fear of behaving assertively scores were low, coeff = .529, $t = 7.7$, $p < .001$, 95% CI [.394, .665], and when scores were high, coeff = .266, $t = 3.746$, $p < .001$, 95% CI [.126, .406]. The association is strongest at low levels of fear of behaving assertively. Finally, in the model using the fear of not being nurturant subscale, the overall model was significant, and accounted for 25.6% of the variance, $F(3, 246) = 28.162$; $p < .001$. EAT total score and the fear of not being nurturant subscale score were significantly associated with BDI total score; the interaction was significant , B = –.016, $t = –1.97$, $p = .05$ (Figure 3). Simple slopes analyses of the interaction found that the relationship between disordered eating behaviors and depressive symptoms was significant when fear of not being nurturant scores were low, coeff = .566, $t = 6.876$, $p < .001$, 95% CI [.404, .728], and when scores were high, coeff = .35, $t = 5.042$, $p < .001$, 95% CI [.213, .486]. As demonstrated by the coefficients, the association is strongest at low levels of fear of not being nurturant.

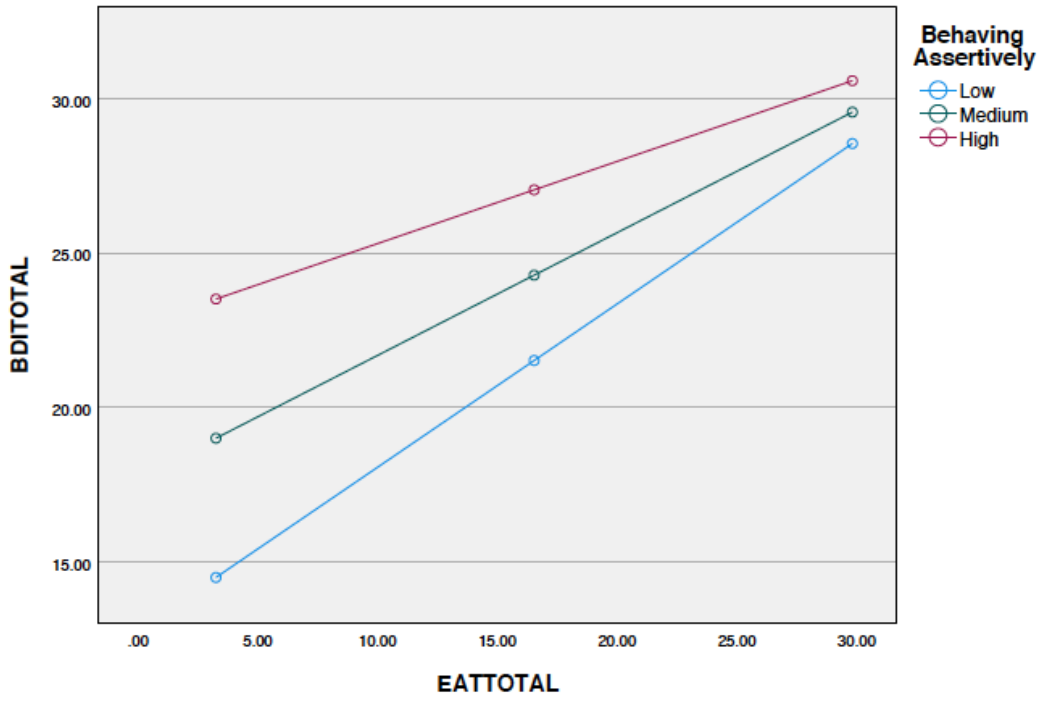

Figure 2. Fear of Behaving Assertively moderates EAT total score and BDI total score.

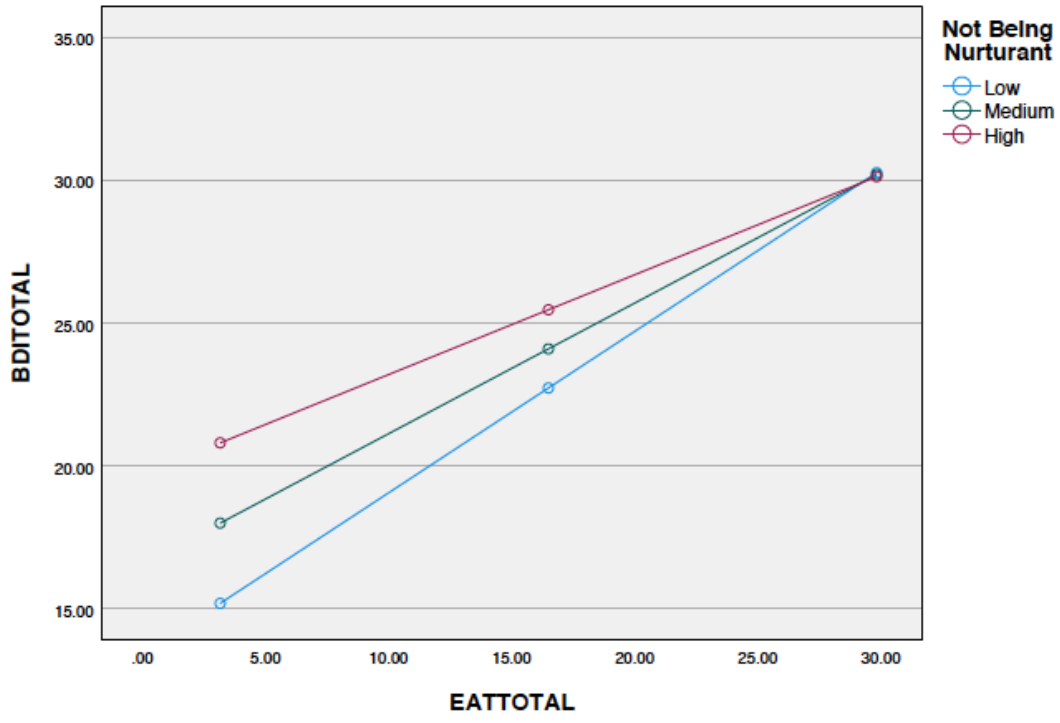

Figure 3. Fear of Not Being Nurturant moderates EAT total score and BDI total score.

Exploratory Analyses

As we also tested the relationship between disordered eating behaviors and depression in the opposite direction, six more analyses were run. In our first exploratory hypothesis that depression would be more strongly correlated with disordered eating behaviors when total FGRS scores were high, total depression score from the BDI-II was entered as the independent variable, disordered eating behaviors score from the EAT-26 was entered as the dependent variable, and total FGRS score was entered as the moderator. The overall model was significant, and accounted for 24.1% of the variance, $F(3, 240) = 25.421$; $p < .001$. BDI total score and FGRS total score were significantly associated with EAT total score; however, the interaction was not significant, B = –.003, $t = –1.335$, $p = .183$.

We then tested the hypothesis that depression would be more strongly correlated with disordered eating behaviors when FGRS subscale scores were high by running a moderation analysis for each subscale of the FGRS. In each analysis, total depression score from the BDI-II was entered as the independent variable, disordered eating behaviors score from the EAT-26 was entered as the dependent variable, and the respective FGRS subscale was entered as the moderator.

In the model using the fear of unemotional relationships subscale, the overall model was significant and accounted for 22.1% of the variance, $F(3, 242) = 22.866$; $p < .001$. BDI total score, but not the fear of unemotional relationships subscale score, was significantly associated with EAT total score; the interaction was not significant, B = –.006, $t = –.878$, $p = .38$. In the model using the fear of physical unattractiveness subscale, the overall model was significant and accounted for 39.2% of the variance, $F(3, 246) =$

52.917; $p < .001$. The fear of physical unattractiveness subscale score, but not BDI total score, was significantly associated with EAT total score; the interaction was not significant, B = .01, $t = 1.543$, $p = .124$. In the model using the fear of victimization subscale, the overall model was significant and accounted for 24.7% of the variance, $F(3, 251) = 27.509$; $p < .001$. BDI total score was significantly associated with EAT total score but the fear of victimization subscale score was not; the interaction was significant, B = –.026, $t = –2.274$, $p = .024$ (Figure 4). Simple slopes analyses of the interaction found that the relationship between depressive symptoms and disordered eating behaviors was significant when fear of victimization scores were low, coeff = .659, $t = 7.81$, $p < .001$, 95% CI [.492, .826], as well as when fear of victimization scores were high, coeff = .394, $t = 4.777$, $p < .001$, 95% CI [.231, .556]. The association is strongest at low levels of fear of victimization. In the model using the fear of behaving assertively subscale, the overall model was significant and accounted for 24.5% of the variance, $F(3, 250) = 27.109$; $p < .001$. BDI total score and fear of behaving assertively subscale score were significantly associated with EAT total score; and the interaction in this model was significant, B = –.027, $t = –2.861$, $p = .005$ (Figure 5). Simple slopes analyses of the interaction found that the relationship between depressive symptoms and disordered eating behaviors was significant when fear of behaving assertively scores were low, coeff = .657, $t = 7.873$, $p < .001$, 95% CI [.493, .822], and when fear of behaving assertively scores were high, coeff = .337, $t = 4.035$, $p < .001$, 95% CI [.172, .501]. Once again, the association was strongest at low levels of fear of behaving assertively. Lastly, in the model using the fear of not being nurturant subscale, the overall model was significant and accounted for 23.7% of the variance, $F(3, 246) = 25.488$; $p < .001$. BDI total score,

but not fear of not being nurturant score, was significantly associated with EAT total score; the interaction in this model was not significant, B = –.006, t = –.642, p = .522.

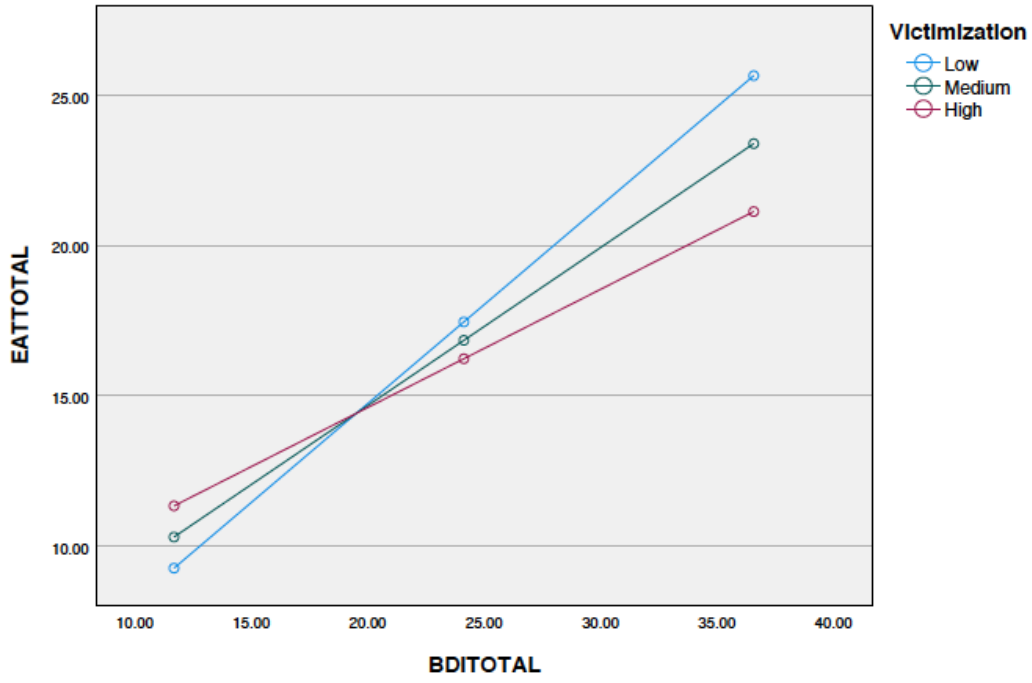

Figure 4. Fear of Victimization moderates BDI total score and EAT total score.

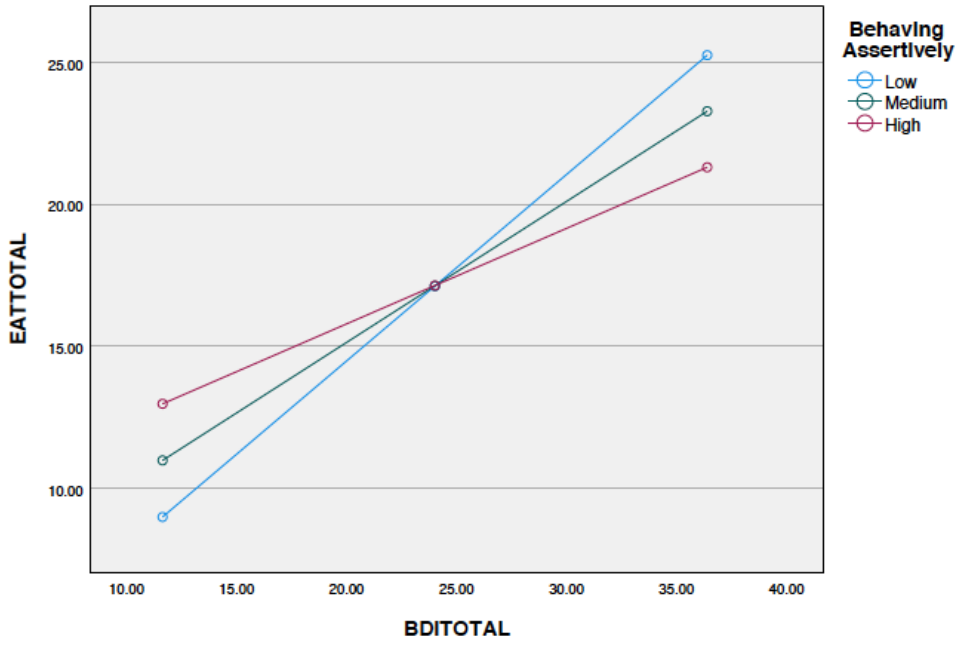

Figure 5. Fear of Behaving Assertively moderates BDI total score and EAT total score.

Discussion

Given that research has consistently demonstrated that disordered eating behaviors and depression occur more frequently in women than in men (Kort-Butler, 2009; Yu et al., 2018), it has been theorized that gender socialization and social interaction may differentially impact the development of these disorders on women and men. Through these processes individuals come to understand the roles and value of women and men in relation to the social world, and an individual's relation to others is ultimately tied to the individual's perception of the self (Rosenfield et al., 2005). Traditionally, men are socialized to deemphasize a connection to others and foster independence; in contrast, women are socialized to form strong connections with others and to rely on and empathize with others, which may in turn lead to lower self-salience (Kort-Butler, 2009). This low emphasis on the self may cause women to internalize negative emotions, thereby increasing the risk of developing disordered eating behaviors and depression (Holm-Denoma et al., 2014). The goal of the current study was to examine the moderating effect of feminine gender role stress, which is the cognitive appraisal of threats to stereotypical feminine gender role coping behavior, on the relationship between disordered eating behaviors and depression. Considering the literature has demonstrated the relationship between feminine gender role stress and disordered eating (Martz et al., 1995), the relationship between feminine gender role stress and depression (Gillespie & Eisler, 1992), and the relationship between disordered eating and depression (Bulik, 2002), we expected to find that feminine gender role stress was significantly positively associated with disordered eating behaviors and depression (see Table 1).

We also predicted that feminine gender role stress would significantly moderate the relationship between disordered eating and depression, such that disordered eating behaviors would be more strongly associated with depression at high levels of FGRS. Results did not support this hypothesis. At all levels of feminine gender role stress, more disordered eating behavior was associated with more depressive symptoms (Figure 1). Of note, however, are the results from the simple slopes analyses; the relationship between depression and disordered eating was strongest when feminine gender role stress was low. Based on previous studies which have demonstrated that depression and disordered eating are often comorbid in development (Bulik, 2002; Gitimu et al., 2016), we would expect to see a strong relationship between these variables in the absence of feminine gender role stress. Results of this study are consistent with this research, but also demonstrate how feminine gender role stress impacts this relationship. With low levels of feminine gender role stress, the relationship between disordered eating and depression is robust. Perhaps women who endorse high levels of FGRS are already encountering significant stressors that are elevating depression levels; so when disordered eating behaviors increase, depression scores can only increase so much. For women with low levels of FGRS, disordered eating behaviors may be one of the most significant stressors encountered, and so depression scores increase greatly.

We also predicted that disordered eating behaviors would be more strongly correlated with depression when FGRS subscale scores (fear of unemotional relationships, fear of physical unattractiveness, fear of victimization, fear of behaving assertively, and fear of not being nurturant) were high, and the fear of physical unattractiveness subscale would account for the most variance in the subscale moderation

analyses; this hypothesis was also not supported. All subscale scores, except for the fear of victimization subscale score, were significantly associated with BDI total score; however, the only significant interactions involved the fear of behaving assertively and fear of not being nurturant subscales. Disordered eating behaviors and depression were more strongly associated at low levels of these subscales.

At all levels of fear of behaving assertively, more disordered eating behavior was associated with more depressive symptoms (Figure 2). And at all levels of fear of not being nurturant, more disordered eating behavior was associated with more depressive symptoms (Figure 3). Again, for women who endorse high levels on these subscales, these stressors may be significant enough to elevate depression levels above those with low endorsement; when disordered eating behaviors increase, depression scores can only increase so much. The significance of these subscales, and not the others, may demonstrate how intimate relationships and social connectedness impact the development of disordered eating and depression for women. As women are socialized to form strong connections and rely on others, situations which threaten these relationships (such as having to confront a friend who is angry with you, or having a close friend stop speaking with you) may be particularly salient for women who endorse high levels of feminine gender role stress. However, as the fear of unemotional relationships subscale also emphasizes women's intimate relationships with others and was not a significant moderator of the relationship between disordered eating and depression, this concept ought to be explored through future research.

Notably, the fear of physical unattractiveness subscale did not moderate the relationship between disordered eating behaviors and depression. Considering that

previous research has demonstrated the relationship between body dissatisfaction and both depression and disordered eating (Neumark-Sztainer et al., 2006; Rodgers et al., 2014), we expected this subscale to significantly moderate the relationship between disordered eating and depression. While the subscale itself was significantly associated with both the BDI and EAT-26, the interaction was not significant. Given that the subscale includes items that are less related to body dissatisfaction and drive for thinness (i.e. turning middle aged and being single), this may explain why our findings are different than previous studies which have evaluated the influence of body dissatisfaction and drive for thinness on the development of disordered eating and depression.

In our exploratory hypotheses, we predicted that feminine gender role stress would moderate the relationship between depression and disordered eating behaviors, such that depression would be more strongly associated with disordered eating behaviors when both total and subscale FGRS scores were high. While results showed that depression and total feminine gender role stress were significantly associated with disordered eating behaviors, the interaction was not significant, indicating that overall FGRS did not affect the relationship between disordered eating and depression. Regarding the FGRS subscales, only the fear of physical unattractiveness subscale and fear of behaving assertively subscale were significantly associated with EAT total score. Moreover, the only significant interactions occurred when the fear of victimization and fear of behaving assertively subscales moderated the relationship between depression and disordered eating. For low levels of depressive symptoms, EAT total scores were highest for those who endorsed high levels of fear of victimization and fear of behaving assertively (Figures 4 and 5). However, for high levels of depressive symptoms, EAT

total scores were highest for those who endorsed low levels of fear of victimization and fear of behaving assertively. Regarding the fear of victimization subscale, our results may demonstrate the fact that this subscale was not correlated with either the EAT-26 or BDI; perhaps the fear of victimization subscale more accurately reflects anxiety provoking situations (i.e. feeling that you are being followed by someone) as opposed to situations that may augment depression or disordered eating.

What our exploratory hypotheses demonstrate is that changing the directions of our variables impacts how these interactions manifest. If we use disordered eating behaviors as the predictor variable and depression as the outcome variable, feminine gender role stress affects the relationship in a way that does not occur when we switch these variables. This may shed more light on the exact impact of feminine gender role stress on the development of disordered eating and depression. However, as no previous study has examined the moderating effect of feminine gender role stress on these variables, nor studied the contribution of the individual FGRS subscales to these variables, our obtained results are difficult to interpret.

Study Limitations

It is also important to address limitations of the study. As the present study was drawn from a non-clinical population of college women, it is not permissible to generalize the results of this study to individuals with clinical diagnoses of eating disorders and MDD. Future studies ought to examine these relationships in women with clinical diagnoses. Additionally, as this study was conducted in a population of college women, this study cannot address whether the relationship between FGRS, disordered eating, and depression will be the same in women of other groups. Future research

should look into these relationships in women with different education levels. And, as the study uses self-report measures, it is prone to participant effects.

It is also important to note that the results of this study may only be interpreted for cisgender women. Conversely, transgender persons have unique experiences which predispose them to certain mental disorders at higher rates than in the general population; for example, while about 10.1% of women in the general population experience depression (Gonzalez et al., 2010), one study found that 62% of male-to-female transgender individuals experienced depression (Clements-Noelle et al., 2001). And while AN and BN rates in the general population of women are 2.0% and 4.6% respectively, a review of the literature suggests that 15.8% of transgender individuals are diagnosed with an eating disorder (Connolly et al., 2016). Transgender individuals fundamentally challenge societal beliefs about traditional gender roles through their experiences and perceptions (Nagoshi et al., 2012). In a study of transgender individuals' views on gender roles and gender identity, all participants reported viewing gender roles as social constructs, and viewed gender identity as more fluid than traditional essentialist, binary, and heteronormative views of gender (Nagoshi et al., 2012). As the FGRS scale has only been validated in samples of cisgender men and women, including transgender individuals in this study would not accurately represent the experiences of a transgender individual in regard to disordered eating, depression, and feminine gender role stress. Future studies may seek to understand the impact of gender roles on transgender individuals using measures validated for transgender individuals, and seek to explore whether this may impact the development of disordered eating and depression in this population.

Concluding Remarks

Although women are socialized to be interdependent and to rely on and empathize with others, reduced self-salience through these socialization processes may augment the development of disordered eating behaviors and depression. Results of this study demonstrate that feminine gender role stress is indeed an important component in the relationship between disordered eating behaviors and depression in college women, as women who endorsed high levels of feminine gender role stress had elevated levels of disordered eating and depression scores compared to women who endorsed low levels of feminine gender role stress. And while society would fundamentally have to change in order to decrease the salience or existence of several traditional feminine gender role stressors, in the meantime it may be effective for women to use these socialization processes to their advantage for dealing with stressors. In particular, using active coping strategies such as seeking social support may be protective against disordered eating behaviors and depression. However, as this study did not examine coping strategies, we cannot be certain; future research that examines the moderating effect of feminine gender role stress on the relationship between disordered eating and depression ought to examine the coping styles of participants as well to determine whether different strategies also affect this relationship.

Additionally, future research may seek to examine if gender role stress affects the relationship between disordered eating and depression in a sample of men. It might also be important to observe whether our obtained results are applicable to women who are not in college, or for women of a different age range. What can be ascertained from this study is that adherence to traditional gender roles may be an important factor in the

comorbid development of disordered eating behaviors and depression, and it may be important for interventions to target the prominence of these traditional gender roles.

References

Almeida, D. M., & Kessler, R. C. (1998). Everyday stressors and gender differences in daily distress. *Journal of Personality and Social Psychology*, *75*(3), 670–680. https://doi.org/10.1037/0022-3514.75.3.670

American College Health Association (2020). The American College Health Association National College Health Assessment III (ACHA-NCHA III): Reference Group Data Report. Silver Spring, MD: American College Health Association.

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (Fifth Edition). American Psychiatric Association. https://doi.org/10.1176/appi.books.9780890425596

Aultman, B. (2014). Cisgender. *TSQ: Transgender Studies Quarterly*, *1*(1–2), 61–62. https://doi.org/10.1215/23289252-2399614

Beck, A.T., Steer, R.A., & Brown, G.K. (1996). Manual for the Beck Depression Inventory-II. San Antonio, TX: Psychological Corporation

Becker-Blease, K. A., & Freyd, J. J. (2006). Research participants telling the truth about their lives: The ethics of asking and not asking about abuse. *American Psychologist*, *61*(3), 218–226. https://doi.org/10.1037/0003-066X.61.3.218

Bekker, M. H. J., & Boselie, K. A. H. M. (2002). Gender and stress: Is gender role stress? A re-examination of the relationship between feminine gender role stress and eating disorders. *Stress and Health*, *18*(3), 141–149. https://doi.org/10.1002/smi.933

Bulik, C. M. (2002). Anxiety, depression, and eating disorders. In *Eating Disorders and Obesity* (pp. 193–198). Guilford Press.

Button, E. J., Sonuga-Barke, E. J. S., Davies, J., & Thompson, M. (1996). A prospective study of self-esteem in the prediction of eating problems in adolescent schoolgirls: Questionnaire findings. *British Journal of Clinical Psychology*, *35*(2), 193–203. https://doi.org/10.1111/j.2044-8260.1996.tb01176.x

Claxton, S. E., & van Dulmen, M. H. M. (2013). Casual sexual relationships and experiences in emerging adulthood. *Emerging Adulthood*, *1*(2), 138–150. https://doi.org/10.1177/2167696813487181

Clements-Nolle, K., Marx, R., Guzman, R., & Katz, M. (2001). HIV prevalence, risk behaviors, health care use, and mental health status of transgender persons: Implications for public health intervention. *American Journal of Public Health*, *91*(6), 915–921. https://doi.org/10.2105/ajph.91.6.915

Compas, B. E., Wagner, B. M., Slavin, L. A., & Vannatta, K. (1986). A prospective study of life events, social support, and psychological symptomatology during the

transition from high school to college. *American Journal of Community Psychology*, *14*(3), 241–257. https://doi.org/10.1007/BF00911173

Currin, L., Schmidt, U., Treasure, J., & Jick, H. (2005). Time trends in eating disorder incidence. *British Journal of Psychiatry*, *186*(2), 132–135. https://doi.org/10.1192/bjp.186.2.132

Dobmeyer, A. C., & Stein, D. M. (2003). A prospective analysis of eating disorder risk factors: Drive for thinness, depressed mood, maladaptive cognitions, and ineffectiveness. *Eating Behaviors*, *4*(2), 135–147. https://doi.org/10.1016/S1471-0153(03)00013-8

Dotti, A., & Lazzari, R. (1998). Validation and reliability of the Italian EAT-26. *Eat Weight Disord*, *3*, 188–194. https://doi.org/10.1007/BF03340009

Dozois, D. J. A. (2010). Beck Depression Inventory-II. In I. B. Weiner & W. E. Craighead (Eds.), *The Corsini Encyclopedia of Psychology*. John Wiley & Sons, Inc. https://doi.org/10.1002/9780470479216.corpsy0113

Eisenberg, D., Nicklett, E. J., Roeder, K., & Kirz, N. E. (2011). Eating disorder symptoms among college students: Prevalence, persistence, correlates, and treatment-seeking. *Journal of American College Health*, *59*(8), 700–707. https://doi.org/10.1080/07448481.2010.546461

Eisler, R. M., & Skidmore, J. R. (1987). Masculine gender role stress: Scale development and component factors in the appraisal of stressful situations. *Behavior Modification*, *11*(2), 123–136. https://doi.org/10.1177/01454455870112001

Fairburn, C., & Beglin, S. (2008). Eating disorder examination questionnaire. In C. Fairburn (Ed.), *Cognitive behavior therapy and eating disorders* (Vol. 12, pp. 309–313). Guilford Press.

Favaro, A., Ferrara, S., & Santonastaso, P. (2003). The spectrum of eating disorders in young women: A prevalence study in a general population sample. *Psychosomatic Medicine*, *65*(4), 701–708. https://doi.org/10.1097/01.PSY.0000073871.67679.D8

Fernandez-Aranda, F., Poyastro Pinheiro, A., Tozzi, F., La Via, M., Thornton, L. M., Plotnicov, K. H., Kaye, W. H., Fichter, M. M., Halmi, K. A., Kaplan, A. S., Woodside, D. B., Klump, K. L., Strober, M., Crow, S., Mitchell, J., Rotondo, A., Keel, P., Berrettini, W. H., Rickels, K. E., … Bulik, C. M. (2007). Symptom profile of major depressive disorder in women with eating disorders. *Australian & New Zealand Journal of Psychiatry*, *41*(1), 24–31. https://doi.org/10.1080/00048670601057718

Fragkos, K., & Frangos, C. (2013). Assessing eating disorder risk: The pivotal role of achievement anxiety, depression and female gender in non-clinical samples. *Nutrients*, *5*(3), 811–828. https://doi.org/10.3390/nu5030811

Furr, S. R., Westefeld, J. S., McConnell, G. N., & Jenkins, J. M. (2001). Suicide and depression among college students: A decade later. *Professional Psychology: Research and Practice*, *32*(1), 97–100. https://doi.org/10.1037/0735-7028.32.1.97

Garcia, J. R., Reiber, C., Massey, S. G., & Merriwether, A. M. (2012). Sexual hookup culture: A review. *Review of General Psychology*, *16*(2), 161–176. https://doi.org/10.1037/a0027911

Garner, D. M., Garfinkel, P. E., Rockert, W., & Olmsted, M. P. (1987). A prospective study of eating disturbances in the ballet. *Psychotherapy and Psychosomatics, 48*(1–4), 170–175. https://doi.org/10.1159/000288049

Garner, D. M., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. *Psychological Medicine, 12*(4), 871–878. https://doi.org/10.1017/S0033291700049163

Gadalla, T., & Piran, N. (2008). Psychiatric comorbidity in women with disordered eating behavior: A national study. *Women & Health*, *48*(4), 467–484. https://doi.org/10.1080/03630240802575104

Galambos, N. L., Leadbeater, B. J., & Barker, E. T. (2004). Gender differences in and risk factors for depression in adolescence: A 4-year longitudinal study. *International Journal of Behavioral Development*, *28*(1), 16–25. https://doi.org/10.1080/01650250344000235

Garfinkel, P. E., Lin, E., Goering, P., Spegg, C., Goldbloom, D. S., Kennedy, S., Kaplan, A. S., & Woodside, D. B. (1995). Bulimia nervosa in a Canadian community sample: Prevalence and comparison of subgroups. *The American Journal of Psychiatry, 152*(7), 1052–1058. https://doi.org/10.1176/ajp.152.7.1052

Gillespie, B. L., & Eisler, R. M. (1992). Development of the Feminine Gender Role Stress scale: A cognitive-behavioral measure of stress, appraisal, and coping for women. *Behavior Modification*, *16*(3), 426–438. https://doi.org/10.1177/01454455920163008

Gitimu, P. N., Jameson, M. M., Turel, T., Pohle-Krauza, R., Mincher, J., Rowlands, Z., & Elias, J. (2016). Appearance issues, depression, and disordered eating among

college females. *Cogent Psychology*, *3*(1), 1196512. https://doi.org/10.1080/23311908.2016.1196512

Gleaves, D. H., Pearson, C. A., Ambwani, S., & Morey, L. C. (2014). Measuring eating disorder attitudes and behaviors: A reliability generalization study. *Journal of Eating Disorders*, *2*, 6. https://doi.org/10.1186/2050-2974-2-6

Gonzalez, O., Berry, J., McKnight-Eily, L., Strine, T., Edwards, V., Lu, H., Croft, J. (2010). Current depression among adults - United States, 2006 and 2008. *Morbidity and Mortality Weekly Report (MMWR) 2010,* 59, 1225–1235.

Hart, T. (2007). The violent victimization of college students: Findings from the national crime victimization survey. In B. Fisher & J. Sloan (Eds.), *Campus Crime: Legal, Social, and Policy Perspectives* (2nd ed., pp. 129–146). Charles C. Tomas.

Hayes, A. F. (2013). Methodology in the social sciences. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach.* Guilford Press.

Henderson, A. S., & Jorm, A. F. (1990). Do mental health surveys disturb? *Psychological Medicine*, *20*(3), 721–724. https://doi.org/10.1017/s0033291700017244

Herzog, W., Deter, H.-C., Vandereycken, W., Hartley, P. (1992). The course of eating disorders. Long-term follow-up studies of anorexia and bulimia nervosa. *European Eating Disorders Review*, *1*(1), 60–61. https://doi.org/10.1002/erv.2400010110

Hidaka, B. H. (2012). Depression as a disease of modernity: Explanations for increasing prevalence. *Journal of Affective Disorders*, *140*(3), 205–214. https://doi.org/10.1016/j.jad.2011.12.036

Hoek, H. W. (2006). Incidence, prevalence and mortality of anorexia nervosa and other eating disorders. *Current Opinion in Psychiatry*, *19*(4), 389–394. https://doi.org/10.1097/01.yco.0000228759.95237.78

Holm-Denoma, J. M., Hankin, B. L., & Young, J. F. (2014). Developmental trends of eating disorder symptoms and comorbid internalizing symptoms in children and adolescents. *Eating Behaviors*, *15*(2), 275–279. https://doi.org/10.1016/j.eatbeh.2014.03.015

Holman, A., & Sillars, A. (2012). Talk about "hooking up": The influence of college student social networks on nonrelationship sex. *Health Communication*, *27*(2), 205–216. https://doi.org/10.1080/10410236.2011.575540

Hudson, J. I., Hiripi, E., Pope, H. G., & Kessler, R. C. (2007). The prevalence and correlates of eating disorders in the national comorbidity survey replication. *Biological Psychiatry*, *61*(3), 348–358. https://doi.org/10.1016/j.biopsych.2006.03.040

Kort-Butler, L. A. (2009). Coping Styles and Sex Differences in Depressive Symptoms and Delinquent Behavior. *Journal of Youth and Adolescence*, *38*(1), 122–136. https://doi.org/10.1007/s10964-008-9291-x

Krahn, D. D., Kurth, C. L., Gomberg, E., & Drewnowski, A. (2005). Pathological dieting and alcohol use in college women—A continuum of behaviors. *Eating Behaviors*, *6*(1), 43–52. https://doi.org/10.1016/j.eatbeh.2004.08.004

Kuehner, C. (2003). Gender differences in unipolar depression: An update of epidemiological findings and possible explanations. *Acta Psychiatrica*

Scandinavica, *108*(3), 163–174. https://doi.org/10.1034/j.1600-0447.2003.00204.x

Lee, S., Kwok, K., Liau, C., & Leung, T. (2002). Screening Chinese patients with eating disorders using the eating attitudes test in Hong Kong. *International Journal of Eating Disorders*, *32*(1), 91–97. https://doi.org/10.1002/eat.10064

Lewinsohn, P. M., Seeley, J. R., Moerk, K. C., & Striegel-Moore, R. H. (2002). Gender differences in eating disorder symptoms in young adults. *International Journal of Eating Disorders*, *32*(4), 426–440. https://doi.org/10.1002/eat.10103

Lewinsohn, P. M., Striegel-Moore, R. H., & Seeley, J. R. (2000). Epidemiology and natural course of eating disorders in young women from adolescence to young adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry*, *39*(10), 1284–1292. https://doi.org/10.1097/00004583-200010000-00016

Lewis, M. A., Atkins, D. C., Blayney, J. A., Dent, D. V., & Kaysen, D. L. (2013). What is hooking up? Examining definitions of hooking up in relation to behavior and normative perceptions. *Journal of Sex Research*, *50*(8), 757–766. https://doi.org/10.1080/00224499.2012.706333

Marcus, S. M., Young, E. A., Kerber, K. B., Kornstein, S., Farabaugh, A. H., Mitchell, J., Wisniewski, S. R., Balasubramani, G. K., Trivedi, M. H., & Rush, A. J. (2005). Gender differences in depression: Findings from the STAR*D study. *Journal of Affective Disorders*, *87*(2–3), 141–150. https://doi.org/10.1016/j.jad.2004.09.008

Martz, D. M., Handley, K. B., & Eisler, R. M. (1995). The relationship between feminine gender role stress, body image, and eating disorders. *Psychology of Women Quarterly*, *19*(4), 493–508. https://doi.org/10.1111/j.1471-6402.1995.tb00088.x

Nagoshi, J. L., Brzuzy, S., & Terrell, H. K. (2012). Deconstructing the complex perceptions of gender roles, gender identity, and sexual orientation among transgender individuals. *Feminism & Psychology*, *22*(4), 405–422. https://doi.org/10.1177/0959353512461929

Neumark-Sztainer, D., Paxton, S. J., Hannan, P. J., Haines, J., & Story, M. (2006). Does Body Satisfaction Matter? Five-year Longitudinal Associations between Body Satisfaction and Health Behaviors in Adolescent Females and Males. *Journal of Adolescent Health*, *39*(2), 244–251. https://doi.org/10.1016/j.jadohealth.2005.12.001

Nolen-Hoeksema, S. (1987). Sex differences in unipolar depression: Evidence and theory. *Psychological Bulletin*, *101*(2), 259–282. https://doi.org/10.1037/0033-2909.101.2.259

Nolen-Hoeksema, S. (1990). *Sex differences in depression*. Stanford University Press.

Oldehinkel, A. J., Wittchen, H.-U., & Schuster, P. (1999). Prevalence, 20-month incidence and outcome of unipolar depressive disorders in a community sample of adolescents. *Psychological Medicine*, *29*(3), 655–668. https://doi.org/10.1017/S0033291799008454

Patton, G. C., Johnson-Sabine, E., Wood, K., Mann, A. H., & Wakeling, A. (1990). Abnormal eating attitudes in London schoolgirls--a prospective epidemiological study: Outcome at twelve month follow-up. *Psychological Medicine*, *20*(2), 383–394. https://doi.org/10.1017/s0033291700017700

Peden, A. R., Hall, L. A., Rayens, M. K., & Beebe, L. L. (2000). Reducing negative thinking and depressive symptoms in college women. *Journal of Nursing Scholarship*, *32*(2), 145–151. https://doi.org/10.1111/j.1547-5069.2000.00145.x

Quick, V. M., & Byrd-Bredbenner, C. (2013). Eating Disorders Examination Questionnaire (EDE-Q): Norms for US college students. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*, *18*(1), 29–35. https://doi.org/10.1007/s40519-013-0015-1

Rodgers, R. F., Paxton, S. J., & McLean, S. A. (2014). A Biopsychosocial Model of Body Image Concerns and Disordered Eating in Early Adolescent Girls. *Journal of Youth and Adolescence*, *43*(5), 814–823. https://doi.org/10.1007/s10964-013-0013-7

Rosenfield, S., Lennon, M. C., & White, H. R. (2005). The Self and Mental Health: Self-Salience and the Emergence of Internalizing and Externalizing Problems. *Journal of Health and Social Behavior*, *46*(4), 323–340. https://doi.org/10.1177/002214650504600402

Rush, A. J., Gullion, C. M., Basco, M. R., Jarrett, R. B., & Trivedi, M. H. (1996). The Inventory of Depressive Symptomatology (IDS): Psychometric properties. *Psychological Medicine*, *26*(3), 477–486. https://doi.org/10.1017/S0033291700035558

Santos, M., Steven Richards, C., & Kathryn Bleckley, M. (2007). Comorbidity between depression and disordered eating in adolescents. *Eating Behaviors*, *8*(4), 440–449. https://doi.org/10.1016/j.eatbeh.2007.03.005

Stice, E., & Bohon, C. (2012). Eating Disorders. In T. Beauchaine & S. Linshaw (Eds.), *Child and Adolescent Psychopathology* (Second Edition). Wiley.

Stice, E., Marti, C. N., & Rohde, P. (2013). Prevalence, incidence, impairment, and course of the proposed DSM-5 eating disorder diagnoses in an 8-year prospective community study of young women. *Journal of Abnormal Psychology*, *122*(2), 445–457. https://doi.org/10.1037/a0030679

Striegel-Moore, R. H., Rosselli, F., Perrin, N., DeBar, L., Wilson, G. T., May, A., & Kraemer, H. C. (2009). Gender difference in the prevalence of eating disorder symptoms. *International Journal of Eating Disorders*, *42*(5), 471–474. https://doi.org/10.1002/eat.20625

Twenge, J. M., Gentile, B., DeWall, C. N., Ma, D., Lacefield, K., & Schurtz, D. R. (2010). Birth cohort increases in psychopathology among young Americans, 1938–2007: A cross-temporal meta-analysis of the MMPI. *Clinical Psychology Review*, *30*(2), 145–154. https://doi.org/10.1016/j.cpr.2009.10.005

Tylka, T. L., & Subich, L. M. (2002). Exploring young women's perceptions of the effectiveness and safety of maladaptive weight control techniques. *Journal of Counseling & Development*, *80*(1), 101–110. https://doi.org/10.1002/j.1556-6678.2002.tb00172.x

Ward, R. M., & Hay, M. C. (2015). Depression, coping, hassles, and body dissatisfaction: Factors associated with disordered eating. *Eating Behaviors*, *17*, 14–18. https://doi.org/10.1016/j.eatbeh.2014.12.002

Wethington, E., McLeod, J., & Kessler, R. C. (1987). The importance of life events for explaining sex differences in psychological distress. In R. C. Barnett, L. Biener, & G. K. Baruch (Eds.), *Gender and stress* (pp. 144–154). Free Press.

Woodside, D. B., & Garfinkel, P. E. (1992). Age of onset in eating disorders. *The International Journal of Eating Disorders (Print)*, *12*(1), 31–36.

Woodside, D. B., Garfinkel, P. E., Lin, E., Goering, P., Kaplan, A. S., Goldbloom, D. S., & Kennedy, S. H. (2001). Comparisons of men with full or partial eating disorders, men without eating disorders, and women with eating disorders in the community. *American Journal of Psychiatry*, *158*(4), 570–574. https://doi.org/10.1176/appi.ajp.158.4.570

Yin, P., & Fan, X. (2000). Assessing the reliability of Beck Depression Inventory scores: Reliability generalization across studies. *Educational and Psychological Measurement*, *60*(2), 201–223. https://doi.org/10.1177/00131640021970466

Yu, Z., Indelicato, N. A., Fuglestad, P., Tan, M., Bane, L., & Stice, C. (2018). Sex differences in disordered eating and food addiction among college students. *Appetite*, *129*, 12–18. https://doi.org/10.1016/j.appet.2018.06.028

Appendix A

Eating Attitudes Test (EAT-26)

Instructions: This is a screening measure to help you determine whether you might have an eating disorder that needs professional attention. This screening measure is not designed to make a diagnosis of an eating disorder or take the place of a professional consultation. Please fill out the form as accurately, honestly and completely as possible. There are no right or wrong answers. All of your responses are confidential.

Part A: Complete the following questions:

1) Birth Date Month: .....Day: .....Year: ..... 2) Gender: ❑ Male ❑ Female

3) Height Feet: .....Inches: .....

4) Current Weight (lbs.):.....5) Highest Weight (excluding pregnancy):.....

6) Lowest Adult Weight: .....7) Ideal Weight:.....

Part B: Please check a response for each of the following statements:	Always	Usually	Often	Sometimes	Rarely	Never
1. Am terrified about being overweight.	❑	❑	❑	❑	❑	❑
2. Avoid eating when I am hungry.	❑	❑	❑	❑	❑	❑
3. Find myself preoccupied with food.	❑	❑	❑	❑	❑	❑
4. Have gone on eating binges where I feel thatI may not be able to stop.	❑	❑	❑	❑	❑	❑
5. Cut my food into small pieces.	❑	❑	❑	❑	❑	❑
6. Aware of the calorie content of foods that I eat.	❑	❑	❑	❑	❑	❑
7. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)	❑	❑	❑	❑	❑	❑
8. Feel that others would prefer if I ate more.	❑	❑	❑	❑	❑	❑
9. Vomit after I have eaten.	❑	❑	❑	❑	❑	❑
10. Feel extremely guilty after eating.	❑	❑	❑	❑	❑	❑
11. Am preoccupied with a desire to be thinner.	❑	❑	❑	❑	❑	❑
12. Think about burning up calories when I exercise.	❑	❑	❑	❑	❑	❑
13. Other people think that I am too thin.	❑	❑	❑	❑	❑	❑
14. Am preoccupied with the thought of having fat on my body.	❑	❑	❑	❑	❑	❑
15. Take longer than others to eat my meals.	❑	❑	❑	❑	❑	❑
16. Avoid foods with sugar in them.	❑	❑	❑	❑	❑	❑
17. Eat diet foods.	❑	❑	❑	❑	❑	❑
18. Feel that food controls my life.	❑	❑	❑	❑	❑	❑
19. Display self-control around food.	❑	❑	❑	❑	❑	❑
20. Feel that others pressure me to eat.	❑	❑	❑	❑	❑	❑
21. Give too much time and thought to food.	❑	❑	❑	❑	❑	❑
22. Feel uncomfortable after eating sweets.	❑	❑	❑	❑	❑	❑
23. Engage in dieting behavior.	❑	❑	❑	❑	❑	❑

24. Like my stomach to be empty.	❑	❑	❑	❑	❑	❑
25. Have the impulse to vomit after meals.	❑	❑	❑	❑	❑	❑
26. Enjoy trying new rich foods.	❑	❑	❑	❑	❑	❑
Part C: Behavioral Questions. In the past 6 months have you:	Never	Once a month or less	2-3 times a month	Once a week	2-6 times a week	Once a day or more
A. Gone on eating binges where you feel that you maynot be able to stop?	❑	❑	❑	❑	❑	❑
B. Ever made yourself sick (vomited) to control your weight or shape?	❑	❑	❑	❑	❑	❑
C. Ever used laxatives, diet pills or diuretics (water pills)to control your weight or shape?	❑	❑	❑	❑	❑	❑
D. Exercised more than 60 minutes a day to lose orto control your weight?	❑	❑	❑	❑	❑	❑
E. Lost 20 pounds or more in the past 6 months	❑ Yes			❑ No		
• Defined as eating much more than most people would under the same circumstances and feeling that eating is out of control.						

Appendix B

Feminine Gender Role Stress Scale

Please read the descriptions of the following situations. Then rate how stressful the situation would be for you. Give each item a rating on the scale from 0 to 5, ranging from not stressful to extremely stressful.

NOTE: The term "mate" refers to either a spouse or partner in an intimate relationship.

Not At All Stressful Extremely Stressful
0 1 2 3 4 5

1. Being perceived by others as overweight _____
2. Not being able to meet family members' emotional needs _____
3. Feeling less attractive than you once were _____
4. Trying to be a good parent and excel at work _____
5. Having others believe you are emotionally cold _____
6. Being in a sexual relationship without any commitment _____
7. Being pressured for sex when seeking affection from your mate _____
8. Your child is disliked by his/her peers _____
9. Wearing a bathing suit in public _____
10. Having a weak or incompetent spouse _____
11. Making sure you are not taken advantage of when buying a house/car _____
12. Having an intimate relationship without any romance _____
13. Being unable to change your appearance to please someone _____
14. Having to move to a new cityor town alone _____
15. Bargaining with a salesperson when buying a car _____
16. Negotiating the price of car repairs _____
17. Being heavier than your mate _____
18. Being unusually tall _____
19. Supervising older and more experienced employees at work _____
20. Feeling that you are being followed by someone _____
21. Being considered promiscuous _____
22. Hearing a strange noise while you are home alone _____

23. Having to deal with unwanted sexual advances _____
24. Losing custody of your children after divorce _____
25. Your mate is unemployed and cannot find a job _____
26. Feeling pressured to engage in sexual activity _____
27. Talking with someone who is angry with you _____
28. Turning middle-aged and being single _____
29. Having your car break down on the road _____
30. Having multiple sex partners _____
31. Having to "sell" yourself at a job interview _____
32. Hearing that a dangerous criminial has escaped nearby _____
33. Receiving an obscene phone call _____
34. Having someone else raise your children _____
35. Trying to get your spouse to take responsibility for child care _____
36. Returning to work soon after your child is born _____
37. A very close friend stops speaking to you _____
38. Your mate will not discuss your relationship problems _____
39. Finding that you have gained 10 pounds _____

Appendix C

Beck Depression Inventory (BDI-II)

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully. And then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness
    0. I do not feel sad
    1. I feel sad much of the time
    2. I feel sad all the time
    3. I am so sad or unhappy that I can't stand it

2. Pessimism
    0. I am not discouraged about my future
    1. I feel more discouraged about my future than I used to
    2. I do not expect things to work out for me
    3. I feel my future is hopeless and will only get worse

3. Past Failure
    0. I do not feel like a failure
    1. I have failed more than I should have
    2. As I look back, I see a lot of failures
    3. I feel I am a total failure as a person

4. Loss of Pleasure
    0. I get as much pleasure as I ever did from the things I enjoy
    1. I don't enjoy things as much as I used to
    2. I get very little pleasure from the things I used to enjoy
    3. I can't get any pleasure from the things I used to enjoy

5. Guilty Feelings
    0. I don't feel particularly guilty
    1. I feel guilty over many things I have done or should have done
    2. I feel quite guilty most of the time
    3. I feel guilty all of the time

6. Punishment Feelings
    0. I don't feel I am being punished
    1. I feel I may be punished
    2. I expect to be punished

3. I feel I am being punished

7. Self-Dislike
    0. I feel the same about myself as ever
    1. I have lost confidence in myself
    2. I am disappointed in myself
    3. I dislike myself

8. Self-Criticalness
    0. I don't criticize or blame myself more than usual
    1. I am more critical of myself than I used to be
    2. I criticize myself for all of my faults
    3. I blame myself for everything bad that happens

9. Suicidal Thoughts or Wishes
    0. I don't have any thoughts of killing myself
    1. I have thoughts of killing myself, but I would not carry them out
    2. I would like to kill myself
    3. I would kill myself if I had the chance

10. Crying
    0. I don't cry anymore than I used to
    1. I cry more than I used to
    2. I cry over every little thing
    3. I feel like crying, but I can't

11. Agitation
    0. I am no more restless or wound up than usual
    1. I feel more restless or wound up than usual
    2. I am so restless or agitated, it's hard to stay still
    3. I am so restless or agitated that I have to keep moving or doing something

12. Loss of Interest
    0. I have not lost interest in other people or activities
    1. I am less interested in other people or things than before
    2. I have lost most of my interest in other people or things
    3. It's hard to get interested in anything

13. Indecisiveness
    0. I make decisions about as well as ever
    1. I find it more difficult to make decisions than usual
    2. I have much greater difficulty in making decisions than I used to
    3. I have trouble making any decisions

14. Worthlessness
    0. I do not feel I am worthless

1. I don't consider myself as worthwhile and useful as I used to
2. I feel more worthless as compared to others
3. I feel utterly worthless

15. Loss of Energy
    0. I have as much energy as ever
    1. I have less energy than I used to have
    2. I don't have enough energy to do very much
    3. I don't have enough energy to do anything

16. Changes in Sleeping Pattern
    0. I have not experienced any change in my sleeping
    1a. I sleep somewhat more than usual
    1b. I sleep somewhat less than usual
    2a. I sleep a lot more than usual
    2b. I sleep a lot less than usual
    3a. I sleep most of the day
    3b. I wake up 1-2 hours early and can't get back to sleep

17. Irritability
    0. I am not more irritable than usual
    1. I am more irritable than usual
    2. I am much more irritable than usual
    3. I am irritable all the time

18. Changes in Appetite
    0. I have not experienced any change in my appetite
    1a. My appetite is somewhat less than usual
    1b. My appetite is somewhat greater than usual
    2a. My appetite is much less than before
    2b. My appetite is much greater than usual
    3a. I have no appetite at all
    3b. I crave food all the time

19. Concentration Difficulty
    0. I can concentrate as well as ever
    1. I can't concentrate as well as usual
    2. It's very hard to keep my mind on anything for very long
    3. I find I can't concentrate on anything

20. Tiredness or Fatigue
    0. I am no more tired or fatigued than usual
    1. I get more tired or fatigued more easily than usual
    2. I am too tired or fatigued to do a lot of the things I used to do
    3. I am too tired or fatigued to do most of the things I used to do

21. Loss of Interest in Sex
    0. I have not noticed any recent change in my interest in sex
    1. I am less interested in sex than I used to be
    2. I am much less interested in sex now
    3. I have lost interest in sex completely