Femininity, Feminine Gender Role Stress, Body Dissatisfaction, and their Relationships to Bulimia Nervosa and Binge Eating Disorder

Nancy Romero

Thesis submitted to the Faculty of

Virginia Polytechnic Institute and State University

In partial fulfillment of the requirements for the degree

MASTER OF SCIENCE
IN
PSYCHOLOGY

Angela Scarpa-Friedman, Ph.D., Committee Chair

Thomas H. Ollendick, Ph.D., Committee Member

Lee D. Cooper, Ph.D., Committee Member

November 17, 2008

Blacksburg, Virginia

Keywords: Bulimia, binge eating disorder, body dissatisfaction, femininity, feminine gender role stress

Copyright 2008, Nancy Romero

Femininity, Feminine Gender Role Stress, Body Dissatisfaction, and their Relationships to Bulimia Nervosa and Binge Eating Disorder

Nancy Romero

Abstract

Research suggests that the associations between femininity, body image and eating disorders are intricate. How these constructs are linked to each other still needs to be determined. The purpose of this study was to gain a deeper understanding of these links, examining the mediational relationship among these constructs. Also, the prediction that bulimia and binge eating disorder symptoms have a similar origin was tested and compared. Some researchers have suggested that the pathways leading to these disorders are equivalent and the main difference between the two is the dietary restriction, while others see them as distinct disorders with different etiology. A total of 355 female college students (ages 18 to 26) completed a set of questionnaires that assessed femininity, feminine gender role stress, body dissatisfaction, bulimia, and binge eating disorder. Results showed that body dissatisfaction mediates the relationship between femininity or feminine gender role stress with bulimia symptoms, as well as the relationship between feminine gender role stress and binge eating disorder symptoms. Results indicate that body dissatisfaction related to femininity or to feminine gender role stress may contribute to higher levels of bulimia symptoms. The findings also suggest that body dissatisfaction related to feminine gender role stress may contribute to higher levels of binge eating disorder symptoms. Results did not support the mediational role of body dissatisfaction between femininity and binge eating disorder. However, the mediational role of feminine gender role stress between femininity and body dissatisfaction was partially supported, suggesting that feminine gender role stress might only be one pathway by which femininity may have an impact on body dissatisfaction.

Acknowledgements

It is with all my gratitude that I would like to acknowledge and say thank you….

To my advisor, Dr. Angela Scarpa-Friedman: for all the knowledge and experience I acquired working with you, and for your continuous support for my professional and private goals. I keep you in my heart for your incredible kindness.

To my committee members, Dr. Thomas Ollendick and Dr. Lee Cooper, for your assistance and support all these years, and to Dr. Ellie Sturgis (former member) for motivating me to pursue this project.

To Dr. Amie Grills-Taquechel, who believed I could write this thesis. Amie, I'm totally indebted to you. Without your motivation, support and guidance, I would still be staring at my computer, wondering if it would explode if I pressed any button. Thanks, Amie ….what a Hokie you are!

To all the women who participated in this study, and to Caroline Pappert, Amber Boyles, Diana Torres, and Michelle, I could not have wished for better research assistants.

To Dr. Jack Finney, former Chair of the Psychology Department, for all his support and advice.

To Susan Anderson, for all you have done for me and for being my friend.

To Paula Ritz, for introducing me to the fascinating world of psychology. To Laurie Shea, for all the miles you walked with me. To Patricia Arnold, for being my lifelong best friend.

To my FFB, Sue, Nikki, Stephanie, Heidi, Sherry, Ritu, Tish, and Lori, all of you made me feel at home when I thought I was homeless. To me, you are *Same Kind of Different As Me*… and especially to Jane Taylor and Roshayl Santiago. I am so lucky to have you as my friends.

To my only-dog, Libby, you brought new emotions to my life, and you made me walk even when I was too stressed to go to the gym.

To my parents, Nancy Pinto-Romero and Jose Romero, for all your love and support every day of my life. I wish I could find a better way to properly acknowledge you…. I will just say thank you and I love you.

To my husband and my daughter, Matthias and Giannina Imhof, you give me love, support, and comfort. Because I have you in my life, my life is wonderful. How fortunate am I, to wake up in the morning knowing how much I like my life. How many people can say that? … words can never express how much I love you both.

Table of Contents

Abstract ii
Acknowledgements iii
Table of Contents .... iv, v
Introduction 1
Bulimia Nervosa 2
Binge Eating Disorder 3
Criteria for the Exclusion of Anorexia Nervosa 4
Etiology of Bulimia and Binge Eating Disorder 6
Femininity 9
Feminine gender role stress 12
Body dissatisfaction 13
Aim of the study 17
The Mediator Model 18
Hypotheses 19
Method 19
Participants 19
Measures 20
Procedures 23
Results
Relationships Among Self-Report Measures 23
Mediator Model Tests and Post Hoc Analyses 24
1 Body-dissatisfaction as a mediator between femininity and bulimia 25
2 Body-dissatisfaction as a mediator between feminine gender role stress and bulimia 26
3 Body-dissatisfaction as a mediator between feminine gender role stress and binge eating disorder 26
4 Feminine gender role stress as a mediator between femininity and body dissatisfaction 27

Discussion 28

Limitations 34

Research, Prevention, and Treatment Implications 34

References 38

Tables

Table 1*: Zero-order Correlations* 51

Table 2: *Descriptive Statistics* 52

Figures

Figure 1: *Mediation model for associations between femininity and bulimia as mediated by body dissatisfaction* 53

Figure 2: *Mediation model for associations between feminine gender role stress and bulimia as mediated by body dissatisfaction* 54

Figure 3: *Mediation model for associations between feminine gender role stress and binge eating disorder as mediated by body dissatisfaction* 55

Appendices

A. QEWP-R *Questionnaire of Eating and Weight Patters-Revised* 56

B. BULIT-R Bulimia 62

C. BSRF Behavioral Self-Report of Femininity 67

D. FGRS Feminine Gender Role Stress 69

E. BSQ Body Shape Questionnaire 71

F. Informed Consent for Participants of Investigative Projects 76

Femininity, Feminine Gender Role Stress, Body-Image Dissatisfaction, and their Relationships to Bulimia Nervosa and Binge Eating Disorder

Introduction

Eating disorders are of great interest to the public, of perplexity to researchers, and a challenge to clinicians. They are featured prominently in the media, and often attract sensational coverage. Empirical literature points to a complex interplay of biological processes, and psychological and social forces that combine to play a major role in the development of the disorders. Still, their cause remains elusive and their treatment in general unsuccessful, with some patients actively resisting attempts to help them. Although there is progress to report in their understanding and treatment (Fairburn & Harrison, 2003), explanations as to why exactly they occur, why predominantly in women, and particularly in which women, remain unexplained (Striegel-Moore, Silberstein, & Rodin, 1986). Therefore, it is important to continue exploring causes relevant to the development of eating disorders.

Eating disorders are one of the most common psychiatric problems faced by females and are characterized by chronicity and high rates of relapse (Lewinsohn, Striegel-Moore, & Seeley, 2000; Stice& Shaw, 2002). Indeed, one of the most remarkable features of eating disorders is how persistent their symptoms are once they have begun (Fairburn & Harrison, 2003; Klein & Walsh, 2004). These disorders mostly occur in females and usually develop in adolescence or young adulthood but are increasingly seen in young children (Becker, Grinspoon, Klibansky & Herzog, 1999; for review see Littleton & Ollendick, 2003; Sands & Wardle, 2003). According to the National Eating Disorders Association (NEDA) conservative estimates indicate that after puberty, 5-10% of girls and women (5-10 million girls and women) and 1 million boys and men are struggling with eating disorders. It is estimated that yearly, as many as 10 million females

and 1 million males suffer from anorexia or bulimia, and millions more struggle with binge eating disorder (NEDA, 2008). It is believed that the prevalence of eating disorders, in general, is increasing among adolescent girls (Golden et al., 2003).

Bulimia Nervosa

Characteristic to bulimia nervosa are recurrent episodes of binge eating, the use of compensatory behaviors to prevent weight gain (DSM-IV-TR; American Psychiatric Association, 2000), and extreme influence of body shape and weight on self-evaluation (Stice & Shaw, 2002). Paradoxically, the minds of these patients are almost constantly filled with thoughts of food. Based on the compensatory behaviors, two subtypes of bulimia can be observed: purging type and non-purging type. To compensate for binge eating, purging type bulimics regularly engage in self-induced vomiting, or use laxatives, diuretics or enemas. Non-purging type bulimics engage in other inappropriate methods to influence their weight and shape, including periods of fasting or excessive exercise. The DSM-IV defines a binge as “eating in a discrete period of time a larger amount of food than most individuals would eat under the same circumstances.” Binge episodes are accompanied by feelings of not being able to control the intake or to stop the episode causing terrible distress and feelings of disgust. Although rare, cases of acute gastric dilation have occurred after an eating binge (Barada et al., 2006) and have even had fatal consequences (Gyurkovics et al. 2006). Barada et al. (2006) conclude that such cases illustrate the serious sequel of even a single binge in any patient with abnormal dietary habits.

According to the DSM-IV, bulimia nervosa has a prevalence of 1-3% among women, and usually begins in late adolescence or early adulthood. However, it can also occur after the age of forty or persist in middle-aged women (Procopio et al., 2005). The prevalence of bulimia in college women is uncertain. Studies have found numbers ranging from 3.8% to 29.6%

(Brazelton, Greene, Gynther, & O'Mell, 1998). More recently, Sloan (2002) found prevalences of 5% and of 20% at two different universities. The participants obtained scores above the BULIT-R cutoff score for bulimia diagnosis.

Binge Eating Disorder

Binge eating without compensatory behaviors to prevent weight gain is characteristic of another eating disorder called binge eating disorder (Stunkard, 1997). Binge eating disorder has been officially recognized only recently and it is included in the DSM-IV as a provisional diagnosis. Characteristic to binge eating disorder is a perceived lack of control over recurrent overeating episodes. These episodes are not an expression of hunger and, like in bulimia, they often occur in a secretive manner. As a consequence people with this eating disorder experience feelings of shame, self-disgust, marked distress and depressed mood. Another feature that binge eating disorder shares with bulimia, is being overly concerned with shape and weight (Spitzer et al. 1993). However, in contrast to bulimics, individuals with binge eating disorder do not resort to the extreme compensatory behaviors to prevent weight gain; and although they have spent a significant amount of their adult lives on diets, they are mostly overweight (Spitzer et al., 1993; Stunkard, 1997).

According to the DSM-IV, binge eating disorder has a prevalence of 0.7-4% among nonpatient community samples. Despite the restricted prevalence rate noted in the DSM-IV, data collected in Norway suggest the prevalence of binge eating disorder is twice the rate of bulimia nervosa and almost five times the rate of anorexia nervosa (Gotestam & Agras, 1995). Other researchers have suggested that the prevalence of binge eating disorder in the entire population is still unclear but it is estimated to have a broader distribution than bulimia (Grucza, Przybeck, & Cloninger, 2007; Kinzl, Traweger, Trefalt, Mangweth, & Biebl, 1997; Spitzer et al., 1993;

Wilfley, Wilson, & Agras, 2003). A recent study conducted in Brazil with women between the ages of 35 and 54, revealed that 20.5% of the women reported binge eating and 6.8% reported restrictive methods of weight control (Freitas, Appolinario, Souza, & Sichieri, 2008). Furthermore, it is also recognized that there is a subgroup of obese individuals with clinically significant binge eating problems and psychosocial impairment. According to the DSM-IV, these individuals amount to 15% to 50% (mean about 30%) in weight control programs.

Criteria for the Exclusion of Anorexia Nervosa

The present study will focus on the symptomology of bulimia nervosa and binge eating disorder and exclude anorexia nervosa, another eating disorder diagnosis, for three primary reasons. First, the higher prevalence of bulimia nervosa and binge eating disorder is one reason for their selection in this study. Bulimia nervosa is the most frequently diagnosed eating disorder and has the highest incidence in the female population (Fairburn, Hay, & Welch, 1995; Walsh, 1998) but while the frequency of binge eating disorder is still unclear, it may have a broader demographic distribution than anorexia nervosa and bulimia nervosa (Spitzer et al., 1993; Wilfley et al., 2003; Grucza et al. 2007). Second, binge eating disorder was selected because of its inclusion as a provisional diagnosis in the DSM-IV. Since many of the etiological theories have focused on bulimia nervosa, this study will examine whether a similar theoretical model applies to binge eating disorder. Compared to anorexia nervosa and bulimia nervosa, little is known about binge eating disorder. While it shares with bulimia nervosa certain symptoms, i.e. binge eating, feelings of loss of control, guilt and shame, it is thought to primarily affect an older age group, its sex ratio is less uneven, and some researchers believe that binge eating is not the result of dietary restraint but a general tendency to overeat. This tendency is probably what accounts for the strong association of the disorder with obesity (Fairburn & Harrison, 2003).

Finally, anorexia nervosa was excluded because it does not contain binge eating as a necessary and primary symptom. This study focuses only on the eating disorders that involve the common primary factor of binge eating. Since 90% of the persons affected by eating disorders are women (DSM-IV-TR, 2000), this study will focus only on the female population.

Eating disorders are marked by medical complications, psychosocial impairment and comorbid psychopathology, inpatient hospitalization, suicide attempts and mortality comparable to that of major depression (Stice & Shaw, 2002). Due to the combination of binging and food restraint, the weight of bulimics is generally unremarkable. Patients with bulimia are distressed by their feelings of loss of control over eating and their symptoms of anxiety and depression are prominent. Because of the secretive nature of the disorder, due to the shame and the embarrassment that the affected individuals experience, they do not seek treatment for their eating disorder but for their anxiety and/or depression. It is only then that the eating disorder can be diagnosed, usually after many years of its manifestation (Fairburn & Harrison, 2003; Hudson, Hiripi, Pope, & Kessler, 2007; Mensinger, Bonifazi, & LaRosa, 2007). A study with data from the National Comorbidity Survey Replication reported that more than 50 percent of participants with bulimia, binge eating disorder, and binge eating symptoms reported receiving treatment for emotional problems at some point in their lives. However, less than half of them had sought treatment specific to their eating disorder. Furthermore, it was found that they sought help from the general medical sector rather than specialized care (Hudson et al., 2007).

The health risks of binge eating disorder are most commonly those associated with clinical obesity (Fairburn & Harrison, 2003). However, like bulimics, binge eaters are overly concerned with shape and weight, they keep their binging episodes secret, and they experience feelings of shame, self-disgust, and depressed mood and anxiety (Schwalberg, Barlow, Alger, &

Howard, 1992; Spitzer et al. 1993). Vollrath, Koch, and Angst (1992) conducted a longitudinal study with two groups of young adults. They were defined as the binge eating group and the weight concerns group. Subjects with these conditions were interviewed at the ages of 27-28 and 29-30 years. The binge eaters, who were mostly women, differed both from the subjects with weight concerns and from controls. Binge eaters had more severe eating problems and more anxiety and depression. Follow-up as well as retrospective data suggests that eating problems are persistent for binge eaters, and, to a lesser extent, for subjects with weight concerns. The study also revealed that like bulimics, binge eaters rarely seek professional treatment for their eating problems. These findings encourage long-term studies on eating problems in community samples.

Etiology of bulimia and binge eating disorder. Although the inclusion of binge eating disorder as a provisional diagnosis in the DSM-IV has originated a vast body of research, the etiology of this disorder is still unclear (Manwaring et al., 2006; Spurrell, Wilfley, Tanofsky, & Brownell, 1997). Research has shown that bulimia and binge eating disorder share some characteristics, i.e. binging, loss of control, shame and guilt, excessive concern with shape and weight, and depression. The most salient differences are 1) binge eaters do not rely on extreme methods to undo their caloric consumption 2) the prevalence is estimated to be much higher than bulimia 3) the sex ratio is estimated to be more even, 65% women and 35% men (DeZwaan, 2001).

Schwalberg and colleagues (1992) conducted a study comparing women with bulimia and binge eating disorder and their comorbidity with anxiety disorders. Their results show that in 59% of bulimics, anxiety disorders preceded the eating disorder by at least one year. In the case of binge eating disorder, anxiety disorders preceded the eating disorder in 71% of the cases. The main difference of the groups was that general anxiety disorder was more prevalent in binge

eaters while social phobia was more prevalent among bulimics. The groups were undifferentiated in terms of lifetime prevalence and clinical severity. Many of the subjects reported experiencing GAD and social phobia for all of their lives or since early childhood, suggesting a possible etiological role of anxiety in the development of eating disorders. Results indicate that anxiety, worry, or social concerns were a salient part of these women's development. Specifically, 80% of bulimics and 70% of binge eaters had a history of one or more anxiety disorders. The tendency toward social evaluative fears or generalized anxiety, together with a variety of cultural, psychological and biological factors, might have contributed to the excessive concern about shape and weight, the severe dieting and the bulimic behavior.

Theory suggests that dieting is at the root of bulimia and of binge eating disorder (Hsu, 1997; Santonastaso, Ferrara, & Favaro, 1999; Schwalberg et al., 1992). Dieting is a behavioral factor that has been suggested to be critical in the development of eating disorders in general and may precede the first binging episode (Fairburn, Welch, Doll, Davies, & O'Connor, 1997; Wilson & Pike, 1993). Research has found that elevated dieting and radical weight-loss efforts (appetite suppressant, laxative use, excessive exercise, vomiting for weight-control purposes) do not predict weight loss. Ironically, they lead to binge eating, greater weight gain, and an elevated hazard for onset of obesity and eating related pathology (Stice, Cameron, Killen, Hayward, & Taylor, 1999; Stice, Presnell, Shaw, & Rohde, 2005; Tanofsky-Kraff, Faden, Yanovski, Wilfley, & Yanovski, 2005).

Dieting results in an erratic delivery of nutrients activating physiological responses that lead to desynchronization between behavior and physiology. This dysregulation of the normal appetite system is thought to promote weight gain because biological regulatory processes oppose underconsumption but not overconsumption. In the case of elevated exercise, a similar

negative energy balance can be created increasing the risk for binge eating and consequent weight gain. Weight-reduction efforts may also result in increased metabolic efficiency, which could promote weight gain (Stice et al. 1999). Dieting may provoke binge eating to directly counteract the effects of caloric deprivation. It may also promote binge eating when individuals violate their strict dietary rules. This violation can result in disinhibited eating because dieting leads to a shift from reliance on physiological to cognitive control over eating behaviors. This disturbance leaves the individual vulnerable to disinhibited eating when the controlling cognitive processes are disrupted, for example, in the case of intense emotions (Stice & Shaw, 2002). Furthermore, it has been found that 'normal' dieting in healthy women alters the function of central serotonin receptors. This might disentangle a potential mechanism by which eating disorders might be precipitated in women who are vulnerable for other reasons that might predispose them to develop an eating disorder (Fairburn & Harrison, 2003). But although 'cosmetic dieting' is a necessary condition in the development of bulimia nervosa, it is not a sufficient one (Huon & Strong, 1998).

Data show that as many as 75% of American women report dieting sometime during their lives (Jeffery, Adlis, & Forster, 1991), 83% of college students diet to lose or to maintain low weight (Malinauskas, Raedeke, Aeby, Smith, & Dallas, 2006) and while girls younger than 6 years of age still have little awareness of dieting recent studies show that girls as young as 6 years of age are aware of dieting to lose weight (Dohnt & Tiggemann, 2006) and are beginning to engage in eating disordered behaviors (Tanofsky-Kraff, Faden, Yanovski, Wilfley, & Yanovski, 2004). Dieting to loose weight has become an almost normative experience, especially among females, and Americans spend approximately $50 billion in weight loss products and services each year (Weiss, Galuska, Khan, & Serdula, 2006).

Despite these high numbers, little is known about the motivations that lead to dieting among females. Finding the ‘roots’ of body image concern is crucial for the prevention and treatment of both eating disorders and depression (Smolak, 2004). Therefore, to reduce the occurrence of negative psychological and physiological consequences of dieting, we need more information about the factors associated with its initiation and maintenance (Huon & Strong, 1998). The relationship among some of these initial factors, namely femininity, feminine gender role stress and body dissatisfaction, will be addressed in this study. Research has shown that femininity, feminine gender role stress, and body dissatisfaction are implicated in the development of disordered eating but there is no clear understanding on how they work together. The current study intends to clarify the connection between femininity or feminine gender role stress, body dissatisfaction, and eating disorders.

Femininity.

Several prominent feminist clinicians and theorists have emphasized the role of femininity in the development of disordered eating (Boskind-Lodahl, 1976; Orbach, 1978; Wolf, 2002). “Femininity refers to the degree to which an individual possesses characteristics associated with the female sex-role stereotype” (Striegel-Moore, 1993). The more a woman internalizes the sociocultural and interpersonal prescriptions about what it means to be feminine, the more at risk she will be to develop an eating disorder (Stice, 2001; Striegel-Moore, Silberstein, & Rodin, 1986).

Feminine thin-ideal internalization has been defined as the psychological process that occurs when women assimilate this thin-ideal and its associated values (i.e., women must be thin to be considered attractive) into their own world view. These ideas become guiding principles in their lives (Myers & Crowther, 2007; Thompson, van den Berg, Roehrig, Guarda, & Heinberg,

2004) and start developing in early childhood (Smolak, 2004). Social influence, with its norms and values about women's slender bodies and their eating habits represents a powerful environmental risk factor for eating disorders (Huon & Strong, 1998; Stice, 2001 Stunkard, 1997). Women experience two major social pressures putting them at risk for eating disorders: the emphasis on thinness as a requirement for attractiveness; and the conflict between traditional and nontraditional roles, referring to the conflict of women trying to be good mothers and wives as well as being successful in their education and careers (Shisslak & Crago, 1994).

The 'Beauty Myth' is, according to Wolf (2002), "the last (and most dangerous) of a long line of lies concerning the "rules" of feminine attributes and behavior." It is the most dangerous because it has succeeded in affecting women's internal sense of self and it has created a standard of femininity that is impossible to attain. Consequently, women are reacting with increasingly obsessive behavior in their attempts to measure up to this femininity ideal. The results are guilt, shame and unhappiness at one's physical faults, while eating disorders have been rising exponentially, and cosmetic surgery has become the fastest-growing specialty. Wolf concludes that although women have more money, power, legal recognition, and possibilities than ever before, the way they feel about themselves physically places them worse off than their unliberated grandmothers.

The way gender identity is developed and established is by the acquisition and continuous use of sex-role congruent behaviors. A central feature of the feminine gender stereotype is that a woman be concerned with her appearance and make all efforts to preserve this beauty (Striegle-Moore, 1993; Striegle-Moore, Silberstein, & Rodin, 1986). Given the pervasiveness of cultural influences and the reinforcing personal experiences that a woman has, she will not question the validity of her belief that she is overweight or that she has an

undesirable body (Attie & Brooks-Gunn, 1987). Society's constant preoccupation with women's bodies makes women extremely self-conscious and preoccupied with reaching an image others will find pleasing and attractive (Orbach, 1978).

Stice (2001) has emphasized the role of thin-ideal and thin ideal internalization in his dual pathway model to body dissatisfaction and disordered eating. Femininity, however, does not only include these two factors. The societal beauty mandate for women also includes women's behaviors. For example, studies have shown that a woman adjusts her eating behavior in front of others, eating small amounts of food if she wants to project an image of femininity and desirability (Chaiken, & Pliner, 1987; Pliner and Chaiken, 1990).

The femininity mandate comes from a variety of sources, including the mass media, parents, siblings, peers and dating partners. The pressure ranges from glorification of the ultra-slender fashion models to direct messages to lose weight and weight-related teasing. Indirect messages can create pressure too, for example when a friend complains about her weight and appearance or is dieting (Stice & Shaw, 2002). The thin-ideal internalization and the belief that achieving thinness will result in positive social benefits, such as acceptance, academic and dating success, plus the persistent messages that one is not thin enough is thought to promote body dissatisfaction (Stice & Shaw, 2002; Striegel-Moore et al., 1986). Theoretically, the relentless pursuit of an ultra-slender body that is virtually unattainable promotes dissatisfaction with one's physical appearance (Groesz, Levine & Murnen, 2002; Stice & Shaw, 2002; Orbach, 1978).

While all women experience these social pressures to a certain degree, the majority of women do not develop an eating disorder. It has been suggested that women who have most deeply internalized and overadapted to the sociocultural norms are more likely to develop an eating disorder while trying to reach the feminine ideal. Despite the importance of the role of

femininity in the development of disordered eating, it has received little attention in the empirical literature (Striegel-Moore et al., 1986).

Brown, Cross, and Nelson (1990) conducted one of the few studies looking at the role of femininity, or more specifically sex role orientation and attitudes, and bulimia. They compared college students who scored higher or lower on the BULIT (Smith & Thelen, 1984) and found significant differences between the two groups and their scores. Women in the lower group scored higher in feminist ideology and on masculine attitudes. Women with bulimic behaviors tended to be more traditionally feminine in their sex-role identity and ideology. Additionally, the results of the study showed that 78% of the high group lived in sororities, while only 22% of the low group did. The statistically significant difference suggests that bulimia is related to peer pressure. In another study, using the Behavioral Self-Report of Femininity (Greene & Gynther, 1994), women who reported low numbers of stereotypic feminine behaviors scored lower on bulimia symptoms than women who scored moderate to high on stereotypic feminine behaviors (Brazelton et al., 1998).

Feminine Gender Role Stress

Martz, Handley, and Eisler (1995) suggest that it may be the stress associated with trying to achieve the feminine gender role ideal that causes the primary risk in developing eating disorders. They compared young women hospitalized with an eating disorder and women hospitalized with different diagnoses or non-hospitalized college students as controls. The eating disordered group scored significantly higher on the feminine gender role stress scale. Results from their studies suggest that it is the stress caused by the cognitive mandate to adherence to certain feminine roles that could cause the vulnerability for eating disorders. Consequently, women who feel more stressed to fulfill certain feminine imperatives, e.g. physical attractiveness

and approval from others, might experience significantly higher stress. This might explain why more women than men develop eating disorders. The FGRS (Gillespie & Eisler, 1992) is a measure of "women's tendency to experience stress when faced with threats and challenged to feminine gender role commitments". Martz et al. (1995) suggest that the "negative aspects" of the feminine gender role might serve as connection between cultural values of femininity and the vulnerability for eating disorders. While they do not specify what these are, they probably refer to individual appraisals of situations that provoke high levels of stress in certain women. This connection was addressed in the current study, testing the role of feminine gender role stress as a mediator in the relation femininity body dissatisfaction, an established vulnerability factor to eating disorders.

It has been posited that femininity or feminine gender role stress is implicated in the etiology of disordered eating (Brazelton et al., 1998; Martz et al., 1995; Orbach, 1978; Striegel-Moore, 1993; Timko, Striegel-Moore, Silberstein, & Rodin, 1987). Nonetheless, the way femininity is implicated in the development of an eating disorder, as a key component of female identity, remains unexplained (Mensinger et al. 2007; Striegel-Moore, 1993).

Body Dissatisfaction

Body dissatisfaction has been established as a prominent risk factor in the development and maintenance of disordered eating. However, research has not clarified what causes females to develop this dissatisfaction with their bodies (Bell, Lawton, & Dittmar, 2007; Fallon & Hausenblas, 2005; Shisslak & Crago, 1994; Stice & Shaw, 2002). Women who become bulimic may be particularly sensitive to social pressure toward the feminine ideal of thinness. It has been suggested that the thin ideal espoused by women is at the origin of body dissatisfaction (Stice, 2001).

Body dissatisfaction is a psychologically salient discrepancy between perceived body and ideal body. It refers to negative subjective evaluations of particular parts of the body, such as figure, weight, stomach, buttocks and hips (Myers & Crowther, 2007; Stice & Shaw, 2002). Heightened internalization of the thin ideal and the belief that achieving thinness will result in a multitude of positive social benefits (e.g. acceptance and success) will increase the degree of body-dissatisfaction, if the actual or perceived body size is highly discrepant to a person's ideal body (Bell et al., 2007). This discrepancy has become a growing trend given the increasingly thinner role model of femininity in the context of rising obesity in the United States, as well as in other developed countries.

Recent data indicates that 65% of U.S. adults (Flegal, Carroll, Ogden, & Johnson, 2002), 15.5% of adolescents (ages 12 to 19), and over 15.3% of children (ages 6 to 11) are either overweight or obese (Hedley, Ogden, Johnson, Carroll, Curtin, & Flegal, 2004). These numbers contrast with the ultra thinness of idealized media models, often more than 20% underweight with a Body Mass Index (BMI) in the range of 14–16. The extremity of this 'cult of the skinny' becomes clear when we consider that 15% underweight constitutes a diagnostic criterion for anorexia, and a BMI of 18.5 the lower end of a biologically healthy body size (Bell et al., 2007).

Body dissatisfaction is thought to arise primarily from sociocultural pressures to be thin and from deviations from the feminine physical thin-ideal imposed for women in Western culture (Stice & Shaw, 2002; Striegel-Moore et al., 1986). A study with college women with reasonably normal levels of weight (mean BMI 22.87) found that 94% of the women wanted to weigh less than their current weight. The difference between their actual and ideal weights was of 14.56 pounds (Cooley & Toray, 2001). The influence is so dominant in women's lives that

even women who are not overweight consider themselves overweight, become unsatisfied with their bodies, and start dieting to fulfill the feminine ideal (Attie & Brooks-Gunn, 1987).

Research has consistently identified body dissatisfaction as central in the initiation of dieting (Stice & Shaw, 2002). The importance of understanding the risk factors is underscored by the fact that this disturbance afflicts a substantial proportion of adolescent and adult women. It is associated with emotional distress, appearance rumination and in many cases, unnecessary cosmetic surgery (Stice & Shaw, 2002; Wolf, 2002).

Studies report growing evidence on how unrealistic body ideals in different forms of mass media (billboards, radio, magazines, music videos and television) can increase body dissatisfaction. Exposure to extremely thin models has been found to have detrimental effects on adolescent girls' body image (Groesz et al. 2001; Stice & Shaw, 2002; Bell et al., 2007). Music videos, which show ultra-thin figure female models with very revealing clothes have been mostly studied in connection to aggression, violence, gender roles and sexuality. A recent study shows the strong influence of music videos in adolescents. In this study, after watching the music videos, adolescent girls reported significantly increased body dissatisfaction (Bell et al., 2007).

Profound feelings of body dissatisfaction might lead to prolonged periods of food restriction to control weight, followed in many cases by binge eating, increasing the risk for onset and maintenance of eating pathology (Striegel-Moore, 1993). More specifically, it starts a cycle of more body dissatisfaction, more binging, and more dieting; establishing the binge eating and the bulimic syndromes (Stice & Shaw, 2002; Hsu, 1997). An example of this cycle is demonstrated in a study conducted with college students at the beginning and at the end of a semester (Striegel-Moore, Silberstein, Frensch, & Rodin, 1989). The results showed that higher ratings in disordered eating were associated with an increase of dysphoric feelings about weight,

increased weight dissatisfaction, and decreased ratings of attractiveness. These distorted attitudes toward food, weight and shape are important factors in the maintenance of the eating disorder.

The problem with body dissatisfaction starts during childhood or early adolescence, when social comparison plays a more significant role in self-perception. Females who do not have the ideal body shape agonize about their bodies and will start dieting to manipulate size and shape (Groesz et al., 2002; see Littleton & Ollendick, 2003 for a review; Thelen, Powell, Lawrence, & Kuhnert, 1992; Wood, Becker, & Thompson, 1996). The fact that body dissatisfaction has become a "normative discontent" and is not categorized as a psychiatric diagnosis, does not eliminate the fact that it causes considerable distress in its own right (Striegel-Moore et al., 1989).

Body dissatisfaction has been found to be a common characteristic of women with eating disorders in general. More precisely, it is a prominent risk factor in the development and maintenance of disordered eating (Bell et al., 2007; Fallon & Hausenblas, 2005; Shisslak & Crago, 1994; Stice & Shaw, 2002). It has been proposed that it is this dissatisfaction with the body shape that may be at the origin of the dieting-binging cycle (Santonastaso, Ferrara, & Favaro, 1999; Shisslak & Crago, 1994; Stice & Shaw, 2002). Therefore, understanding the factors that lead to body image dissatisfaction is of prime importance.

In combination, these findings suggest that women who have internalized the thin ideal as the feminine ideal may develop high levels of body dissatisfaction increasing their risk of developing an eating disorder. Thus, a goal of this study is to investigate the relation of the roles of femininity, feminine gender role stress and body-image dissatisfaction as these factors relate to bulimia nervosa. Furthermore, to gain a deeper understanding of the etiology of binge eating disorder, the same criteria will be tested for this disorder. This study will focus on one of the

developmental periods of highest risk for eating disorders and eating problems: the period between adolescence and young adulthood (Attie & Brooks-Gunn, 1992). For the design of future prevention and treatment programs, it is crucial to increase knowledge about these periods as well as of the contributing factors of eating disturbances.

Aim of the study

This study will examine 1) the role of body-image dissatisfaction as a mediator in the relationship between femininity/feminine gender role stress and bulimia symptoms; 2) the role of body-image dissatisfaction as a mediator in the relationship between femininity/feminine gender role stress and binge-eating disorder symptoms; and 3) the role of feminine gender role stress as a mediator in the relationship between femininity and body dissatisfaction. Given the increase in eating pathology in women and especially in very young children, it is of utmost importance to gain a deeper understanding of the significant factors and their relationships that culminate in the onset and maintenance of eating pathology. Furthermore, the introduction of binge eating disorder in DSM-IV originated a vast body of research. Still, little is known about the etiology of the disorder. This study intends to fill some of the gaps in the eating disorder literature to better understand the origin of these disorders, and hence contribute to the development of optimally effective preventive interventions and treatments.

The primary purpose of this study was to examine the relationship of factors leading to bulimia nervosa and to binge eating disorder symptomology. The factors examined were femininity, feminine gender role stress, and body-image dissatisfaction. Furthermore, the potential role of body dissatisfaction mediating the relationship of femininity or feminine gender role stress to bulimia and binge eating disorder symptomology was tested. This study examined whether a similar theoretical model applies to bulimia as well as to binge eating disorder

symptomology. The potential mediating or moderating role of feminine gender role stress between femininity and body dissatisfaction was also tested.

The Mediator Model

The first, or mediated model, proposes that femininity will significantly affect body dissatisfaction, which will, in turn, lead to greater levels of bulimia symptoms. The connection between femininity and eating disorders has been established by the previously cited studies. Their results suggest that higher levels of femininity will lead to higher levels of bulimic symptoms. Furthermore, theory suggests a connection between femininity and body dissatisfaction. It seems likely that women, who have internalized the thin-ideal of femininity, will show higher levels of femininity, which will lead to higher levels of body dissatisfaction. Consistent with empirical findings linking body dissatisfaction to bulimia, it is here proposed that higher levels of body dissatisfaction will be associated with higher levels of bulimic symptoms. It is here suggested that higher levels of body dissatisfaction will serve as a mediator in the relationship between femininity and bulimia nervosa symptomology. The same mediator models will be tested with binge eating disorder symptomology as the dependent variable. The current study also examines the potential mediating role of body dissatisfaction between feminine gender role stress and bulimia symptomology, as well as its mediating role between feminine gender role stress and binge eating disorder symptomology.

The four criteria used for mediating models (Baron & Kenny, 1986; Holmbeck, 1997) will be used to test the mediating role of body-dissatisfaction in explaining the relationship between femininity/feminine gender role stress and both bulimia nervosa and binge eating disorder symptomology. The criteria will also be tested for bulimia purging type and for bulimia non-purging type symptoms.

Mediating Model Hypotheses

1. High levels of body-dissatisfaction will explain the relationship between femininity and high levels of bulimia nervosa symptoms. Also, high levels of body-dissatisfaction will explain the relationship between femininity and high levels of both bulimia nervosa purging type and bulimia nervosa non-purging type symptoms.

2. High levels of body-dissatisfaction will explain the relationship between femininity and high levels of binge eating disorder symptoms.

3. High levels of body-dissatisfaction will explain the relationship between feminine gender role stress and high levels of bulimia nervosa symptoms. Also, high levels of body dissatisfaction will explain the relationship between feminine gender role stress and high levels of both bulimia nervosa purging type and bulimia nervosa non-purging type symptoms.

4: High levels of body-dissatisfaction will explain the relationship between feminine gender role stress and high levels of binge eating disorder symptoms

5: High levels of feminine gender role stress will explain the relationship between femininity and body dissatisfaction.

Method

Participants

Subjects for this study were 355 female students (aged 18-26) from Virginia Polytechnic Institute and State University in Blacksburg, Virginia. The participants were recruited through the psychology subject pool. The study was presented as a study on women’s attitudes to food. Participants from the introductory psychology course completed the questionnaires and received extra credit in accordance with the department of psychology.

Measures

Questionnaire on Eating and Weight Patterns-Revised, (QEWP-R; Spitzer et al., 1993): The QEWP-R was designed by Spitzer and colleagues (1993; Appendix A) to identify individuals with binge eating disorder. This 28-item questionnaire also assesses essential diagnostic criteria for purging and nonpurging bulimia nervosa. The Cronbach alpha of the QEWP-R is .75 and .79 in weight control and community samples, respectively. A predictive validity of kappa = .60 was obtained for the agreement between the clinical evaluation and the self-report questionnaire in a weight control study (Spitzer et al., 1993). The assessment of binge eating disorder (BED) is done by the summation of the scores on eight items: loss of control, episodic overeating and six symptoms associated with binge eating. The assessment of bulimia nervosa purging type (BNP) is done by the summation of scores associated with symptoms of binge eating, weight/shape over-evaluation and purging behavior. This questionnaire also includes questions about compensatory behaviors associated with the diagnosis of nonpurging bulimia nervosa (BNNP), by summing scores associated with symptoms of binge eating, fasting, excessive exercise, or use of medication. Although the scale was designed to determine diagnoses, for this study the scores will be kept on a dimensional scale. This will allow for the analysis of symptomology on a continuum of severity, without having to exclude subjects who do not meet full diagnostic criteria. For the present study, and using the data from the subscales, this measure obtained an internal consistency score of *Cronbach's alpha = .92.*

Bulimia Test Revised (BULIT-R; Thelen, Farmer, Wonderlich, & Smith, 1991): In addition to the QEWP-R the Bulimia Test-Revised (BULIT-R) was included in the study, as a check of the bulimia items on the QEWP-R. The BULIT-R was developed to measure the symptoms of bulimia nervosa (Thelen et al., 1991; Appendix B). The BULIT-R is a 36-item

questionnaire with internal consistency of .97 and test-retest reliability over a two month interval of .95. Items assess the frequency of bulimic behaviors, such as bingeing, inappropriate compensatory behaviors (e.g., vomiting, laxative use), and a sense of loss of control while eating. Items are scored on a 5-point Likert-type scale. This measure is highly correlated with bulimia nervosa diagnosis (r = .74) and has been found to significantly discriminate clinical bulimic and nonclinical samples. In addition, it has been found to be highly sensitive for identifying bulimics in a sample of college women. Thelen, Mintz, and Vander Wal (1996) also found the BULIT-R a valid measure of bulimia according to criteria outlined in the 4th ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 1994). For the present study, this measure obtained an internal consistency score of *Cronbach's alpha = .94*.

The Behavioral Self-Report of Femininity (BSRF, Greene & Gynther, 1994): This self-report questionnaire was developed to assess stereotypic feminine behavior in real life situations, (e.g. "I have shaved my legs" or "I have used cream on my face to prevent wrinkles"), and is composed of six factors: Social Connectedness, Romantic, Domestic/Dutiful, Concern with Age-Sexual Attractiveness, Concern with Appearance, and Traditional-Conservative (Greene & Gynther, 1994; Appendix C). The 59 items are scored on a continuum 4 = very often to 0 = never, and summed to form a total score. Six items considered less feminine, e.g. "I have changed a tire" are reverse scored. The Cronbach's coefficient of .92 indicates excellent internal consistency and test-retest reliability over a two-week period is .90. For the present study, this measure obtained an internal consistency score of *Cronbach's alpha = .91*. The items differentiate females from males as well as more or less feminine women.

The Feminine Gender Role Stress Scale (FGRS, Gillespie & Eisler, 1992): This self-report questionnaire was developed to assess women's cognitive appraisal of stressors when their

gender role identity is threatened (Gillespie & Eisler, 1992: Appendix D). The 39 items on the scale are rated on a Likert scale from 0 = not at all stressful to 5 = extremely stressful, such that higher scores indicate greater gender role stress. The 5 factors of this measure are "Fear of Unemotional Relationships", "Fear of Physical Unattractiveness", "Fear of Victimization", "Fear of Behaving Assertively", and "Fear of Not Being Nurturant". The Cronbach's coefficients of .83, .81, .77, .80, and .73 respectively, indicate good internal consistency for the five factors. The items on the scale significantly differentiate female from male stressors and the test-retest reliability over a two-week period is .82. For the present study, the total score was used and the test obtained an internal consistency score of Cronbach's alpha = .93.

The Body Shape Questionnaire (BSQ, Cooper, Taylor, Cooper, & Fairburn, 1987): This self-report questionnaire was designed to measure attitudes and behaviors about body shape, in particular body shape dissatisfaction (Cooper, et al., 1987; Appendix E). The BSQ contains 34 items rated on a six-point Likert scale ("never"=1 to "always"= 6). All questions refer to the subjects' feelings about their appearance over the last four weeks, with higher scores meaning higher body dissatisfaction. The items of the BSQ were empirically derived from interviews with eating disordered and non-eating disordered women. Cooper et al. (1987) found concurrent validity through the significant correlations between the BSQ and the total score on the Eating Attitudes Test and the Body Dissatisfaction Subscale of the Eating Disorders Inventory. The BSQ shows also satisfactory discriminant validity. The women of a community sample who declared themselves concerned with their weight and their shape scored significantly higher on the BSQ than unconcerned women. Women diagnosed with bulimia showed significantly higher BSQ scores than non-bulimics. For the present study, this measure obtained an internal consistency score of Cronbach's alpha = .98.

Procedures

Participants received an informed consent (Appendix F) for completion. The self-report questionnaires were completed in classrooms with 30-40 subjects at a time. Instructions were read to the participants and clarification questions were answered. The introduction to the testing took about five to ten minutes. Answering the questions of the test battery itself lasted between 50 minutes to approximately 1 hour 15 minutes.

Results

Relationships Among Self-Report Measures

Correlations were calculated among the total scores of the BSRF, FGRS, BSQ, BULIT-R, and QEWP-R (binge eating disorder, bulimia purging type, bulimia non-purging type). Significant positive correlations were found among all variables of interest, with exception of the BSRF (femininity) and the QEWP-R binge eating disorder symptomology (see Table 1). Also, descriptive statistics were obtained for each variable (see Table2). The results obtained in the current study are comparable to those found in other studies, and suggest that the participants include a range of performance that would capture those with and without the core features of interest. Bekker and Boselie (2002) tested women with eating disorders with the FGRS (Gillespie & Eisler, 1992) and obtained M = 129.82. Their control group obtained M = 118.15. For the BULIT-R, Thelen, Mintz, and Vander Wal (1996) obtained M = 119.26 for the bulimic participants and M = 53.31 for the controls. For the BSQ, Cooper et al. (1987) obtained M = 136.9 for women with bulimia, M = 129.3 for “probable cases” of bulimia, and M = 71.9 for the non-bulimia group. Using the BSRF (Greene & Gynther, 1994), Brazelton and colleagues (1998) obtained M = 130 in a college sample.

Mediator Model Tests and Post Hoc Analyses

The mediator models examined whether body dissatisfaction acted as a mediator for femininity or feminine gender role stress (independent variable) in predicting bulimia or binge eating disorder symptoms (criterion). As recommended by Holmbeck (1997) and Baron and Kenny (1986), three prerequisites were necessary to examine the mediating role in each of these analyses. First, a statistically significant relationship had to be established between the predictor and criterion variables. As such, in order to meet minimum requirements for mediation for bulimia, femininity and feminine gender role stress would need to be significantly correlated with both body dissatisfaction and bulimia symptoms. Also, in order to meet minimum requirements for mediation for binge eating disorder symptoms, femininity, feminine gender role stress, and body dissatisfaction would need to be significantly correlated with binge eating symptomology. As shown in Table 1, the significance prerequisites were met for all relationships except for binge eating disorder symptoms and femininity, which were not significantly correlated. Consequently, requirements for mediation were not met for femininity and binge eating disorder symptomology, and the mediating role of body dissatisfaction in the femininity – binge eating disorder symptomology relationship could not be examined. All other mediating tests were pursued.

Furthermore, Holmbeck (2002) and Baron and Kenny (1986) recommend post-hoc probing in order to confirm the presence of mediation. Post hoc probing was conducted for the significant mediation models using Sobel's equation. This equation uses unstandardized regression coefficients and standard errors and provides a test of the decrease observed in the predictor-dependent effect when the mediator is entered into the model (see Figure 3). For each of these analyses, a regression analysis was first conducted with the mediator regressed on the

predictor variable. A second regression analysis is computed next, with the dependent variable regressed on the predictor and mediator variables (c.f., Holmbeck, 2002 for computational explanations and examples; c.f., Preacher & Leonardelli, 2003 for interactive calculation).

The second step in the post hoc probing method involves computing the percentage of the path from the predictor to the outcome accounted for by the mediator. The obtained unstandardized beta (B) of the indirect effect was divided by the unstandardized beta (B) of the total effect.

1 Body-dissatisfaction as a mediator between femininity and bulimia symptomology[1,2]

Hierarchical linear regressions were computed to assess whether measures of body dissatisfaction mediated the relations between femininity and bulimia symptomology (Figure 1). Results indicated that femininity predicted bulimia symptoms, $R^2 = .011$, $F\ (1, 353) = 3.89$, $p = .049$ (criterion I), and body dissatisfaction, $R^2 = .04$, $F\ (1, 353) = 15.18$, $p < .001$ (criterion II). In accordance with criterion III, body dissatisfaction continued to predict bulimia symptoms with the effects of femininity accounted for in the equation, $R^2 = .56$, $F\ (1, 352) = 226.11$, $p < .001$. Finally, the relation between bulimia symptoms and femininity was non-significant, $\Delta R^2 = .551$, when body dissatisfaction was accounted for, demonstrating criterion IV for mediation.

To further test the significant mediation effect found for body-dissatisfaction in the femininity and bulimia symptomology relation, body-dissatisfaction was first regressed on femininity (unstandardized coefficient = .273, standard error = .070). Next, bulimia symptomology was regressed on body dissatisfaction, resulting in an unstandardized coefficient of .432 and a standard error of .021. Sobel's test ($z = 3.83$) was significant at the $p < .001$ level, with approximately 59.59 % of the femininity-bulimia symptomology path accounted for by body-dissatisfaction.

[1,2] The same analyses were conducted for BNP and BNNP with the results showing the same effects.

2 Body-dissatisfaction as a mediator between feminine gender role stress and bulimia symptomology[3,4]

Hierarchical linear regressions were computed to assess whether measures of body dissatisfaction mediated the relations between feminine gender role stress and bulimia symptomology (Figure 2). Results indicated that feminine gender role stress predicted bulimia symptoms, $R^2 = .043$, $F(1, 353) = 16.02$, $p < .001$ (criterion I), and body dissatisfaction, $R^2 = .89$, $F(1, 353) = 34.59$, $p < .001$ (criterion II). In accordance with criterion III, body dissatisfaction predicted bulimia symptoms with the effects of feminine gender role stress accounted for in the equation, $R^2 = .56$, $F(2, 352) = 224.177$, $p < .001$. Finally, the relation between feminine gender role stress and bulimia symptomology was non-significant, $\Delta R^2 = .517$, when body dissatisfaction was accounted for, demonstrating criterion IV for mediation.

To further test the significant mediation effect found for body-dissatisfaction in the feminine gender role stress and bulimia symptomology relation, body-dissatisfaction was first regressed on feminine gender role stress (unstandardized coefficient = .419, standard error = .071). Next, bulimia symptomology was regressed on body dissatisfaction, resulting in an unstandardized coefficient of .429 and a standard error of .021. Sobel's test ($z = 5.67$) was significant at the $p < .001$ level, with approximately 51.84 % of the feminine gender role stress-bulimia symptomology path accounted for by body-dissatisfaction.

3 Body-dissatisfaction as a mediator between feminine gender role stress and binge eating disorder symptomology

Hierarchical linear regressions were computed to assess whether measures of body dissatisfaction mediated the relations between feminine gender role stress and BED symptomology (Figure 3). Results indicated that feminine gender role stress predicted BED

[3,4] The same analyses were conducted for BNP and BNNP with the results showing the same effects.

symptoms, $R^2 = .01$, $F(1, 353) = 3.904$, $p = .049$ (criterion I), and body dissatisfaction, $R^2 = .09$, $F(1, 353) = 34{,}59$, $p < .001$ (criterion II). In accordance with criterion III, body dissatisfaction predicted BED symptomology with the effects of feminine gender role stress accounted for in the equation, $R^2 = .17$, $F\ (1, 353) = 72.43$, $p < .001$. Finally, the relation between feminine gender role stress was non-significant, and $\Delta R^2 = .16$, when body dissatisfaction was accounted for, demonstrating criterion IV for mediation.

To further test the significant mediation effect found for body-dissatisfaction in the feminine gender role stress and BED symptomology relation, body-dissatisfaction was first regressed on feminine gender role stress (unstandardized coefficient = .419, standard error = .071). Next, BED symptomology was regressed on body dissatisfaction, resulting in an unstandardized coefficient of .014 and a standard error of .002. Sobel's test ($z = 4.51$) was significant at the $p < .001$ level, with approximately 86.49 % of the feminine gender role stress-BED symptomology path accounted for by body-dissatisfaction.

A different mediation model tested whether feminine gender role stress acted as a mediator between femininity (independent variable) and body dissatisfaction (criterion). This model was partially confirmed, since the relation between femininity and body dissatisfaction, although reduced, remained significant after the mediator was entered in the analysis.

4 Feminine gender role stress as a mediator between femininity and body dissatisfaction[5]

Hierarchical linear regressions were computed to assess whether measures of feminine gender role stress mediated the relations between femininity and body dissatisfaction. Results indicated partial mediation, since the relation femininity and body dissatisfaction remained significant after entering the mediator in the analysis. Post-hoc probing was computed for this

---

[5] An analysis was also conducted to test for a moderational effect of feminine gender role stress. No moderating effects were found.

model with the results indicating that approximately 25.64% of the femininity – body dissatisfaction path was accounted for by feminine gender role stress.

Discussion

This study sought to examine the mediational relationships between the constructs of femininity/feminine gender role stress and both bulimia and binge eating disorder symptomology with body dissatisfaction as a mediator. Furthermore, it also intended to shed light onto the similarities or differences between bulimia and binge eating disorder symptomology and examine if the same etiological factors apply for both disorders. Specifically, it was hypothesized that femininity and feminine gender role stress would each lead to bulimia as well as to binge eating disorder symptomology through the mediator of body dissatisfaction. Also, it was hypothesized that femininity would lead to body dissatisfaction through the mediator of feminine gender role stress.

The first mediator model looked at the relation between femininity and symptoms of bulimia general, bulimia purging type, and bulimia non-purging type. Consistent with the hypotheses, higher levels of femininity predicted higher levels of body dissatisfaction and bulimia symptomology. As anticipated, body dissatisfaction acted as a mediator between femininity and bulimia symptomology. It accounted for about 47% to 60 % of the relationships.

The second mediator model looked at the relation femininity and binge eating disorder symptomology with body dissatisfaction as a mediator. This model found that although there was a significant relationship between binge eating and body dissatisfaction, there was no significant relation between femininity and binge eating disorder symptomology. Further analyses were not pursued since the predicted hypothesis of this etiological pathway was not supported. These results are an interesting finding of this study. The high correlations found between the

symptoms of both disorders may suggest more similarities than differences and emphasize the continuity perspective of eating pathology. But in this case, the same etiological model did not apply for the symptomologies of bulimia and of binge eating disorder. Stice, Killen, Hayward and Taylor (1998) have stated that data are often contradictory in that certain variables tend to support the continuity model, while others support the discontinuity model. The inconsistencies may result depending on which aspects of the disorder are tested. More specifically, the tested variables will support different perspectives if they are related to core eating pathology (e.g. weight or drive for thinness) or to comorbid psychiatric symptoms (e.g. depression or anxiety). In conclusion, there is no consensus in this controversy and even studies addressing the continuity and discontinuity perspectives have shown mixed results (Fitzgibbon, Sanchez-Johnsen, & Martinovich, 2003).

The third mediator model looked at feminine gender role stress and its relation to the symptomology of bulimia total, bulimia purging type, and bulimia non-purging type. Here again, consistent with the hypotheses, higher levels of feminine gender role stress predicted higher levels of body dissatisfaction and bulimia symptoms. The anticipated mediational role of body dissatisfaction was supported, and accounted for about 49% to 52 % of the relationships.

The fourth mediator model looked at the relation between feminine gender role stress and binge eating disorder symptomology. Consistent with the hypothesis, higher levels of feminine gender role stress predicted higher levels of body dissatisfaction and binge eating disorder symptoms. The predicted mediational role of body dissatisfaction was supported too, and it accounted for 86.5% of the relation between feminine gender role stress and binge eating disorder symptomology.

The final model tested if feminine gender role stress acted as a mediator in the relation

between femininity and body dissatisfaction. This hypothesis was supported through a partial mediation. The relation between femininity and body dissatisfaction was reduced, but remained significant after the mediator was entered in the analysis. Feminine gender role stress accounted for almost 26% of the relation between femininity and body dissatisfaction.

Most findings of this study are consistent with results of previous research, in that there were significant relationships among most of the main constructs. First, higher levels of femininity were significantly correlated with higher levels of bulimia symptomology, which supports the findings of Brown et al. (1990), and of Greene and Gynther (1994). Also, higher levels of feminine gender role stress were significantly correlated with bulimia symptomology, which supports the findings of Martz et al. (1995). Mediational analyses shed further light on the relationships between femininity, feminine gender role stress and bulimia symptomology by highlighting the role of body dissatisfaction. Body dissatisfaction related to femininity, and to feminine gender role stress, may contribute to higher levels of disordered eating. It is therefore of utmost importance to address these factors in therapeutic interventions as well as in prevention campaigns and programs.

The mediator model for feminine gender role stress and binge eating disorder symptomology was supported too. Body dissatisfaction acted as a mediator between feminine gender role stress and binge eating disorder symptoms. Additionally, the mediational analyses shed further light on the relationship between feminine gender role stress and binge eating disorder symptomology by highlighting the role of body dissatisfaction.

The study did not support the hypothesis that body dissatisfaction would act as a mediator between femininity and binge eating disorder symptomology. Hence, the results did not support this common etiological pathway for the symptomologies of bulimia and binge eating disorder.

However, the lack of a significant relation between the two constructs is an important finding from this study. The BSRF (Greene & Gynther, 1994) measures women's adherence to cultural norms. The FGRS (Gillespie & Eisler, 1992) measures the cognitive appraisal of such situations. The fact that binge eating disorder symptomology was not significantly correlated with femininity may indicate that women with symptoms of binge eating disorder do not adhere to the established cultural norms of femininity. On the other hand, the fact that feminine gender role stress and binge eating disorder symptomology were significantly correlated suggests that women with symptoms of binge eating disorder are still susceptible to the cultural norms and feel stressed when facing situations that require feminine behaviors or important feminine commitments.

Martz and colleagues (1995) suggested that when placed in vulnerable feminine situations, women with high FGRS might resort to coping behaviors that are inconsistent with these commitments. The findings of the current study suggest that higher levels of feminine gender role stress predict higher levels of binge eating disorder symptomology through the mediator of body dissatisfaction. It can be implied that constant messages of appropriate feminine norms makes women internalize their content, even in women who do not show high levels of femininity. This internalization leads to greater distress when such women who are dissatisfied with their bodies are faced with a femininity relevant situation. Symptoms of binge eating disorder may be the inadequate response to feelings of inappropriateness. From the current study, it is not possible to know if gender-neutral situations would elicit the same response, since the FGRS (Gillespie & Eisler, 1995) was developed to address gender role-relevant situations. A different study by Bekker and Boselie (2002) compared a group of bulimic patients with a group of non-clinical controls on measures of FGRS, Masculine Gender Role Stress (MGRS; Eisler &

Skidmore, 1987), and recently experienced stress. Although the two groups were different in age and in education, compared to the controls, bulimic women scored significantly higher on all three measures of stress. The results suggest that stress in general is associated with bulimia, rather than only stress that is related to femininity. A study by Striegel-Moore and colleagues (2007) found that elevated levels of perceived stress predicted the onset of binge eating disorder. However, Bekker and Boselie (2002) found that while stress is a predictor of disordered eating, living with an eating disorder is also a predictor of stress, indicating the relevance of stress as a concomitant feature of eating disorders. Hence, it is possible that the results of the current study reflect not only gender specific stress but stress in general, as well as past or concomitant stress.

Additionally, a different explanation for the results of the current study could be that factors not included in this study are more influential to the development of binge eating disorder than the variables considered here. Furthermore, it has been suggested that there might be different etiological pathways leading to the disorder and that binging, and not dieting, occurs first (Manwaring et al. 2005; Spurrell et al., 1999). Marcus (1995) pointed out that in some cases dieting might be a consequence of binging rather than its cause. Leaning on the bulimia restraint model, some researchers have speculated that dieting precedes the first binging episode such as in bulimia (Hsu, 1997; Santonastaso et al., 1999; Schwalberg et al. 1992). Manwaring and colleagues (2005) conducted a study looking at both types of binge eating individuals: the ones who dieted first (DF) and the ones who binged first (BF). Results of this study indicated that the BF group (81%) was more likely to have suffered a stressful event (e.g. moves, end of a significant relationship, death of a close person) one year prior to the initiation of the binging. These results suggest a higher inability to regulate affective experiences in the BF group when exposed to stressful situations. The DF group (19%) showed significantly higher restraint, weight

concern, shape concern, eating concern, as well as importance of weight and shape. While the current study established a connection among gender related stress, body dissatisfaction, and eating pathology, it did not separate the two groups but tested for a common etiological path. Additional research using the same variables used here, but separating the groups into BF and DF may help clarify more about the etiology of binge eating disorder. Since the current study leaned on a model that assumes that binge eating disorder subjects pertain to the DF group, it may not appropriately describe the BF population. More specifically, subtyping may help explain if the used pathway leads to the DF group of the binge eating disordered population. Although the current study, did not find a significant correlation between femininity and binge eating disorder, it could be that if there is a higher percentage of BF subjects, their numbers might have covered important information related to the DF group.

The last hypothesis was supported through a partial mediation. Feminine gender role stress was found to act as a partial mediator between femininity and body dissatisfaction. This suggests that feminine gender role stress might only be one pathway by which femininity may have an impact on body dissatisfaction. As such, femininity is predictive of unique variance above and beyond feminine gender role stress, indicating direct and indirect effects of femininity on body dissatisfaction.

In addition, the higher levels of body dissatisfaction found in the current study (table 2), compared to the original sample of healthy controls might raise some concern, even if the level is not as high as the “probably bulimic” group in the original sample (Cooper et al., 1987). Researchers suggest that normative levels of body dissatisfaction may be differentiated from clinically significant eating problems on the basis of problems in emotional functioning (Sim & Zeman, 2006). From the current study, it is not possible to know the extent of the problem

reflected here.

Limitations

First, the results of this study underscore the need to include other relevant variables in the analysis to further understand the complexity of the eating disorders. For example, other factors such as dieting, stress, or affect regulation may account for disordered eating. In the current study, however, only a direct pathway with one mediator was suggested. Second, the use of mediational analyses sought to clarify the direction and the specific roles of each of the variables studied. Causation is inferred by the mediational findings. However, the cross-sectional nature of this research prevents the directionality of the relationships from being established. Longitudinal studies are needed to establish true causal connections among variables. Third, participants of this study were not diagnosed with an eating disorder. Such results might not be specific to the bulimia or binge eating disorder population but rather reflect the tendencies of individuals with self-reported binge eating tendencies (Wolff, Crosby, Roberts & Wittrock, 2000). Lastly, the choice of body dissatisfaction as a mediator might be a limitation too. Body dissatisfaction is so omnipresent among young adolescents and women that it is known as a “normative discontent” (Striegle-Moore et al., 1986). While body dissatisfaction is a strong predictor of eating disorders, it has been found to be significantly correlated with other psychological variables, such as depression (Smolak, 2004; Stice & Bearman, 2001), social anxiety (Grilo, Wilfley, Jones, Brownell, & Rodin, 1994), negative affect (Sim & Zeman, 2006), and teasing (Jackson, Grilo, & Masheb, 2000).

Research, Prevention, and Treatment Implications

Despite the limitations of the study, the results provide useful information as of the role of femininity, feminine gender role stress and body dissatisfaction in the development of bulimia

and binge eating disorder. The use of mediating variables helps us understand the ways in which two risk factors may work together to influence an outcome. Classifying risk factors and understanding the role they play in the development of the disorder can help identify high-risk individuals in need of preventive interventions and the content of such interventions. The findings can be applied to future research, prevention and treatment. Fairburn and Harrison (2003) have pointed out that there is a pressing need for more treatment research, which should include not only more effective treatments but also the development of appropriate treatments for the different eating disorders. Currently, the treatment recommendation in cases of binge eating is to follow the guidelines for bulimia nervosa.

Future research should consider examining how the two subgroups found in the binge eating disorder population (DF and BF) relate to femininity. Subtyping the disorder may lead to different results and help clarify the heterogeneity of the binge eating disorder population (Manwaring et al., 2006).

According to Smolak (2004) “Body dissatisfaction is an extremely gendered phenomenon”. Not that boys and men do not experience body dissatisfaction but the risk factors and the outcomes are different, and probably the developmental course too. The current study points to the role of two feminine factors, namely femininity and feminine gender role stress and their influence in the development of body dissatisfaction and of disordered eating. The results, suggest that these two factors should be considered in prevention or treatment for females.

The fact that body dissatisfaction and eating disorders are on the rise may be an indication that there has not been enough focus on prevention or that prevention programs have been unsuccessful. In fact, most of the programs to date have had little success. Their content has mostly been psychoeducational, focusing on educating children in nutrition and on the negative

effects of disordered eating (for review see Littleton & Ollendick, 2003). Although it is not yet clear by what age body image becomes stable, it has been suggested that a “thinness schema” develops during childhood and is in place by early adolescence (Smolak, 2004). Therefore, prevention programs should be started at an early age. It is imperative that such programs not only address nutrition, but also the dictates of femininity in our society and how they relate to body dissatisfaction and to different eating pathologies.

After a careful review of the current prevention and intervention programs, Littleton and Ollendick (2003) have emphasized the need to move away from the current one-size fits all mentality for such programs. Moreover, they recommend that future programs should be tailored including developmental level, symptomatology and motivation for change of the participants. Hence, addressing the symptomatology might lead to more appropriate programs for the different eating disorders and their symptoms. The importance of focusing on prevention programs lies in the fact that body dissatisfaction, especially after the physical changes of puberty, has been linked to disordered eating and to depressive symptoms (Littleton & Ollendick, 2003; Smolak, 2004; Stice & Bearman, 2001). Nonetheless, researchers have not reached an agreement yet as to what, how, or when such interventions should be conducted. For example, Stice and Shaw (2004) have argued that children do not possess the cognitive ability or insight to process information regarding shape and weight concerns. Consequently, this will result in little motivation for behavioral changes or attitudes. But according to Holt and Ricciardelli (2008), children are aware of different body shapes and sizes. This is widely documented in the literature regarding peer teasing and societal ideals presented in the media. Therefore, prevention programs should be developed, but should be age appropriate and targeted to at risk individuals (Stice & Ragan, 2002). Nevertheless, caution is advised, since the

consequences might outweigh the positive consequences when working with children, especially in the school setting. The main reason being that targeted interventions might single out children and these children may become the victims of teasing or bullying. A good reason for at-risk children to refuse participation (for review see Holt & Ricciardelli, 2008).

While the controversies regarding eating disorders, including appropriate prevention and inclusion of binge eating disorder as a distinct category continue, it is important to continue exploring factors related to these disorders. Further research is needed looking at factors associated with eating disorders symptomology, i.e. femininity, feminine gender role stress, and body dissatisfaction, so that prevention and treatment programs can include them to the benefit of girls and women. Thus, addressing femininity and feminine gender role stress may be clinically useful in designing interventions to decrease body dissatisfaction and eating disorders in at-risk populations.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., Text Revision). Washington, DC: Author.

Attie, I., & Brooks-Gunn, J. (1992). Developmental issues in the study of eating problems and disorders. In J.H. Crowther, D.L. Tennenbaum, S.E. Hobfoll, & M.A. Parris Stephens (Eds.), *The etiology of bulimia nervosa*. (pp.35-58). Kent State University, Ohio: Hemisphere Publishing Corporation.

Barada, K., Azar, C. R., Al-Kutoubi, A.O., Harb, R.S., Hazimeh, Y.M., Abbas, J. S., & Al-Amin, H. A. (2006). Massive gastric dilation after a single binge in an anorectic woman. *International Journal of Eating Disorders, 39,* 166-169.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Becker, A.E., Grinspoon, S.K., Klibansky, A., & Herzog, D.B. (1999). Current concepts: Eating disorders. *The New England Journal of Medicine, 340*, 1092-1098.

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*, 141-149.

Bell, B.T., Lawton, R., & Dittmar, H. (2007). The impact of thin models in music videos on adolescent girls' body dissatisfaction. *Body Image, 4,* 137-145.

Boskind-Lodahl, M. (1976). Cinderella's stepsisters: A feminist perspective on anorexia nervosa and bulimia. *Signs, 2,* 342-356.

Brazelton, E.W., Greene, K.S., Gynther, M., & O'Mell, J. (1998). Femininity, bulimia, and

distress in college women. *Psychological Reports, 83*, 355-363.

Brown, J.A., Cross, H.J., & Nelson, J.M. (1990). Sex-role identity and sex-role ideology in college women with bulimic behavior. *International Journal of Eating Disorders, 9*, 571-575.

Chaiken, S. & Pliner, P. (1987). Women, but not men are what they eat: The effect of meal size and gender on perceived femininity and masculinity. *Personality and Social Psychology Bulletin, 13*, 166-176.

Cooley, E. & Toray, T. (2001). Disordered eating in college freshman women: A prospective study. *Journal of American College Health, 49* (5), 229-235.

Cooper, P.J., Taylor, M. J., Cooper, Z., & Fairburn, C.G. (1987). The development and validation of the Body Shape Questionnaire. *International Journal of Eating Disorders, 6*, 485-494.

DeZwaan, M. (2001). Binge eating disorder and obesity. *International Journal of Obesity, 25*, 551-555.

Dohnt, H.K. & Tiggemann, M. (2006). Body Image Concerns in Young Girls: The Role of Peers and Media Prior to Adolescence. *Journal of Youth and Adolescence, 35*, 141-151.

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*, 123-136.

Fairburn, C.G. & Harrison P.J. (2003). Eating Disorders. *The Lancet, 361,* 407-416.

Fairburn, C.G., Hay, P.J., & Welch, S.L. (1995). Binge eating and bulimia nervosa: distributions and determinants. In C.G. Fairburn & G.T. Wilson (Eds.), *Binge eating: nature assessment and treatment* (pp. 123-142). New York: Guilford Press.

Fairburn, C.G., Welch, S.L., Doll, H.A., Davies, B.D., & O'Connor, M. (1997). Risk factors for bulimia nervosa: a community based case-control study. *Archives of General Psychiatry, 54*, 509-517.

Fallon, E. & Hausenblas, H.A. (2005). Media images of the "ideal" female body: Can acute exercise moderate their psychological impact? *Body Image, 2,* 62-73.

Fitzgibbon, M.L., Sanchez-Johnsen, L.A.P., & Martinovich, Z. (2003). A test of the continuity perspective across bulimic and binge eating pathology. *International Journal of Eating Disorders, 34*, 83-97.

Flegal, K.M., Carroll, M.D., Ogden, C.L., & Johnson, C.L. (2002). Prevalence and trends in obesity among US adults, 1999-2000. *The Journal of the American Medical Association, 288*, 1723-1727.

Freitas, S.R., Appolinario, J.C., Souza, A. de M., & Sichieri, R. (2008). Prevalence of binge eating and associated factors in a Brazilian probability sample of midlife women. *International Journal of Eating Disorders, 41*, 471-478.

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,* 426-438.

Golden, N.H., Katzman, D.K., Kreipe, R.E., Stevens, S.L., Sawyer, S.M., Rees, J., Nicholls, D., & Rome, E.S. (2003). Eating disorders in adolescents: Position paper of the Society for Adolescent Medicine. *Journal of Adolescent Health, 33*, 496–503.

Gotestam, K.G., & Agras, S.W. (1995). General population-based epidemiological study of eating disorders in Norway. *International Journal of Eating Disorders, 18*, 119-126.

Greene, K.S. & Gynther, M.D. (1994). Another Femininity scale? *Psychological Reports, 75*,

163-170.

Grilo, C.M., Wilfley, D.E., Jones, A., Brownell, K.D., & Rodin, J. (1994). The social self, body dissatisfaction, and binge eating in obese females. *Obesity Research, 2*, 24-27.

Groesz, L.M., Levine, M.P., & Murnen, S.K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders, 31*, 1-16.

Grucza, R.A., Przybeck, T.R., & Cloninger, C.R. (2007). Prevalence and correlates of binge eating disorder in a community sample. *Comprehensive Psychiatry, 48*, 124-131.

Gyurkovics, E., Tihanyi, B., Szijarto, A., Kaliszky, P., Temesi, V., Sas, H., & Kupcsulik, P. (2006). Fatal outcome from extreme acute gastric dilation after an eating binge. *International Journal of Eating Disorders, 39,* 602-605.

Hedley, A.A., Ogden, C.L., Johnson, C.L., Carroll, M.D., Curtin, L.R., & Flegal, K.M. (2004). Prevalence of Overweight and Obesity Among US Children, Adolescents, and Adults, 1999-2002. *Journal of the American Medical Association, 291*, 2847-2850.

Holmbeck, G.N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: examples from the child clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology, 65*, 599-610.

Holmbeck, G.N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology, 27*(1), 87-96.

Holt, K.E. & Ricciardelli, L.A. (2008). Weight concerns among elementary school children: A review of prevention programs. *Body Image, 5*, 233-243.

Hsu, L.K.G. (1997). Can dieting cause an eating disorder? *Psychological Medicine, 27*, 509-513.

Huon, G.F., & Strong, K.G. (1998). The initiation and the maintenance of dieting: structural models for large-scale longitudinal investigations. *International Journal of Eating Disorders, 23*, 361-369.

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*, 348-358.

Jackson, T.D., Grilo, C.M., & Masheb, R.M. (2000). Teasing history, onset of obesity, current eating disorder pathology, body dissatisfaction, and psychosocial functioning in binge eating disorder. *Obesity Research, 8*, 451-458.

Jeffery, R.W., Adlis, S.A., & Forster, J.L. (1991). Prevalence of dieting among working men and women: The healthy worker project. *Health Psychology, 10*, 274-281.

Kinzl, J.F., Traweger,C., Trefalt,E., Mangweth,B., & Biebl, W. (1999). Binge eating disorder in females: a population-based investigation. *International Journal of Eating Disorders, 25*, 287-295.

Klein, D.A., & Walsh. B.T. (2004). Eating disorders: clinical features and psychopathology. *Physiology and Behavior, 81*, 359-374.

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 and Adolescent Psychiatry, 39*(10), 1284–1292.

Littleton, H.L., & Ollendick, T.H. (2003). Negative body image and disordered eating behavior in children and adolescents: What places youth at risk and how can these problems be prevented? *Clinical Child and Family Psychology Review, 6*, 51-66.

Malinauskas, B.M., Raedeke, T.D., Aeby, V.G., Smith, J.L., & Dallas, M.B. (2006). Dieting

practices, weight perceptions, and body composition: A comparison of normal weight, overweight, and obese college females. *Nutrition Journal, 5*, 1-8.

Manwaring, J.L., Hilbert, A., Wilfley, D.E., Pike, K.M., Fairburn, C.G., Dohm, F.-A., & Striegel-Moore, R.H. (2006). Risk factors and patterns of onset in binge eating disorder. *International Journal of Eating Disorders 39*, 101-107.

Marcus, M.D. (1995). Binge eating and obesity. In C.G. Fairburn & G.T. Wilson (Eds.), *Binge eating: nature assessment and treatment* (pp. 77-96). New York: Guilford Press.

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, 493-508.

Mensinger, J.L., Bonifazi, D.Z., & LaRosa, J. (2007). Perceived gender role prescriptions in schools, the superwoman ideal, and disordered eating among adolescent girls. *Sex Roles, 57*, 557-568.

Myers, T.A., & Crowther, J.H. (2007). Sociocultural pressures, thin-ideal internalization, self objectivation, and body dissatisfaction: Could feminist beliefs be a moderating factor? *Body Image, 4,* 296-308.

National Eating Disorders Association (2008). Statistics: Eating disorders and their precursors. Retrieved August16, 2008, from http://www.nationaleatingdisorders,org/p.asp?WebPage_ID=286&Profile_ID=41138

Orbach, S. (1978). *Fat is a feminist issue*. New York: Berkeley Press.

Pliner, P. & Chaiken, S. (1990). Eating, social motives, and self-presentation in women and men. *Journal of Experimental Social Psychology, 26*, 240-254.

Preacher, K.J. & Leonardelli, G.J. (2003). Calculation for the Sobel test. An interactive

calculation tool for mediation tests. http://www.people.ku.edu/~preacher/sobel/sobel.htm.

Procopio, C.A., Holm-Denoma, J.M., Gordon, K. H., & Joiner, T.E. Jr. (2006). Two-three-year stability and interrelations of bulimotypic indicators and depressive and anxious symptoms in middle-aged women. *International Journal of Eating Disorders, 39*, 312-319.

Sands, E.R. & Wardle, J. (2003). Internalization of ideal body shapes in 9-12-year-old girls. *International Journal of Eating Disorders, 33*, 193-204.

Santonastaso, P., Ferrara, S., & Favaro, A. (1999). Differences between binge eating disorder and nonpurging bulimia nervosa. *International Journal of Eating Disorders, 25*, 215-218.

Schwalberg, M. D., Barlow, D. H., Alger, S. A., & Howard, L. J. (1992). Comparison of bulimics, obese binge eaters, social phobics, and individuals with panic disorder on comorbidity across DSM–III–R anxiety disorders. *Journal of Abnormal Psychology, 101*, 675–681

Shisslak, C.M., & Crago, M. (1994). Toward a new model for the prevention of Eating disorders. In P. Fallon, M.A. Katzman, & S.C. Wooley (Eds.), *Feminist perspectives on eating disorders* (419-437). New York: Guilford Press.

Sim, L., & Zeman, J. (2006). The contributions of emotion regulation to body dissatisfaction and disordered eating in early adolescent girls. *Journal of Youth and Adolescence, 2*, 219-228.

Sloan, D.M. (2002). Does warm weather climate affect eating disorder pathology? *International Journal of Eating Disorders, 32*, 240-244.

Smith, M.C. & Thelen, M.H. (1984). Development and validation of a test for bulimia. *Journal of Consulting and Clinical Psychology, 52*, 863-872.

Smolak, L. (2004). Body image in children and adolescents: Where do we go from here? *Body Image, 1*, 15–28.

Spitzer, R.L., Yanovski, S., Wadden, T., Wing, R., Marcus, M.D., Stunkard, A., Devlin, M., Mitchell, J., Hasin, D., & Horne, R.L. (1993). Binge eating disorder: Its further validation in a multisided study. *International Journal of Eating Disorders, 13*, 137-153.

Spurrell, E.B., Wilfley, D.E., Tanofsky, M.B., & Brownell, K.D. (1997). Age of onset of binge eating: Are there different pathways to binge eating? *International Journal of Eating Disorders, 21*, 55-65.

Stice, E. (2001). A prospective test of the dual-pathway model of bulimic pathology: mediating effects of dieting and negative affect. *Journal of Abnormal Psychology, 110*, 124-135.

Stice, E. & Bearman, S.K. (2001). Body-image and eating disturbances prospectively predict increases in depressive symptoms in adolescent girls: A growth curve analysis. *Developmental Psychology, 37*, 597-607.

Stice, E., Cameron, R., Killen, J.D., Hayward, C., & Taylor, C.B. (1999). Naturalistic weight reduction efforts prospectively predict growth in relative weight and onset of obesity among female adolescents. *Journal of Consulting and Clinical Psychology, 67*, 967-974.

Stice, E., Killen, J.D., Hayward, C., & Taylor, C.B. (1998). Support for the continuity hypothesis of bulimic pathology. *Journal of Consulting and Clinical Psychology, 66*, 784-790.

Stice, E., Presnell, K., Shaw, H., & Rohde, P. (2005). Psychological and behavioral risk factors for obesity onset in adolescent girls: A prospective study. *Journal of Consulting and Clinical Psychology, 73*, 195-202.

Stice, E. & Ragan, J. (2002). A preliminary controlled evaluation of an eating disturbance psychoeducational intervention for college students. *International Journal of Eating Disorders, 31*, 159-171.

Stice, E., & Shaw, H.E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research, 53*, 985-993.

Striegel-Moore, R.H. (1993). Etiology of binge eating: a developmental perspective. In C.G. Fairburn & G.T. Wilson (Eds.), *Binge eating: nature assessment and treatment* (144-172). New York: Guilford Press.

Striegel-Moore, R.H., Dohm, F.-A., Kraemer, H.C., Schreiber, G.B., Taylor, C.B., & Daniels, S.R. (2007). Risk factors of binge eating disorders: An exploratory study. *International Journal of Eating Disorders, 40*, 481-487.

Striegel-Moore, R.H., Silberstein, L.R., Frensch, P., & Rodin, J. (1989). A prospective study of disordered eating among college students. *International Journal of Eating Disorders, 8*, 499-509.

Striegel-Moore, R.H., Silberstein, L.R., & Rodin, J. (1986). Toward an understanding of risk factors in bulimia. *American Psychologist, 41*, 246-263.

Stunkard, A. (1997). Eating disorders: The last 25 years. *Appetite, 29*, 181-190.

Tanofsky-Kraff, M., Faden, D., Yanovski, S.Z., Wilfley, D.E., & Yanovski, J.A. (2005). The perceived onset of dieting and loss of control eating behaviors in children. *International Journal of Eating Disorders, 38,* 112-122.

Tanofsky-Kraff, M., Yanovski, S. Z., Wilfley, D. E., Marmarosh, C., Morgan, C. M., & Yanovski, J. A. (2004). Eating-disordered behaviours, body fat, and psychopathology in

overweight and normal-weight children. *Journal of Consulting and Clinical Psychology, 72*, 53–61.

Thelen, M.H., Farmer, J., Wonderlich, S., & Smith, M. (1991). A revision of the bulimia test: The BULIT-R. *Psychological Assessment, 3*, 119-124.

Thelen, M.H., Mintz, L.B., & Vander Wal, J.S. (1996). The bulimia test-revised: Validation with DSM IV criteria for bulimia nervosa. *Psychological Assessment, 8*, (2), 219-221.

Thelen, M.H., Powell, A.L., Lawrence, C., & Kuhnert, M.E. (1992). Eating and body image concerns among children. *Journal of Clinical Child Psychology, 21*, 41-46.

Thompson, J.K., van den Berg, P., Roehrig, M., Guarda, A.S., & L.G. Heinberg, (2004). The Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ-3): Development and validation, *International Journal of Eating Disorders , 35*, 293–304.

Timko, C., Striegel-Moore, R.H., Silberstein, L.R., & Rodin, J. (1987). Femininity / masculinity and disordered eating in women: How are they related? *International Journal of Eating Disorders, 6*, 701-712.

Vollrath, M., Koch, R., & Angst, J. (1992**)**. Binge eating and weight concerns among young adults. Results from the Zurich cohort study. *The British Journal of Psychiatry, 160*, 498-503.

Walsh, T. (1998). Eating disorders: progress and problems, regulation and body weight. *Science, 5368*, 1387-1396.

Weiss, E.C., Galuska, D.A., Khan, L.K., & Serdula, M.K. (2006). Weight control practices among U.S. adults, 2001-2002. *American Journal of Preventive Medicine, 31*, (1), 18-24.

Wilfley, D.E., Wilson, G.T., & Agras, W.S. (2003). The clinical significance of binge eating disorder. *International Journal of Eating Disorders, 34* (Suppl): 96–106.

Wilson, T.G., & Pike, K.M. (1993). Eating disorders. In D.H. Barlow (Ed.), *Clinical handbook of psychological disorders* (pp. 278-317). New York: Guilford Press.

Wolf, N. (2002). *The Beauty Myth: How images of beauty are used against women*. New York: Harper Collins Publishers Inc.

Wolff, G.E., Crosby, R.D., Roberts, J.A., & Wittrock, D.A. (2000). Differences in daily stress, mood, coping, and eating behavior in binge eating and nonbinge eating college women. *Addictive Behaviors, 25*, 205-216.

Wood, K.C., Becker, J.A., & Thompson, J.K. (1996). Body image dissatisfaction in preadolescent children. *Journal of Applied Developmental Psychology, 17*, 85-100.

Footnotes

[1] *Body-dissatisfaction as a mediator between femininity and bulimia purging type*

Hierarchical linear regressions were computed to assess whether measures of body dissatisfaction mediated the relations between femininity and BNP. Sobel's test ($z = 3.77$) was significant at the $p < .001$ level, with approximately 50.58 % of the femininity-BNP path accounted for by body-dissatisfaction.

[2] *Body-dissatisfaction as a mediator between femininity and bulimia non- purging type*

Hierarchical linear regressions were computed to assess whether measures of body dissatisfaction mediated the relations between femininity and BNNP. Sobel's test ($z = 3.79$) was significant at the $p < .001$ level, with approximately 46.57 % of the femininity-BNNP path accounted for by body-dissatisfaction.

[3]*Body-dissatisfaction as a mediator between feminine gender role stress and bulimia purging type*

Hierarchical linear regressions were computed to assess whether measures of body dissatisfaction mediated the relations between feminine gender role stress and BNP. Sobel's test ($z = 5.49$) was significant at the $p < .001$ level, with approximately 50.59 % of the feminine gender role stress-BNP path accounted for by body-dissatisfaction.

[4] *Body-dissatisfaction as a mediator between feminine gender role stress and bulimia non-purging type*

Hierarchical linear regressions were computed to assess whether measures of body dissatisfaction mediated the relations between feminine gender role stress and BNNP. Sobel's test ($z = 5.54$)

was significant at the $p < .001$ level, with approximately 52.77 % of the feminine gender role stress BNNP path accounted for by body-dissatisfaction.

Table 1*: Zero-order Correlations*

	BED	**BNP**	**BNNP**	**BULIT-R**	**BSRF**	**FGRS**	**BSQ**
BED **Pearson Correlation** Sig. (2-tailed)	1						
BNP **Pearson Correlation** Sig. (2-tailed)	.798** .000	1					
BNNP **Pearson Correlation** Sig. (2-tailed)	.765** .000	.938** .000	1				
BULIT-R **Pearson Correlation** Sig. (2-tailed)	.692** .000	.747** .000	.722** .000	1			
BSRF **Pearson Correlation** Sig. (2-tailed)	.050 .351	.107* .043	.140** .008	.104* .049	1		
FGRS **Pearson Correlation** Sig. (2-tailed)	.105* .049	.158** .003	.153** .004	.208** .000	.199** .000	1	
BSQ **Pearson Correlation** Sig. (2-tailed)	.413** .000	.581** .000	.566** .000	.748** .000	.203** .000	.299** .000	1

Note. * $p < .05$ level (2-tailed). ** $p < .01$ level (2-tailed). N=355

BED = binge eating disorder; BNP = bulimia nervosa purging type; BNNP = bulimia nervosa non-purging type; BULIT = bulimia nervosa; BSRF = Behavioral Self-Report of Femininity; FGRS = Feminine Gender Role Stress Scale; BSQ = Body Shape Questionnaire

Table 2: *Descriptive Statistics*

	N	Range	Minimum	Maximum	Mean	Std. Deviation
BED	355	4.00	.00	4.00	.6282	1.18955
BNP	355	4.00	.00	4.00	.8507	.88472
BNNP	355	4.00	.00	4.00	.9380	.98094
BULIT-R	355	95.00	28.00	123.00	53.2761	19.68774
BSRF	355	143.00	47.00	190.00	113.6620	25.65908
FGRS	355	141.00	49.00	190.00	129.5211	24.60689
BSQ	355	155.00	34.00	189.00	94.7521	34.53878

Note: BED = binge eating disorder; BNP = bulimia nervosa purging type; BNNP = bulimia nervosa non-purging type; BULIT-R = bulimia nervosa; BSRF = Behavioral Self-Report of Femininity; FGRS = Feminine Gender Role Stress Scale; BSQ = Body Shape Questionnaire

Figure 1

Mediation model for associations between femininity and bulimia as mediated by body dissatisfaction. **p* < .05. ***p* < .01.

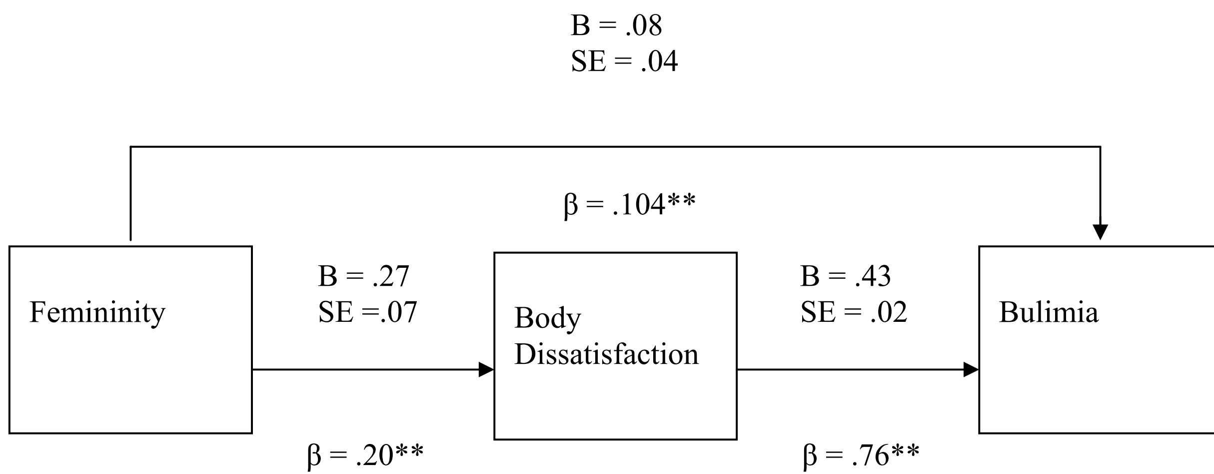


Figure 2

Mediation model for associations between feminine gender role stress and bulimia as mediated by body dissatisfaction. *$p < .05$. **$p < .01$.

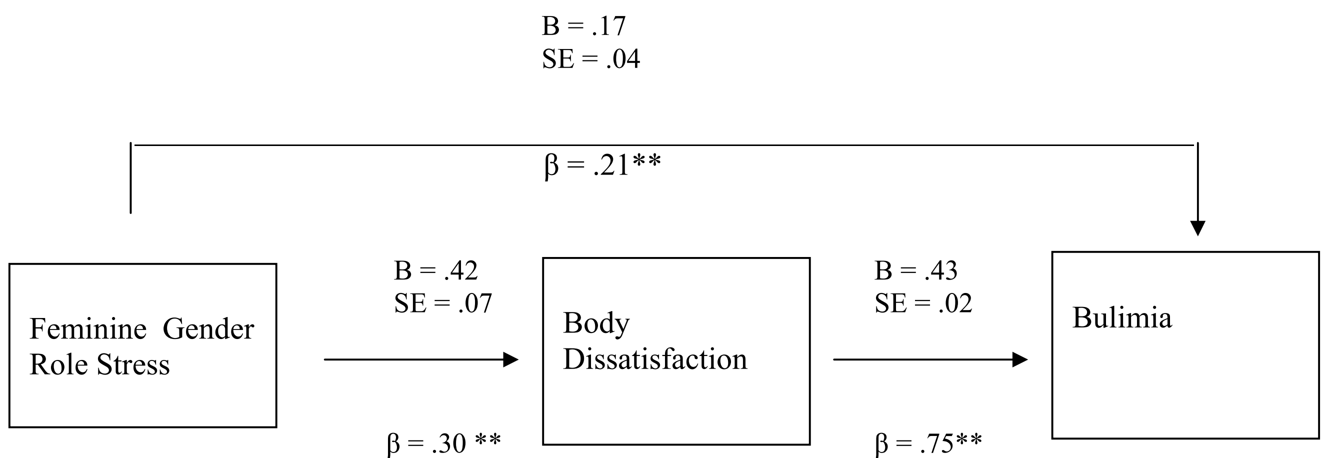
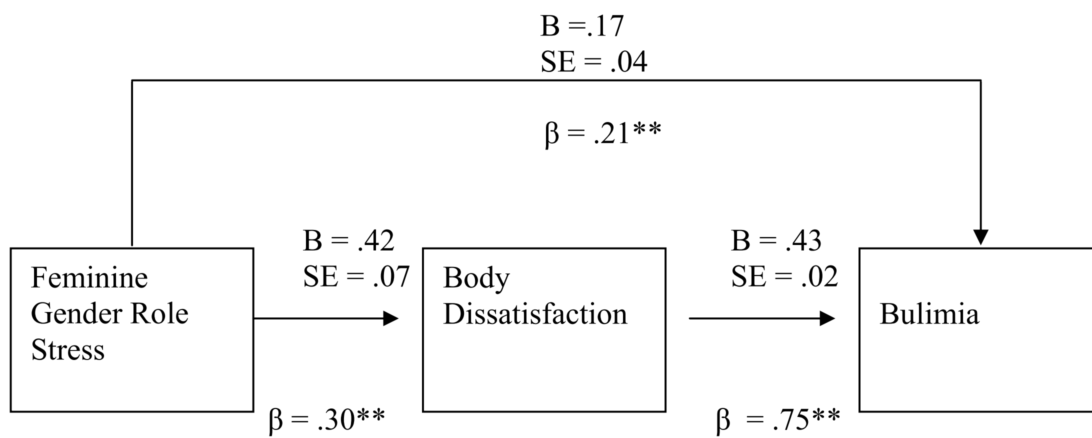


Figure 3
Mediation model for associations between feminine gender role stress and binge eating disorder as mediated by body dissatisfaction. *$p < .05$. **$p < .01$.



Appendix A

QEWP-R

Instructions: Answer all questions that require written answers on the blank sheet of paper provided in the packet. Please write each question with its corresponding number.

(1-3) Please write your responses on the blank piece of paper provided.
1. How tall are you?
____ feet ___ ___ in

2. How much do you weigh now?
________ lbs

3. What has been your highest weight ever (when not pregnant)?
________ lbs

4. Have you ever been overweight by at least 10 lbs as a child or 15 lbs as an adult (when not pregnant)?
1 = Yes
2 = No or not sure

5.. **IF YES**: How old were you when you were first overweight (at least 10 lbs as a child or 15 lbs as an adult?) **If you are not sure**, what is your best guess? **Please write your responses on the blank piece of paper provided.**
____ ___ years

6. How many times (approximately) have you lost 20 lbs or more -- when you weren't sick -- and then gained it back?

1 = Never
2 = Once or twice
3 = Three or four times
4 = Five times or more

7. During the past six months, did you often eat within any two-hour period what most people would regard as an unusually large amount of food?
1 = Yes
2 = No
IF NO: SKIP TO QUESTION 20

8. During the times when you ate this way, did you often feel you couldn't stop eating or control what or how much you were eating?
1 = Yes

2 = No

IF NO: SKIP TO QUESTION 20

9. During the past **six** months, how often, on average, did you have times when you ate this way -- that is, large amounts of food **plus** the feeling that your eating was out of control? (There may have been some weeks when it was not present --just average those in).

1 = Less than one day a week
2 = One day a week
3 = Two or three days a week
4 = Four or five days a week
5 = Nearly every day

Did you **usually** have any of the following experiences during these occasions?

10.Eating much more rapidly than usual?
1 = Yes 2 = No

11. Eating until you felt uncomfortably full?
1 = Yes 2 = No

12. Eating large amounts of food when you didn't feel physically hungry?
1 = Yes 2 = No

13. Eating alone because you were embarrassed by how much you were eating?
1 = Yes 2 = No

14. Feeling disgusted with yourself, depressed, or feeling very guilty after overeating?
1 = Yes 2 = No

Think about a typical time when you ate this way --that is, large amounts of food **plus** the feeling that your eating was out of control.

15. What time of day did the episode start?
1 = Morning (8 AM to 12 Noon)
2 = Early afternoon (12 Noon to 4 PM)
3 = Late afternoon (4 PM to 7 PM)
4 = Evening (7 PM-10 PM)
5 = Night (After 10 PM)

16. Approximately how long did this episode of eating last, from the time you started to eat to when you stopped and didn't eat again for at least two hours? (Please Answer on blank paper provided)

____ hours ____ minutes **Please write your response on the blank piece of paper provided.**

17. As best you can remember, please list everything you might have eaten or drunk during that episode. If you ate for more than two hours, describe the foods eaten and liquids drunk during the two hours that you ate the most. Be specific- include brand names where possible, and amounts as best you can estimate.
(For example: 7 ounces Ruffles potato chips; 1 cup Breyer's chocolate ice cream with 2 teaspoons hot fudge; 2 8-ounce glasses of Coca-cola, 1 & 1/2 ham and cheese sandwiches with mustard). **Please write your response on the blank piece of paper provided.**

18. At the time this episode started, how long had it been since you had previously finished eating a meal or snack? (Please answer on the blank paper provided)
____ hours ____ minutes **Please write your response on the blank piece of paper provided.**

19**.** In general, during the past **six** months, how upset were you by overeating (eating more than you think is best for you)?

1 = Not at all
2 = Slightly
3 = Moderately
4 = Greatly
5 = Extremely

20. In general, during the past **six** months, how upset were you by the feeling that you couldn't stop eating or control what or how much you were eating?

1 = Not at all
2 = Slightly
3 = Moderately
4 = Greatly
5 = Extremely

21. During the past **six** months, how important has your weight or shape been in how you feel about or evaluate yourself as a person-- as compared to other aspects of your life, such as how you do at work, as a parent, or how you get along with other people?

1 = Weight and shape were **not very important**
2 = Weight and shape **played a part** in how you felt about yourself
3 = Weight and shape **were among the main things** that affected how you felt about yourself
4 = Weight and shape **were the most important things** that affected how you felt about yourself

22. During the past three months, did you ever make yourself vomit in order to avoid gaining weight after binge eating?
1 = Yes 2 = No
23. **IF YES**: How often, on average, was that?
1 = Less than once a week
2 = Once a week
3 = Two or three times a week
4 = Four or five times a week
5 = More than five times a week

24. During the past three months, did you ever take more than twice the recommended dose of laxatives in order to avoid gaining weight after binge eating?
1 = Yes 2 = No

25. **IF YES**: How often, on average, was that?
1 = Less than once a week
2 = Once a week
3 = Two or three times a week
4 = Four or five times a week
5 = More than five times a week

26. During the past three months, did you ever take more than twice the recommended dose of diuretics (water pills) in order to avoid gaining weight after binge eating?
1 = Yes 2 = No

27. **IF YES**: How often, on average, was that?
1 = Less than once a week
2 = Once a week
3 = Two or three times a week
4 = Four or five times a week
5 = More than five times a week

28. During the past three months, did you ever fast -- not eat anything at all for at least 24 hours -in order to avoid gaining weight after binge eating?
1 = Yes 2 = No

29. **IF YES**: How often, on average, was that?
1 = Less than one day a week
2 = One day a week

3 = Two or three days a week
4 = Four or five days a week
5 = Nearly every day

30. During the past three months, did you ever exercise for more than an hour specifically in order to avoid gaining weight after binge eating?

1 = Yes 2 = No

31. **IF YES**: How often on average, was that?

1 = Less than once a week
2 = Once a week
3 = Two or three times a week
4 = Four or five times a week
5 = More than five times a week

32. During the past three months, did you ever take more than twice the recommended dose of a diet pill in order to avoid gaining weight after binge eating?

1 = Yes 2 = No

33. **IF YES**: How often on average, was that?

1 = Less than once a week
2 = Once a week
3 = Two or three times a week
4 = Four or five times a week
5 = More than five times a week

34. During the past six months, did you go to any meetings of an organized weight control program? (e.g. Weight Watchers, Optifast, Nutrisystem) or a self-help group (e.g., TOPS, Overeaters Anonymous)?

1 = Yes 2 = No

35. **IF YES**: Name of program________________ **Please write your response on the blank piece of paper provided.**

36. Since you have been an adult—18 years old-- how much of the time have you been on a diet, been trying to follow a diet, or in some way been limiting how much you were eating in order to lost weight or keep from regaining weight you had lost? Would you say...?

1 = None or hardly any of the time
2 = About a quarter of the time
3 = About half of the time
4 = About three-quarters of the time
5 = Nearly all of the time

37. **SKIP THIS QUESTION IF YOU NEVER LOST AT LEAST 10 LBS BY DIETING**: How old were you the first time you lost at least 10 lbs by dieting, or in some way limiting how much you ate? If you are not sure, what is your best guess?

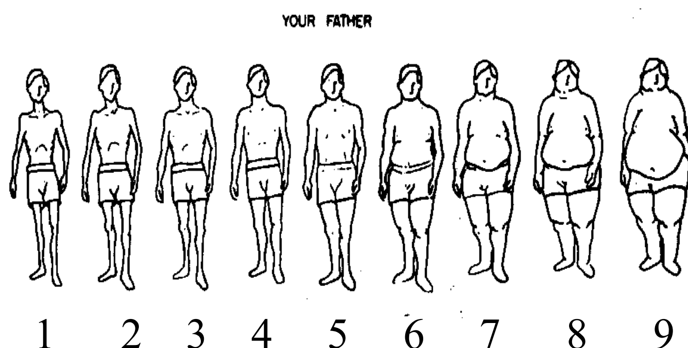
____ ___ years **Please write your response on the blank piece of paper provided.**

38**. SKIP THIS QUESTION IF YOU'VE NEVER HAD EPISODES OF EATING UNUSUALLY LARGE AMOUNTS OF FOOD ALONG WITH THE SENSE OF LOSS OF CONTROL**: How old were you when you first had times when you ate large amounts of food and felt that your eating was out of control? If you are not sure, what is your best guess?

____ ___ years **Please write your response on the blank piece of paper provided.**

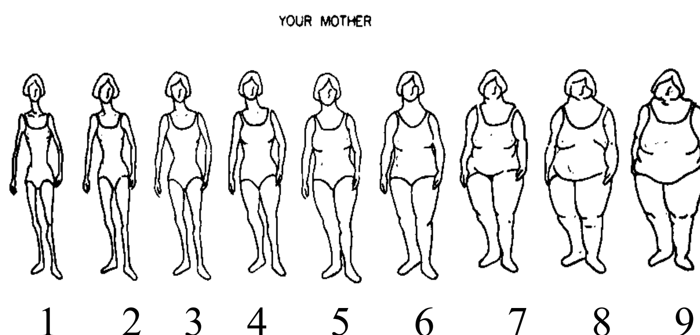
Please take a look at these silhouettes. Choose the number of the silhouettes which most resemble the body build of your natural father and mother at their heaviest. If you have no knowledge of your biological father and/or mother, don't choose anything for that parent.

39.



1 2 3 4 5 6 7 8 9

40.



1 2 3 4 5 6 7 8 9

BULIT-R

Answer each question by filling in the appropriate circle on the computer answer sheet. Please respond to each item as honestly as possible; remember all of the information you provide will be kept strictly confidential.

1. I am satisfied with my eating patterns
   1 agree
   2 neutral
   3 disagree a little
   4 disagree
   5 disagree strongly
2. Would you presently call yourself a "binge eater"?
   1 yes, absolutely
   2 yes
   3 yes, probably
   4 yes, possible
   5 no, probably not
3. Do you feel you have control over the amount of food you consume?
   1 most or all of the time
   2 a lot of the time
   3 occasionally
   4 rarely
   5 never
4. I am satisfied with the shape and size of my body.
   1 frequently or always
   2 sometimes
   3 occasionally
   4 rarely
   5 seldom or never
5. When I feel that my eating behavior is out of control, I try to take rather extreme measures to get back on course (strict dieting, fasting, laxatives, diuretics, self-induced vomiting, or vigorous exercise).
   1 always
   2 almost always
   3 frequently
   4 sometimes
   5 never or my eating behavior is never out of control
6. I use laxatives or suppositories to help control my weight.
   1 once a day or more
   2 3-6 times a week
   3 once or twice a week
   4 2-3 times a month
   5 once a month or less (or never)
7. I am obsessed about the size and shape of my body.
   1 always
   2 almost always
   3 frequently
   4 sometimes
   5 seldom or never

8. There are times when I rapidly eat a very large amount of food.
   1 more than twice a week
   2 twice a week
   3 once a week
   4 2-3 times a month
   5 once a month or less (or never)
9. How long have you been binge eating (eating uncontrollable to the point of stuffing yourself)?
   1 not applicable; I don't binge eat
   2 less than 3 months
   3 3 months-1 year
   4 1-3 years
   5 3 or more years
10. Most people I know would be amazed if they knew how much food I can consume at one sitting.
   1 without a doubt
   2 very probably
   3 probably
   4 possibly
   5 no
11. I exercise in order to burn calories.
   1 more than 2 hours per day
   2 about 2 hours per day
   3 more than 1 but less than 2 hours per day
   4 one hour or less per day
   5 I exercise but not to burn calories or I don't exercise
12. Compare with women your age, how preoccupied are you about your weight and body shape?
   1 a great deal more than average
   2 much more than average
   3 more than average
   4 a little more than average
   5 average or less than average
13. I am afraid to eat anything for fear that I won't be able to stop.
   1 always
   2 almost always
   3 frequently
   4 sometimes
   5 seldom or never
14. I feel tormented by the idea that I am fat or might gain weight.
   1 always
   2 almost always
   3 frequently
   4 sometimes
   5 seldom or never
15. How often do you intentionally vomit after eating?
   1 2 or more times a week
   2 once a week
   3 2-3 times a month
   4 once a month
   5 less than once a month or never

16. I eat a lot of food when I'm not even hungry.
    1 very frequently
    2 frequently
    3 occasionally
    4 sometimes
    5 seldom or never
17. My eating patterns are different from the eating patterns of most people.
    1 always
    2 almost always
    3 frequently
    4 sometimes
    5 seldom or never
18. After I binge eat I turn to one of several strict methods to try to keep from gaining weight (vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics).
    1 never or I don't binge eat
    2 rarely
    3 occasionally
    4 a lot of the time
    5 most or all of the time
19. I have tried to lose weight by fasting or going on strict diets.
    1 not in the past year
    2 once in the past year
    3 2-3 times in the past year
    4 4-5 times in the past year
    5 more than five times in the past year
20. I exercise vigorously and for long periods of time in order to burn calories.
    1 average or less than average
    2 a little more than average
    3 more than average
    4 much more than average
    5 a great deal more than average
21. When engaged in an eating binge, I tend to eat foods that are high in carbohydrates (sweets and starches).
    1 always
    2 almost always
    3 frequently
    4 sometimes
    5 seldom, or I don't binge
22. Compared to most people, my ability to control my eating behavior seems to be:
    1 greater than others' ability
    2 about the same
    3 less
    4 much less
    5 I have absolutely no control
23. I would presently label myself a "compulsive eater" (one who engages in episodes of uncontrollable eating).
    1 absolutely
    2 yes
    3 yes, probably
    4 yes, possibly
    5 no, probably not

24. I hate the way my body looks after I eat too much.
    1 seldom or never
    2 sometimes
    3 frequently
    4 almost always
    5 always
25. When I am trying to keep from gaining weight, I feel that I have to resort to vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics.
    1 never
    2 rarely
    3 occasionally
    4 a lot of the time
    5 most or all of the time
26. Do you believe that it is easier for you to vomit that it is for most people?
    1 yes, it's no problem at all for me
    2 yes, it's easier
    3 yes, it's a little easier
    4 about the same
    5 no, it's less easy
27. I use diuretics (water pills) to help control my weight.
    1 never
    2 seldom
    3 sometimes
    4 frequently
    5 seldom or never
28. I feel that food controls my life.
    1 always
    2 almost always
    3 frequently
    4 sometimes
    5 seldom or never
29. I try to control my weight by eating little or no food for a day or longer.
    1 never
    2 seldom
    3 sometimes
    4 frequently
    5 very frequently
30. When consuming a large quantity of food, at what rate of speed do you usually eat?
    1 more rapidly than most people have ever eaten in their lives
    2 a lot more rapidly than most people
    3 a little more rapidly than most people
    4 about the same rate than most people
    5 more slowly than most people (or not applicable)
31. I use laxatives or suppositories to help control my weight.
    1 never
    2 seldom
    3 sometimes
    4 frequently
    5 very frequently

32. Right after I binge eat I feel:
    1 so fat and bloated I can't stand it
    2 extremely fat
    3 fat
    4 a little fat
    5 OK about how my body looks or I never binge eat
33. Compared to other people of my sex, my ability to always feel in control of how much I eat is:
    1 about the same or greater
    2 a little less
    3 less
    4 much less
    5 a great deal less
34. In the last 3 month, on the average how often did you binge eat (eat uncontrollable to the point of stuffing yourself)?
    1 once a month or less (or never)
    2 2-3 times a month
    3 once a week
    4 twice a week
    5 more than twice a week
35. Most people I know would be surprised at how fat I look after I eat a lot of food.
    1 yes, definitely
    2 yes
    3 yes, probably
    4 yes, possibly
    5 no, probably not or I never eat a lot of food
36. I use diuretics (water pills) to help control my weight.
    1 3 times a week or more
    2 once or twice a week
    3 2-3 times a month
    4 once a month
    5 never

Appendix C

Behavioral Self-Report of Femininity

Directions: Please read the following items and rate how often you have engaged in each behavior within the last year. Rate each item on a scale from 1 to 5, ranging from never to very often.

1----------------------2---------------------3----------------------4---------------------5

never   once or twice   several times   often   very often

1. I have spent an hour or more getting ready to go to work, school, or on a date. ____
2. I have openly cried when someone hurt my feelings. ____
3. I have gone shopping for clothes/shoes for fun. ____
4. I have written a thank you note. ____
5. I have had a manicure or used nail polish. ____
6. When given a choice of several movies to see I have picked the one with a romantic plot. ___
7. I have given gifts to others, even though it was not a special occasion. ____
8. I have ironed my clothes and/or sewn on buttons when needed. ____
9. I watch the Opera, Donahue or Joan Rivers shows. ____
10. I have apologized to someone to keep the peace, even though I thought I was in the right. ___
11. I have changed a tire on my car. ____
12. I have read a romance novel. ____
13. I have faked an orgasm. ____
14. In describing colors, I have used words like “mauve, puce, or cranberry” ____
15. I have clipped coupons out of the newspaper. ____
16. I have cleaned house because company was coming. ____
17. I have held, changed, and/or taken care of a baby. ____
18. I have asked for directions when lost. ____
19. I have read recipes in my free time. ____
20. I have used cream to prevent wrinkles. ____
21. I have participated in aerobic exercise/dance class. ____
22. I have worn makeup. ____
23. I have eaten quiche, rice cakes, and/or yogurt. ____
24. I have hugged a same-sex friend. ____
25. I have slept with a stuffed animal on my bed. ____
26. I have participated in church activities. ____
27. I have cried or pouted to get my way. ____
28. I have changed my clothing two or three times before a date or special occasion. ___
29. I have watched daytime soap operas on TV. ____
30. I have gone to a full service gas station. ____
31. I have baked a cake, pie, or cookies. ____
32. I have read a fashion magazine. ____

33. When on dates, I have chosen the activities for the outing and have paid for all the related expenses. ____
34. I have completed arts and crafts projects. ____
35. I have confided intimate secrets to a friend or counselor. ____
36. I have bought greeting cards for friends/family. ____
37. I have bought/arranged fresh flowers for myself. ____
38. I have avoided going somewhere at night for safety reasons. ____
39. I have read the society column of the newspaper. ____
40. I have given advice to others for intimate, personal problems. ____
41. I have worn three of more different kinds of jewelry at one time. ____
42. I have carried a purse. ____
43. I have gone to a baby shower, wedding shower, or luncheon. ____
44. I have entered or watched a beauty pageant. ____
45. I have called or written my parents/grandparents. ____
46. I have worn stylish shoes, even though they were uncomfortable. ____
47. I have daydreamed about being married. ____
48. I have felt embarrassed when someone cursed or told a dirty joke. ____
49. I have attended a sorority function. ____
50. I have worn ribbons or bows in my hair. ____
51. I have used facial masks to improve my skin tone. ____
52. I have received corsages to wear on dates. ____
53. I have worn fancy lingerie purchased form Victoria's Secret, Frederick's of Hollywood, etc. ____
54. I have waited for men to open doors for me. ____
55. I have shaved my legs. ____
56. I have worn string bikinis or skimpy bathing suits while sunbathing or at the beach. ____
57. I have received flowers delivered by a special messenger. ____
58. I have collected or have been given items for my trousseau/hope chest. ____
59. I have gone to a public restroom in the company of a same-sex friend. ____

Appendix D

Feminine Gender Role and Stress Scale

Directions: Please read the descriptions of the following situations. Then rate how stressful the situation would be for you if it has happened or did happen in the future. Give each item a rating on the scale from 1 to 6, ranging from not stressful to extremely stressful. Note: the term "mate" refers to either a spouse or partner in an intimate relationship.
For example:

A. Driving a car 1
B. Discovering you have a serious illness 6
C. Losing your keys 2

****

1------------2--------------3--------------4-----------------5------------------6
Not at all stressful ... Extremely stressful

****

1. Being perceived by others as overweight ____
2. Not being able to meet family members emotional need ____
3. Feeling less attractive than you once were ____
4. Trying to be a good parent and excel at work ____
5. Having others believe that 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 dislike by his/her peers ____
9. Wearing a bathing suit in public ____
10. Having a weak incompetent spouse ____
11. Making sure you are not taken advantage of when buying a house or 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 city or 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 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 breakdown in the middle of the road ____
30. Having multiple sex partners ____
31. Having to “sell” yourself at a job interview ____
32. Hearing that a dangerous criminal 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 childcare ____
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 gained 10 pounds ____

Appendix E

Body Shape Questionnaire

We should like to know how you have been feeling about your appearance over the PAST FOUR WEEKS. Please read each question and circle the appropriate number to the right. Please answer all the questions. OVER THE PAST FOUR WEEKS.

1. Has feeling bored made you brood about your shape?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
2. Have you been so worried about your shape that you have been feeling that you ought to diet?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
3. Have you thought that you thighs, hip, or bottom are too large for the rest of you?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
4. Have you been afraid that you might become fat (or fatter)?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
5. Have you been worried about you flesh not being firm enough?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
6. Has feeling full (e.g., after eating a large meal) made you feel fat?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
7. Have you felt so bad about your shape that you have cried?

1 never
2 rarely
3 sometimes
4 often
5 very often
6 always

8. Have you avoided running because your flesh might wobble?

1 never
2 rarely
3 sometimes
4 often
5 very often
6 always

9. Has being with thin women made you feel self-conscious about your shape?

1 never
2 rarely
3 sometimes
4 often
5 very often
6 always

10. Have you worried about your thighs spreading out when sitting down?

1 never
2 rarely
3 sometimes
4 often
5 very often
6 always

11. Has eating even a small amount of food made you feel fat?

1 never
2 rarely
3 sometimes
4 often
5 very often
6 always

12. Have you noticed the shape of other women and felt that you own shape compared unfavorably?

1 never
2 rarely
3 sometimes
4 often
5 very often
6 always

13. Has thinking about your shape interfered with you ability to concentrate (e.g., while watching television, reading, listening to conversations)?

1 never
2 rarely
3 sometimes
4 often
5 very often
6 always

14. Has being naked, such as when taking a bath, made you feel fat?

1 never
2 rarely
3 sometimes
4 often
5 very often
6 always

15. Have you avoided wearing clothes which make you particularly aware of the shape of your body?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always
16. Have you imagined cutting off fleshy areas of your body?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always
17. Has eating sweets, cakes, or other high calorie food made you feel fat?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always
18. Have you not gone out to social occasions (e.g., parties) because you have felt bad about your shape?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always
19. Have you felt excessively large and rounded?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always
20. Have you felt ashamed of you body?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always

21. Has worry about your shape made you diet?

1 never
2 rarely
3 sometimes
4 often
5 very often
6 always

22. Have you felt happiest about your shape when you stomach has been empty (e.g., in the morning)?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always
23. Have you thought that you are the shape you are because you lack self-control?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always
24. Have you worried about other people seeing rolls of flesh around you waist or stomach?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always
25. Have you felt that it is not fair that other women are thinner than you?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always
26. Have you vomited in order to feel thinner?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always
27. When in company have you worried about taking up too much room (e.g., sitting on a sofa or bus seat)?
    1 never
    2 rarely
    3 sometimes
    4 often
    5 very often
    6 always

28. Have you worried about you flesh being dimply?

1 never
2 rarely
3 sometimes
4 often
5 very often
6 always

29. Has seeing you reflection (e.g., in a mirror or shop window) made you feel bad about your shape)?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
30. Have you pinched areas of your body to see how much fat there is?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
31. Have you avoided situations where people could see your body (e.g., communal changing rooms or swimming baths)?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
32. Have you taken laxatives in order to feel thinner?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
33. Have you been particularly self-conscious about you shape when in the company of other people?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always
34. Has worry about your shape made you feel you ought to exercise?
   1 never
   2 rarely
   3 sometimes
   4 often
   5 very often
   6 always

Appendix F
Virginia Polytechnic Institute and State University
Informed Consent for Participants of Investigative Projects

Title of Project: Sex role socialization and its effects on eating attitudes
Investigators: Nancy Romero, Angela Scarpa, Ph.D.

I. **The Purpose of this Research/Project.** You are invited to participate in a study that is examining femininity and its relationship to women's attitudes toward food.
II. **Procedures.** You will be asked to complete the questionnaires that will be given to you. These questionnaires will assess your eating habits, beliefs and attitudes, and you will be asked to rate some specific stressors. The process will take less than two hours.
III. **Risks.** There are no apparent risks to you for participating in this study. However, you might find out certain information about yourself from participating in this research. You may contact the Psychological Services Center at Virginia Tech (231-6914) or the Counseling Center (231-6557) if you experience some emotional discomfort.
IV. **Benefits.** Your responses will provide us with valuable information that will help us understand how sex role socialization affects a woman's eating behavior.
V. **Extent of Anonymity and Confidentiality.** Any information obtained during this research will be kept confidential. Your responses will not be released to anyone other than individuals working on the project without your written consent.
VI. **Compensation.** For your participation in this study, you may receive one extra credit point per hour if you are taking a psychology class that offers this option.
VII. **Freedom to Withdraw.** You are free to withdraw from the study at any time without penalty. You are also free to skip questions that you might not want to answer.
VIII. **Approval of Research.** This project has been approved, as required, by the Human Subjects Committee of the Department of Psychology and the Institutional Review Board for Research Involving Human Subjects at Virginia Polytechnic Institute and State University.
IX. **Subject's Responsibilities.** I voluntarily agree to participate in this study and to complete the questionnaires.
X. **Subject's Permission.** I have read and understand the Informed Consent or it has been read to me. Any questions I have pertaining to the study have been answered. I hereby acknowledge the above information and give my voluntary consent for participation in this project. A copy of this consent form will be given to me.

If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

______________ ______________ ______________
Signature Subjects Name Date

____
Experimenter's Signature

Should I have any questions pertaining to this research or its conduct, I may contact:

Primary Researcher:	Nancy Romero	231-2053
Research Advisor:	Angela Scarpa, Ph.D.	231-2615
Chair, Human Subjects Committee:	R.J. Harvey, Ph.D.	231-7030
Chair, Institutional Review Board	David Moore, Ph.D.	231-4991