

THE EFFECTS OF FEMALE GENDER ROLE APPRAISAL AND BODY IMAGE
THREAT ON THE STRESS RESPONSES OF WOMEN:
A VALIDATION OF THE FEMININE GENDER ROLE STRESS SCALE

by

Denise M. Martz-Ludwig

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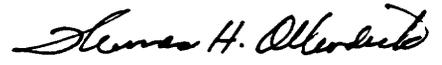
APPROVED:



Richard M. Eisler, Ph.D. Chair



Laurie Desiderato, Ph.D



Thomas H. Ollendick, Ph.D.



Douglas R. Southard, Ph.D.

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Committee Chairperson: Richard M. Eisler, Ph.D.

Department of Psychology

(ABSTRACT)

The purpose of the present study was 1) to begin exploring the relationship between female gender role stress and eating disorders and 2) to validate the ability of the Feminine Gender Role Stress scale (FGRS; Gillespie, 1990) to distinguish between women who are more likely to evidence behavioral and physiological reactivity to a "feminine" (body image) stressor than a neutral control condition. The FGRS scale was developed to measure the cognitive tendency among women to appraise specific situations as stressful due to commitments, beliefs, and values that are a product of the traditional female gender role. It was proposed that women with high female gender role stress, as measured by this scale, should display more reactivity when female stressors are encountered. This hypothesis was tested by selecting women who scored high and low on the FGRS scale and subjecting them to a situation found to be more stressful for women than for men during which physiological and psychological distress were monitored. The stressor entailed a body-image-threat physical exam and interview which was designed to be a stressor relevant to body image disturbance and eating disorders.

The experimental design was a 2 (High verses Low FGRS women) by 2 (Stress condition verses a Control condition) factorial design with cardiovascular reactivity and self-reported anxiety as dependent variables.

The results supported the predicted interaction between FGRS and Stress Condition on heart rate reactivity. High FGRS women in the Stress Condition evidenced greater heart rate reactivity than Low FGRS women or participants in the Control Condition. Support for experimental hypotheses was found in a similar trend for interaction for systolic blood pressure reactivity, whereas diastolic blood pressure reactivity was less supportive. It is believed that the FGRS scale can distinguish which women will evidence stress in situations which challenge traditional female gender role values and beliefs. Therefore, the FGRS may have utility for determining which women are more vulnerable to developing female predominant psychopathology, such as eating disorders.

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Stress Theory

Environmental events alone are not sufficient to explain or predict individual adverse physical and psychological reactions. Personality variables and previous learning histories mediate and moderate the effects of negative life events. Originally a discipline focusing on negative life events, stress theory has evolved to include the interaction between select individual factors and potentially damaging life events (Kobasa, 1979; Lazarus & Folkman, 1984). By accounting for individual perceptions of an event, psychologists aim to better predict the outcome of potentially stressful life events. Being able to identify individuals who are more vulnerable to life stressors will enable the development of primary and secondary prevention programs for psychological disorders.

Lazarus and Folkman (1984) were the first to include personal perception and cognitive appraisal of an event into stress theory. These researchers explain that when a person encounters an event, two interdependent evaluative processes happen. First an individual makes a primary appraisal when s/he evaluates the personal meaningfulness of the encounter for her/his well-being. This evaluation includes such factors as commitments, beliefs, and values and results in one of three potential perceptions: 1) the situation is irrelevant, or 2) it is benign/positive, or 3) it is stressful. A primary appraisal may result in a stress reaction when deeply held values or commitments have been threatened or challenged. The other evaluative process is called secondary appraisal. Here the

individual may assess available coping responses and her/his ability to perform these coping behaviors efficaciously. A secondary appraisal induces stress when an individual does not believe that s/he has the skills to cope successfully (i.e., self-efficacy) or that a coping attempt would not succeed, regardless of her/his response (i.e., outcome expectancy).

Gender Role and Stress

People may vary systematically by gender in both primary and secondary appraisal processes. In other words, in an individual's primary appraisal, s/he may evaluate environmental events through gender specific commitments, beliefs, and values. Women may evaluate certain events as more stressful because such events challenge female role imperatives within the primary appraisal process. For example, since many women believe that romantic relationships are important for esteem, the inability to develop meaningful enduring relationships and fulfill this value may become a chronic stressor. Likewise, in secondary appraisal processes, women may experience an event as stressful if it calls for coping behaviors that are not well learned through traditional female socialization.

Historically, men and women have been socialized to exhibit different behavior patterns in American society. Boys tend to be socialized to be self-reliant, athletic, competitive, and assertive. Girls are socialized to be nurturant, emotional, dependent, friendly, and concerned about their appearance (Bem, 1974; Skevington, 1986). Due to this disparate gender role socialization, certain personal traits may become more important

for men than women while others become more important for women than men. These differences may encourage gender specific primary appraisal processes. For instance, petite physical appearance seems to be more important for women and thus, gaining weight may be perceived as more stressful for women than for men (Attie & Brooks-Gunn, 1987).

O'Neil (1981) has argued that women are learning only one-half of the attitudes (i.e. primary appraisal) and coping skills (i.e. secondary appraisal) which are necessary to cope in modern life because of gender role socialization. Some women may be engaging in less effective instrumental coping strategies and this may influence the development of female specific psychopathology since many situations call for active problem solving skills (Radloff & Rae, 1979). Likewise, Carver and Ganellen (1983) found that college women tended to inflict more self-criticism and overgeneralize hypothetical failures than college males. Also, research by Kessler, Brown, and Broman (1981) found that women were more likely than men to appraise mental distress they were experiencing as an emotional problem requiring special attention. Male participants in this study appraised their distress as a problem not requiring additional action or attention.

Although the evidence is not conclusive, some research suggests that men and women may also cope in different ways with stressful life events (Miller & Kirsch, 1987). For instance, some studies suggest that women tend to choose more emotion-focused coping techniques when confronted with stress, whereas men tend to employ more problem-focused strategies.

Physical Appearance and Gender Role Stress

Physical attractiveness seems to play a greater role in the lives of women than in the lives of men. Previous research suggests that women value "how they look" more than men (Bar-Tal & Saxe, 1976; Lerner, Karabenick, & Stuart, 1973; Striegel-Moore, Silberstein, & Rodin, 1986). Likewise, physical attractiveness is more likely to influence perceptions of a woman's education, intelligence, femininity, social class, and romantic potential than similar judgements concerning men (Bar-Tal & Saxe, 1976; Striegel-Moore, Silberstein, & Rodin, 1986). Concern for physical appearance may involve commitments, beliefs, and values that figure into primary appraisal of female stressors. Women who value physical attractiveness may feel strongly that their appearance is important for self-worth. Anything which threatens this ability to be attractive may elicit cognitive appraisal of stress.

Murphy (1972, p.620) has postulated the following feminist description for why physical appearance is more important for women,

"Women (seem to) more nearly equate self with body. Man's role and status has typically been defined in terms of his achievement, rather than in terms of body attributes."

Brownmiller (1984) has also suggested that women's concern for their appearance and subsequent efforts to improve one's beauty is a central component of the female sex role. Indeed, there is a stronger relationship between self-esteem or self-concept and satisfaction with body characteristics for women than for men (Franzoi & Shields, 1984; Gray, 1977; Lerner & Karabenick, 1974;

Lerner, Karabenick, & Stuart, 1973; Tobin-Richards, Boxer, & Peterson, 1983).

It is proposed that women who repeatedly feel threatened or inadequate about their ability to meet this value of attractiveness may be more vulnerable to developing body image disturbance or an eating disorder. Hesse-Biber, Downey, and Clayton-Matthews (1987) believe that low body weight has become critical in determining what is attractive for women. Women's appearance seems to be more important for dating than men's and schools that emphasize dating appear to have higher rates of eating disorders (Janda, O'Grady, & Barnhart, 1981; Rodin, Silberstein, & Striegel-Moore, 1985). Body image discontentment in women has become commonplace in American society (Striegel-Moore, Silberstein, & Rodin, 1986). Even school girls from 12-18 years of age feel too fat, attribute their weight to overeating, restrict their food intake, and feel guilty when they do eat (Freeman, 1986; Wardle & Beales, 1986).

Wooley and Wooley (1979) believe that women's concern for body weight can lead to a loss of self-esteem and loss of self-efficacy. Women who appraise their bodies as heavier than the ideal media prototype may often experience unhappiness about their figure and attempt to cope with this failure by engaging in diets to control their weight (Bar-Tal & Saxe, 1976; Drewnowski & Yee, 1987; Kaplan, Busner, Pollack, 1988; Lerner, Karabenick, & Stuart, 1973; Lundholm & Anderson, 1986). Attie and Brooks-Gunn (1987) suggest that not only is dieting normally ineffective in terms of weight loss, but it can be a source of psychological

stress for women because it leads to fatigue, irritability, and forces women to use cognitive strategies to override their physiological hunger. Pursuit of a diminutive physique runs counter to women's natural body build because women have a greater body fat percentage and proportionately larger hips than men, characteristics which are biologically adaptive for child bearing and rearing. Therefore, for many women, efforts to obtain a slender build may be physically impossible. Excessive value on their own slenderness can be problematic for some women who cannot meet this goal. Although excessive concern for physical thinness has become the norm for women in American society, this obsession seems to be causing needless stress, promoting unhealthy dieting or purging behaviors, and leading to self-esteem problems for women.

Female Gender Role Stress

Female gender role stress is conceptualized as the cognitive tendency to appraise threats and challenges to stereotypically defined femininity as stressful. Femininity in this context refers to traditional female values such as the need to be well liked, the need to be perceived as attractive, concerns about being a good mother or romantic partner, and concerns about not appearing masculine. In so far as environmental events are appraised as threatening to these feminine commitments and values, some women will experience stress. Thus, it may not be the event which best predicts stress, but rather a woman's appraisal of the event. Female gender role stress is believed to be a product of normal female gender role socialization; however,

researchers speculate that women vary in the amount of female gender role stress they experience (Gillespie, 1990). Women who are strongly committed to the female gender role should have a great amount of female gender role stress, especially since many women are expected to meet challenges incongruent with traditional female imperatives. For instance, interpersonal conflict is a situation which calls for assertive coping skills. However, women who are invested in being well liked or concerned about appearing masculine may be unable to behave assertively.

In a general way, female gender role stress is conceptualized as the way a female incorporates traditional cultural mandates within her own psyche. This can be detrimental for some women since the traditional feminine role limits the range of feminine achievement possibilities and learned coping behaviors. Also, some women are discovering that their traditional socialization has left them devoid of psychological and behavioral skills to cope with present day nontraditional demands. Female gender role stress may be the invisible link between disparate cultural expectations for women and the reason why women predominate in certain psychological disorders. Thus, women with a strong cognitive tendency to perceive challenges to femininity as stressful are believed to be more vulnerable to developing certain psychological disorders. On the other hand, women who do not feel impelled to fulfill the traditional female gender role are less likely to experience female gender role stress.

Research on the construct of female gender role stress has only recently begun. The Feminine Gender Role Stress (FGRS)

scale was developed by Gillespie (1990) to measure the cognitive tendency among women to appraise specific situations as stressful. Thus, the FGRS scale was specifically designed to measure individual differences among women's experience of stressful aspects of the female gender role. Unlike traditional sex role inventories such as the Personality Attributes Questionnaire (PAQ: Spence, Helmreich & Stapp, 1974) and the Bem Sex Role Inventory (BSRI: Bem, 1974) which measure positive gender role traits, the FGRS scale should have more utility for research exploring women's vulnerability to "female" psychopathology such as eating disorders.

Although certain clinicians have purported that women with eating disorders are excessively feminine (Boskind-Lodahl, 1976; Boskind-White & White, 1987), previous attempts to link the female gender role and femininity to such disorders have yielded inconclusive findings. Rost, Neuhaus, and Florin (1982) found that bulimics conform to a more traditional feminine gender role than controls and hold less liberated attitudes about women. Silverstein, Perdue, Wolf, and Pizzolo (1988) found that bulimic women reported that their family of origin upheld more traditional gender role imperatives for females and males. Likewise, Steiger and colleagues (1989) suggested that both anorexics and bulimics showed hyperfeminine sex role identification. On the other hand, some research has reported no differences in femininity between eating disordered women and control women (Cantelon, Leichner, & Harper, 1986; Dunn & Ondersin, 1981; Sriameswaren, Honours, Leichner, & Harper, 1984;

Striegel-Moore, Silberstein, & Rodin, 1985).

In summary, research evaluating femininity or adherence to the traditional female role and disordered eating has found conflicting results. Perhaps this inconsistency is a function of the psychological instruments used to measure femininity. The Feminine Gender Role Stress scale is believed to be a better measure of the negative or stressful aspects of trying to fulfill the traditional female gender role. Thus, the FGRS scale may be more appropriate than the PAQ and the BSRI for linking cultural expectations for femininity to body image disturbance and disordered eating. Because the FGRS scale was recently developed, its utility needs empirical validation.

Initial psychometric findings of the FGRS scale appear promising. The items significantly differentiate female from male stressors. The test-retest reliability coefficient over a two week period was .82 which suggests the FGRS scale is a measure of a relatively enduring cognitive style (Gillespie, 1990). Factor analysis using a common factor model revealed five homogeneous factors: 1) emotional detachment, 2) physical unattractiveness, 3) fear of victimization, 4) unassertiveness, and 5) failed nurturance. These five factors illustrate categories of stressors that are salient and meaningful for women because of values and commitments learned through female socialization. These FGRS scale factors and their corresponding items are listed in Table 1 and reflect feminine beliefs and commitments. Items reflect the desire to develop and sustain intimate relationships, the desire to achieve female beauty standards of extreme thinness, the desire to feel safe and

TABLE 1

FEMININE GENDER ROLE STRESS SCALE (FGRS)

FACTOR 1 EMOTIONAL DETACHMENT

Feeling pressured to engage in sexual activity
Having to deal with unwanted sexual advances
Being taken for granted in a sexual relationship
Being pressured for sex when seeking affection from your mate
Having multiple sex partners
Having an intimate relationship without any romance
Not being able to meet family members emotional need
Your mate will not discuss your relationship problems
Being considered promiscuous
Having others believe that you are emotionally cold

FACTOR 2 PHYSICAL UNATTRACTIVENESS

Being perceived by others as overweight
Finding that you gained 10 pounds
Feeling less attractive than you once were
Being heavier than your mate
Being unusually tall
Being unable to change your appearance to please someone
Turning middle-aged and being single
Wearing a bathing suit in public

FACTOR 3 FEAR OF VICTIMIZATION

Hearing a strange noise while you are home alone
Hearing that a dangerous criminal has escaped nearby
Having your car breakdown on the road
Feeling that you are being followed by someone
Having to move to a new city or town alone
Receiving an obscene phone call

FACTOR 4 UNASSERTIVENESS

Bargaining with a salesperson when buying a car
Negotiating the price of car repairs
Making sure you are not taken advantage of when buying house or car
Supervising older and more experienced employees at work
Trying to be a good parent and excel at work
Having to "sell" yourself at a job interview
Talking with someone who is angry with you

FACTOR 5 FAILED NURTURANCE

Your mate is unemployed and cannot find a job
Your child is disliked by her/his peers
Having a weak or incompetent spouse
Having someone else raise your children
Returning to work soon after your child is born
Trying to get your spouse to take responsibility for childcare
Losing custody of your children after divorce
A very close friend stops speaking to you

respected by others, the wish to have influence over others, and the desire to foster the well-being of loved-ones and friends (Gillespie, 1990). Internal reliability coefficients among items in each factor were .83, .81, .77, .80, .73 respectively.

Preliminary construct validity was demonstrated by establishing convergent validity with a daily hassles inventory (Kanner, Coyne, Schaefer, & Lazarus, 1981). Convergent validity has also been initially established with significant correlations between the Unassertiveness and Physical Unattractiveness factors and the Beck Depression Inventory (Beck, 1961), as well as the trait portion of the State Trait Anxiety Inventory (Spielberger, Gorschuch, Lushene, & Vagg, 1983).

Similar to a stress-diathesis model, female gender role stress is conceptualized as a stable cognitive appraisal style or diathesis. According to a model of gender role stress appraisal, stress should be experienced physiologically and cognitively when individuals encounter gender specific stressors (Eisler & Skidmore, 1987). For instance, a woman who reports on the FGRS scale that gaining ten pounds would be a highly stressful event may be particularly vulnerable in situations which threaten this commitment such as gaining weight during her first year in college, popularly known as the "freshmen fifeteen." Hence, female gender role stress represents a potentially maladaptive appraisal style which interacts with events that threaten or challenge female role imperatives to produce stress. According to Gillespie (1990), further validation of the FGRS scale is warranted.

Gillespie (1990) suggests that construct validation might

include testing the scale's ability to predict gender specific cognitive appraisals of actual stressors. Do women who report a tendency on the FGRS scale to appraise stress in situations threatening their femininity actually experience and evidence more stress during a female relevant stressor? Likewise, a cluster of items related to attractiveness (Factor 2) suggested that women are more concerned about their physical appearance than men. Are women who report more female gender role stress more likely to feel negatively about their body image and engage in dysfunctional eating behaviors? The rationale for the following two studies is to begin empirically exploring answers to these questions.

Overview Study 1

The purpose of the current study was twofold: 1) to seek further construct validation for the Feminine Gender Role Stress scale and 2) to empirically explore the relationship between female gender role stress and body image disturbance in women, a presumed precursor to eating disorders. The first study used a correlational approach to investigate the association of the FGRS with body image disturbance and eating disorders. Over four hundred college age women were tested using the FGRS scale and several body image and eating disorder inventories to examine correlations between these constructs.

The second study involved an experiment to see if women higher in FGRS, compared to women lower in FGRS, actually experience and evidence more stress when exposed to a female relevant stressor. This study compared high versus low FGRS

women on physiological stress reactivity to a situation involving a female stressor and to a control situation. Since the purpose of study was to link female gender role stress to body image disturbance, the manipulation was designed to challenge a woman's appraisal of body image.

Study 1: Correlational Validation of the FGRS Scale

Since eating disorders and body image disturbances are primarily diagnosed in women, further convergent validity was sought by examining the FGRS's relationship to established body image and eating disorder scales. Women who report higher stress appraisals on the FGRS Unattractiveness Factor are believed to be more vulnerable to developing body image disturbances or eating disorders. Thus, weak correlations were predicted between the FGRS scale and established eating disorder and body image disturbance inventories, whereas larger correlations were expected between the Unattractiveness Factor and these measures.

Study 1 Hypotheses:

- #1 FGRS scores should correlate significantly with the Body Esteem Scale (BES), the Bulimia Test (BULIT), and the trait scale of the Body Image Anxiety Scale (BIAS).
- #2 FGRS scores on the Unattractiveness Factor should correlate significantly to the BES, BULIT, and BIAS-Trait.
- #3 Correlations for Hypothesis # 2 should be significantly greater than correlations for Hypothesis # 1.

Study 1 Method

Subjects

Four hundred and twenty one college women enrolled in 2000-level psychology courses offering extra credit for experimental

participation were recruited as participants in this study. Generally, individuals participating in psychology experiments at this university are protestant caucasian females ranging in age from 18-22, although demographic information was not obtained in this study. All participants completed a consent form (Appendix A) and a series of inventories.

Study 1 Inventories

The Feminine Gender Role Stress scale (FGRS; Gillespie, 1990; Appendix B) measures the cognitive appraisal of stressors that are particularly salient for women. These 39 items are rated on a Likert continuum from "0- Not at all Stressful" to "5-Extremely Stressful. FGRS and its five factors with items are listed in Table 1. Psychometric properties of the FGRS scale appear to be acceptable (Gillespie, 1990).

The Body Esteem Scale (BES; Franzoi & Shields, 1984; Appendix C) is a measure of body satisfaction which lists 35 aspects of physical appearance and bodily functioning. Factor analysis of the BES has shown that body esteem is a multidimensional construct which differs for males and females. Physical attractiveness, upper body strength, and physical condition were shown to be factors for men, whereas sexual attractiveness, weight concerns, and physical condition were indicated as factors for women. The weight concern factor for females was found to be related to percentage of time that females spend thinking about how food adds weight to their bodies rather than how food fuels their bodies. Likewise, the weight concern factor has shown to discriminate anorexic females from non-anorexic females (Franzoi

& Shields, 1984). The BES factors have shown to have good internal reliability with alpha coefficients ranging from .78 to .86 across the factors. The BES also has good convergent validity with a general measure of self-esteem (Franzoi & Shields, 1984). In addition, BES scores are only moderately correlated to measures of body consciousness (Franzoi & Herzog, 1986) which suggests that the BES has discriminate validity from the construct of body awareness.

The Bulimia Test (BULIT; Smith & Thelen, 1984; Appendix D) is a 36 item, self report, multiple-choice inventory which was developed to assess and discriminate bulimic behaviors from non-bulimic behaviors based on DSM-III criteria for bulimia nervosa. Using a classification system that placed all subjects scoring above 102 in the bulimic category, the BULIT's sensitivity, specificity, positive predictive and negative predictive values were all above .90. However, a more liberal cut-off score of 88 has been suggested by Smith and Thelen (1984) when the BULIT is used as a screening instrument to identify actual bulimic women as well as women who are at risk. The BULIT has been reported to have a Pearson correlation of .87 for test-retest reliability. Construct and discriminant validity were tested by comparing the BULIT to the Eating Attitudes Test (EAT; Garner & Garfinkel, 1979). The Pearson correlation of .93 was found between the BULIT and the Binge Scale of the EAT. The Pearson correlation between the BULIT and the entire EAT was .68 which suggests the BULIT and the EAT are tapping overlapping criteria only in so far as bingeing and purging behaviors are being measured.

Using factor analysis, researchers have found the BULIT

to be composed of the following six factors: 1) binge behavior, 2) vomiting, 3) negative feelings regarding overeating, 4) menstruation problems, 5) preference for high-caloric easily ingested food, 6) and weight fluctuations (Thelen, Mann, Pruitt, & Smith, 1987).

The Body Image Anxiety Scale (BIAS; Reed, Thompson, Brannick, & Sacco, 1990; Appendix E) was used to evaluate trait body image anxiety. The trait scale of the BIAS contains 16 bodily items in which the subject rates her general anxiety level on a scale of "0- Not at all Anxious" to "4-Exceptionally Anxious." Factor analysis of the scale revealed two components, a weight/appearance factor and a non weight/appearance component. These two factors correlated minimally to one another $r=.32$ which suggests they are somewhat independent. The BIAS-Trait weight/appearance factor discriminated individuals with a high versus low level of eating disturbance. Test-retest reliability was high at $r=.87$.

Study 1 Results

The full FGRS scale was significantly correlated with each of its five factors. Likewise, as Gillespie (1990) reported, each of the FGRS factors was significantly related to the others which suggests full scale homogeneity. These Pearson product moment correlations are shown in Table 2.

Pearson product moment correlations between the FGRS scale and body image and eating disorder scales suggested minimal relationships. Whereas the FGRS scale was significantly related to the BULIT [$r=.08$, $p<.05$] and the BIAS-Trait [$r=.18$, $p<.05$],

TABLE 2

Pearson Correlation Coefficients
Between FGRS Factors

	FGRS Full Scale	FACTOR 1 Emotional Detachment	FACTOR 2 Physical Unattractiveness	FACTOR 3 Fear of Victimization	FACTOR 4 Unassertiveness	FACTOR 5 Failed Nurturance
FGRS	1.00*					
FACTOR 1	.79*	1.00*				
FACTOR 2	.71*	.44*	1.00*			
FACTOR 3	.69*	.48*	.35*	1.00*		
FACTOR 4	.78*	.46*	.42*	.54*	1.00*	
FACTOR 5	.77*	.51*	.39*	.38*	.58*	1.00*

* Significant at $p < .05$.

(N=421)

overlapping variances between these scales were negligible. The FGRS scale was not significantly related to the BES. These correlations yield some support for Study 1 Hypothesis # 1.

As illustrated in Tables 3-5, the Unattractiveness Factor of the FGRS scale was the only factor to reveal consistent significant relationships with the BES, the BULIT, the BIAS-Trait, and their respective factors. Factor 2 was significantly, but minimally, related to the BES [$r = -.20$, $p < .05$]. This negative correlation was expected since the BES measures positive aspects of body image and Factor 2 measures negative aspects of female attractiveness imperatives. Of each of the BES factors, Factor 2 was most related to the Weight Concerns factor, a finding which is not surprising since thinness appears to be almost synonymous with attractiveness in our culture (Hesse-Biber, Downey, & Clayton-Matthews, 1987).

The FGRS Unattractiveness Factor was significantly related to the BULIT [$r = .39$, $p < .05$] which measures behaviors associated with disordered eating, especially bulimia. Again not surprisingly, Factor 2 was most strongly associated with the Feelings Factor of the BULIT, which appears to tap into an individual's affect and cognitions surrounding eating [$r = .42$, $p < .05$]. For instance, "I feel depressed immediately after I eat too much," "I don't like myself after I eat too much," "I've tried to lose weight by going on crash diets" are items included in the BULIT's Feelings Factor. The Unattractiveness Factor was also strongly related to the Binge Factor of the BULIT [$r = .33$, $p < .05$] which assesses an individual's choice and quantity of foods that are selected for binges. The FGRS Factor 2 appeared to be

TABLE 3

Pearson Correlation Coefficients
Between FGRS Factors and BES Factors

	BES Full Scale	Sexual Attractiveness Factor	Weight Concerns Factor	Physical Condition Factor
FGRS	-.06	-.03	-.13*	-.03
FACTOR 1	-.01	-.01	-.06	.04
FACTOR 2	-.20*	-.15*	-.28*	-.10*
FACTOR 3	-.01	.03	-.05	-.06
FACTOR 4	-.05	-.02	-.09*	-.08
FACTOR 5	.06	.07	.01	.06
BES Full Scale	1.00*			
Sexual Attractiveness	.73*	1.00*		
Weight Concerns Factor	.83*	.52*	1.00*	
Physical Condition Factor	.67*	.38*	.58*	1.00*

* Significant at $p < .05$.

(N=421)

TABLE 4

Pearson Correlation Coefficients
Between FGRS Factors and BULIT Factors

	BULIT Full Scale	BINGES FACTOR	FEELINGS FACTOR	VOMIT FACTOR	FOOD FACTOR	WEIGHT FACTOR
FGRS	.08*	.07	.10*	-.01	.02	.05
FACTOR 1	-.06	-.07	-.03	-.10*	-.09*	-.03
FACTOR 2	.39*	.33*	.42*	.22*	.22*	.21*
FACTOR 3	-.04	-.03	-.03	-.04	-.03	-.01
FACTOR 4	.04	.04	.03	-.03	.03	.04
FACTOR 5	.05	-.04	-.05	-.07	-.07	-.02
BULIT Full Scale	1.00*					
BINGES FACTOR	.91*	1.00*				
FEELINGS FACTOR	.94*	.74*	1.00*			
VOMIT FACTOR	.69*	.69*	.54*	1.00*		
FOOD FACTOR	.71*	.60*	.63*	.43*	1.00*	
WEIGHT FACTOR	.52*	.37*	.49*	.24*	.29*	1.00*

* Significant at $p < .05$.

(N=421)

TABLE 5

Pearson Correlation Coefficients
Between FGRS Factors and BIAS-TRAIT Factors

	BIAS-TRAIT FULL SCALE	WEIGHT FACTOR	NON-WEIGHT FACTOR
FGRS	.18*	.16*	.13*
FACTOR 1	.08	.08	.03
FACTOR 2	.45*	.43*	.29*
FACTOR 3	.01	.01	.02
FACTOR 4	.10*	.07	.11*
FACTOR 5	.01	.03	.02
BIAS-TRAIT FULL SCALE	1.00*		
WEIGHT FACTOR	.93*	1.00*	
NON-WEIGHT FACTOR	.67*	.37*	1.00*

* Significant at $p < .05$.

(N=421)

relatively less related to the Vomit, Food, and Weight factors of the BULIT.

The FGRS Factor 2 was also significantly related to the trait version of the Body Image Anxiety Scale [$r=.45$, $p<.05$]. Comparisons between the Factor 2 correlation with the Weight Factor [$r=.43$, $p <.05$] and the Factor 2 correlation with the Nonweight Factor [$r=.29$, $p<.05$] once again suggest that attractiveness was empirically linked to weight, rather than other body features in this population of college women.

Overall, correlational results supported Hypothesis # 2 for Study 1 which implies convergent validity between the Unattractiveness Factor 2 and body image and eating disorders. To evaluate discriminant validity, correlations between the full FGRS scale and these body image constructs were compared to correlations between the FGRS Factor 2 and these same constructs. The association between Factor 2 and the BES was significantly greater than the relationship between the FGRS scale and the BES [$z=2.0$, $p <.05$]. Likewise, this same finding was revealed for the relationship between Factor 2 and the BULIT, as opposed to the correlation between the full FGRS scale and the BULIT [$z=4.5$, $p<.005$]. Finally, a Z-test between correlations showed a consistent result for Factor 2 and the BIAS-Trait [$z=3.9$, $p<.005$]. The Unattractiveness Factor of the Feminine Gender Role Stress scale is more related empirically to eating disorders and body image than any of the other FGRS scale factors or the full scale.

Study 1 Discussion

FGRS scores were predicted to correlate significantly with the Body Esteem Scale (BES), the Bulimia Test (BULIT), and the trait version of the Body Image Anxiety Scale (BIAS-Trait). In support of discriminant validity, the FGRS scale proved to be minimally related to the BES, BULIT, and BIAS-Trait. This suggests that FGRS is measuring something different than body image dissatisfaction and disordered eating, a distinction which may be important for understanding how female gender role stress relates conceptually to eating disorders. The FGRS scale is believed to tap into cognitive appraisal of certain potentially stressful events. The full FGRS scale taps into a more general cognitive tendency to perceive threats to femininity as stressful. This general cognitive tendency can be broken into components of specific threats to femininity such as challenges to physical attractiveness and nurturance. However, the full FGRS scale is believed to capture a more complete evaluation of the predisposition to experience stress when not fulfilling the prescribed feminine role and should therefore serve as a better measure of vulnerability for psychological disorders than any of its individual factors. Eating disorders are only one example of how this cognitive appraisal style may be manifested as a psychological disorder. Since Factor 2 of the FGRS scale was the only factor to significantly relate to the BES, BIAS-Trait, and BULIT, Factor 2 may be the most appropriate measure for understanding the relationship between female gender role stress and eating disorders. Although an empirical question, vulnerability for general psychopathology may be best evaluated

using the entire FGRS scale, whereas information about vulnerability to what type of disorder may be better obtained through the FGRS factor scores.

Factor 2 of the FGRS scale, the Unattractiveness Factor, was the only factor to show significant association with these eating disorders and body image scales. Factor 2 is believed to measure the tendency for a woman to appraise situations in which her attractiveness is threatened as stressful. FGRS scale Factor 2 was found to be related to the BULIT, especially the Feelings Factor. This suggests that women who tend to appraise situations relevant to their attractiveness as stressful may be more likely to engage in behaviors believed to lead to weight loss, and experience negative affect about their eating behavior. Since our culture promotes low body weight as a critical component of attractiveness (Hesse-Biber, 1987), it seems natural that women who value their physical appearance would also engage in behaviors related to achieving slenderness. While this correlation was moderate with $r=.39$, this relationship is notable since the BULIT taps into self reported behaviors related to eating and purging and FGRS Factor 2 measures cognitive appraisal of situations concerning attractiveness. This bridge between cognitions about physical appearance and actual behaviors has been demonstrated previously in the eating disorder literature (Fabian & Thompson, 1989; Grant & Fodor, 1986; Gross & Rosen, 1988). For instance, Attie and Brooks-Gunn (1989) conducted a longitudinal study in which poor body image was the best predictor of later eating disturbance.

FGRS Factor 2 was also moderately related to the BIAS-Trait scale. This relationship seems more straightforward since women who report that stress experienced in situations challenging their attractiveness are also reporting a tendency to feel chronic body image anxiety. Although this relationship has not been demonstrated behaviorally, Reed, Thompson, and Brannick (1990) found that general body image anxiety as measured by the BIAS-Trait predicted severity of body image anxiety in a stressful imagery condition.

Finally, the FGRS scale Unattractiveness Factor was also inversely related to the BES, which asks individuals to rate how positively they feel about certain body parts and functions. This negative correlation suggests that women who tend to appraise attractiveness threats as stressful are more likely to have less positive body image esteem ($r=-.20$), especially esteem related to weight concerns ($r=-.28$).

In conclusion, these correlational relationships between the Feminine Gender Role Stress scale and the Unattractiveness Factor and eating disorder and body image disturbance instruments suggest appropriate discriminant and convergent validity. Convergent validity for the Unattractiveness factor was demonstrated through significantly higher correlations between the FGRS Factor 2 and body image and disordered eating questionnaires than between the full FGRS scale and these inventories. Minimal correlations between the entire FGRS and these measures suggest that the construct of female gender role stress is only remotely associated to eating disorders and body image disturbance, thus lending discriminant validity. This

cognitive appraisal style is not the same phenomena as eating-related psychopathology. Rather, female gender role stress is conceptualized as a cognitive schema through which women filter incoming perceptual information. Since some women place more value on traditional female role imperatives, such as the need to be perceived as attractive, their cognitive schema initiates a stress reaction when these particular female stressors are encountered. Therefore, the FGRS scale measures a cognitive appraisal style which may create vulnerability for psychological disorders such as body image or eating disturbance, whereas women who score within the upper percentiles on eating disorder scales are reporting already existing dysfunctional behaviors. The Unattractiveness Factor of the FGRS scale may be the most important component for understanding how female gender role stress relates to body image and eating disorders. Study 2 examines how Factor 2 is behaviorally and physiologically related to stress caused by femininity.

Overview Study 2

Behavioral validation of the Feminine Gender Role Stress scale was evaluated by dividing women into High and Low FGRS categories and subjecting them to a female gender role stressor during which physiological and psychological distress were monitored. According to Lazarus and Folkman's model of stress appraisal (1984), women who report a cognitive tendency to appraise female gender relevant stressors as threatening (High FGRS women) were predicted to show more distress than Low FGRS women when presented with a female gender relevant challenge.

However, it was also predicted that High and Low FGRS women should not differ in their appraisal and response to gender neutral stressors since such stressors do not involve commitments, beliefs, and values related to female gender role socialization.

Study 2 Hypotheses

- #1 High FGRS women should show more of a stress reaction as measured by cardiovascular reactivity, the DPS, and the BIAS-State scales in the Stress Condition than Low FGRS women. However, the stress reaction in the Control Condition should not differ among High and Low FGRS women. (Predicted FGRS x Condition Interaction)
- #2 All women should evidence more of a stress reaction in the Stress Condition as opposed to the Control Condition. (Predicted Main Effect for Condition)

Research Design for Study 2

		<u>Feminine Gender Role Stress</u>				
		<u>Scale</u>	<u>Score</u>	<u>Classification</u>		
		-	HIGH	-	LOW	-

STRESS	-	A	-	B	-	-
CONDITION	-		-		-	-

CONTROL	-	C	-	C	-	-
CONDITION	-		-		-	-

A, B, & C = CVR from baseline to experimental phase
Hypotheses: A > B, A > C, B > C

The resulting experimental design was a 2 X 2 factorial design involving physiological variables that naturally differ among individuals. Thus, individual baseline recordings for heart rate (HR), systolic blood pressure (SBP), and diastolic blood pressure (DBP) were collected to establish cardiovascular reactivity units as dependent variables. Physiological dependent

variables were collected throughout the four phases of the experiment including: 1) an anticipation phase in which the participants received verbal information regarding the experimental procedures, 2) the experimental phase in which either control or stress procedures were implemented, 3) a recovery phase following experimental manipulations, and 4) a return-day resting baseline. SBP, DBP, and HR measures were recorded at one minute intervals throughout each of these phases. Averages of the last three measures were used as aggregate dependent variables for the return-day baseline, anticipation, and recovery phases. Cardiovascular measures for the experimental phase were obtained by averaging HR, SBP, and DBP scores over this 4-5 minute phase. Since individuals may naturally evidence substantial baseline differences on physiological variables such as heart rate and blood pressure, a dependent variable comparing each individual's baseline to her experimental scores on these variables was necessary. As a psychological dependent variable, all participants were given the state portion of the Body Image Anxiety Scale (BIAS; Reed, Thompson, Brannick, & Sacco, 1990) following the experimental phase and prior to recovery. Likewise, a brief dieting propensity questionnaire (Appendix H) was administered at this time for a manipulation evaluation of the stress and control exams.

Study 2 was designed mainly to test the ability of the full FGRS scale, including the Unattractiveness Factor, to predict stress in a situation with a female gender relevant challenge. The stressor used in the experimental phase of this study was

created and suggested through pilot testing to be more of a stressor for women than men based on systolic blood pressure reactivity. The stressor included challenging a woman's body image, specifically by evaluating her thinness/fatness. It was hypothesized that female gender role requirements of needing to achieve female beauty standards of thinness were challenged or threatened by this stressor. In pilot research, women evidenced greater systolic blood pressure reactivity than males in response to this feminine stressor. Likewise, females showed more SBP reactivity to this feminine stressor than in response to a control condition, similar to the one in Study 2. Although most women should experience this challenge as stressful, FGRS scale scores were predicted to moderate severity of this stress reaction.

Study 2 Method

Subjects

One hundred and twelve out of 421 female participants from Study 1 were called back and agreed to participate in Study 2. Based on the range of scores for the FGRS scale in Study 1, women were classified into low, middle, and high groups. The mean of the FGRS scale was 128.5 (SD = 24.5) with the overall range spanning from 26 to 180. Approximately 136 women in Study 1 scored in the top third percentile (FGRS scores > 136) and were recruited randomly as High FGRS participants. Approximately 166 females in Study 1 scored in the bottom third percentile (FGRS scores < 120) and were recruited randomly to serve as Low FGRS participants. Fifty seven Low FGRS women participated in the

second study; 26 were assigned to the Stress Condition and 31 were assigned to the Control Condition. Fifty five High FGRS women participated, 27 were assigned to the Stress Condition and 28 were assigned to the Control Condition. Table 6 lists FGRS scores and the five FGRS factor scores for each of these experimental groups. Although Study 2 recruits were not screened for eating disorders, two females from Study 1 were telephoned to make treatment referrals based on unusual comments on their consent forms. These two females were not recruited for Study 2.

Apparatus

The following devices were used during Study 2: body fat skin calipers, a measuring tape, a stethoscope, weight scale, and a tuning fork. Systolic blood pressure (SBP), diastolic blood pressure (DBP), and heart rate (HR) were measured by the IBS Corporation's Automatic Blood Pressure Monitor (model SD-700A). This device detects Karotkov vibrations to measure blood pressure and oscillometric pressure surges within the cuff for assessment of heart rate. Phase five is used in the assessment of DBP. Blood pressure accuracy for this instrument has been established within 3 mm Hg of those auscultated, and heart rate accuracy is within 2%, or one beat per minute (IBS, 1987).

Study 2 Inventories

The state portion of the Body Image Anxiety Scale (BIAS-State; Reed Thompson, Brannick, & Sacco, 1990; Appendix E) contains 16 bodily items in which the subject rates her current anxiety on a scale of "0- Not at all Anxious" to "4-Exceptionally Anxious." This scale also consists of weight/appearance and non weight/appearance factors. It was validated as a situationally

TABLE 6
PRETEST MEASURES FOR EXPERIMENTAL GROUPS

DEPENDENT VARIABLES	HIGH FGRS STRESS (N=27)	LOW FGRS STRESS (N=26)	HIGH FGRS CONTROL (N=28)	LOW FGRS CONTROL (N=31)
FGRS	145.4 (7.4)	99.9 (19.3)	154.75 (11.6)	96.77 (21.4)
FACTOR 1	41.6 (3.6)	28.2 (8.1)	41.9 (5.2)	26.54 (9.7)
FACTOR 2	25.7 (3.9)	19.3 (5.4)	29.3 (5.6)	17.7 (7.5)
FACTOR 3	21.8 (4.2)	15.7 (5.7)	24.8 (3.7)	16.1 (4.8)
FACTOR 4	22.9 (3.8)	15.6 (4.2)	24.7 (4.9)	14.4 (5.2)
FACTOR 5	32.7 (2.6)	22.9 (7.6)	33.9 (2.8)	23.5 (8.0)
BES	116.3 (17.7)	114.1 (17)	113.1 (24.7)	114.5 (23.4)
BULIT	69.7 (16.2)	75.6 (20.6)	84.9 (24.2)	69.5 (19.3)
BIAS-TRAIT	19.1 (9.3)	19.9 (10.2)	26.2 (11.8)	17.2 (10.2)
BIAS-STATE	14.4 (8.1)	18.1 (12.8)	21.0 (12.7)	16.8 (8.2)
BMI	21.9 (2.3)	22.2 (2.1)	22.4 (3.2)	22.2 (2.9)

Standard Deviations are included in parenthesis

sensitive scale by testing female individuals under three different imagery conditions (Reed, Thompson, Brannick, & Sacco, 1990). In the low body image threat condition, subjects were instructed to imagine themselves at home relaxing in front of the TV. A medium threat condition consisted of imagery dealing with walking around in a public place. The high threat condition asked the subjects to imagine being on a crowded beach in a revealing two-piece bathing suit. (Note that there is a similar item on the FGRS Unattractiveness Factor) After imagery induction, each subject rated her body image anxiety. Results were consistent with severity of imagery. Additionally, individuals who scored higher on the BIAS trait scale reported significantly higher state anxiety in all three situations and their state scores increased more from the low threat to high threat than individuals who scored lower on the BIAS trait scale. The BIAS state scale was administered in Study 2 as a self-report psychological measure of situational body image anxiety.

Reed, Thompson, Brannick, and Sacco (1990) suggested that the trait scale of the BIAS is useful for measuring overall body image anxiety and for predicting responses to situational factors. The state scale of the BIAS is useful for validating power of situational factors such as experimental manipulations. Thus, the trait-BIAS was administered in Study 1 and the state-BIAS was given in study 2 as a dependent variable and for a manipulation check of the feminine stressor.

A Dieting Propensity Scale (Appendix F) was created for this study to assess frequency and severity of intended dieting behavior and to serve as a manipulation check for the

feminine stressor. Participants were asked to rate their frequency of dieting behavior and how often they desire to lose weight. This scale asked participants how stressful this experiment was for them on a likert rating scale from 0 to 7 (STRESS variable) and how stressful would this experiment have been if a female research assistant replaced the actual male research assistant (FSTRESS variable). Participants were also asked to report how important it was for them to do well during this experiment (COMMITMENT variable), how uncomfortable they were (DISCOMFORT variable), and how uncomfortable was it for them to be videotaped during the experiment (VIDEO variable). Ratings for each of these variables for experimental groups are listed later in Table 8. Participants were asked to record their current height and weight which were converted to a body mass index or BMI.

Procedure

During study 1, college females (N=421) were tested with the Feminine Gender Role Stress scale (FGRS; Gillespie, 1990), the Body Esteem Scale (BES; Franzoi & Shields, 1984), the Body Image Anxiety Scale-Trait (BIAS; Reed, Thompson, Brannick, & Sacco, 1990), and the Bulimia Test (BULIT; Smith & Thelen, 1984). Only High and Low FGRS women were called back to participate in Study 2. For a detailed protocol of the Study 2 experiment, please see Appendix G.

Study 2 was identified as a "Health and Attitudes Study" to help minimize participants' expectations of stress. It consisted of baseline, anticipation, experimental, and recovery

phases. High and Low FGRS participants were randomly assigned to a Stress Condition or a Control Condition. Participants were recruited by telephone and brought individually into the lab. One of four male research assistants greeted each participant, explained that he would be assessing her physical health and that she would be asked to fill out some questionnaires. A consent form (Appendix A) was endorsed and participants reporting consumption of alcohol, caffeine, or tobacco within two hours of the experiment were excluded from data analyses.

Participants sat quietly in a comfortable chair and were encouraged to relax. The research assistant explained to each participant that "she would be participating in a physical exam similar to a normal doctor's office physical, except that no blood would be taken and she would not be asked to remove any of her clothes." She was told that "blood pressure readings are not always accurate and thus he would be taking readings throughout the experiment to obtain an accurate average." The research assistant would explain that it is "important for him to obtain accurate measures and that this is easiest if she relaxes and refrains from talking during the exam because this raises one's blood pressure." The research assistant then measured the circumference of the participant's right arm two inches above the antecubital fossa and placed an appropriate blood pressure cuff on this arm leaving the bottom edge of the cuff one inch above the antecubital fossa with the microphone positioned over the brachial artery. Following the research assistant's instructions which are described below, blood pressure and heart rate readings were taken at one minute intervals until three SBP

readings were within 5mm Hg of the first SBP measurement to establish a stable anticipation phase measure.

Stress Condition

During the anticipation phase, participants in this condition were told by the research assistant just prior to the first physiological measure that they would be experiencing an exam that will include having their body fat percentage evaluated. He would say, "in other words, I will be calculating how much fat you have." Participants were told that normally women evidence a body fat percentage around 30%, college age women about 25%, and athletic women and models around 20%. At least three one minute-interval SBP, DBP, and HR measures were recorded during the anticipation phase.

The experimental phase consisted of the following brief physical exam and interview:

1. Waist circumference: Participants were told that they were "having their waist thickness evaluated."
2. Skin fold width from the back of the arm: (triceps)
Participants were told that they were having their "body fat percentage evaluated."
3. Skin fold width from the side of the neck:
Participants were told that "another body fat measure would be taken."
4. Interview:
 - A. What is your height and weight?
 - B. Do you think your weight is appropriate for your height?
The RA said: We'll double check your weight on our scales before you leave.
 - C. Do you feel heavier than most women?
 - D. What part of your body are you most concerned about?
 - E. What size shoe do you wear?
 - F. What size clothes do you wear? (pants or dress)
 - G. Do you think that is about average?

All data was recorded directly onto a data sheet (Appendix H).

Control Condition

Participants in this group were told by the research assistant during the anticipation phase that the purpose of the following exam would be to look at certain physiological measures to gain an idea about their physical health. He said, "the goal of this experiment is to explore how an individual's attitudes and lifestyle affect general health." At least three one minute-interval SBP, DBP, and HR measures were recorded during the anticipation phase.

The experimental phase consisted of the following brief exam and interview:

1. Lung Fields: Participants were told that they were "having their lung fields evaluated with a stethoscope."
2. Auditory Dominance: Participants were told they were having their "auditory dominance evaluated" using a tuning fork.
3. Eye muscles: Participants were told that their eye muscle control was being assessed.
4. Interview:
 - A. What is your age in years and months?
 - B. What year are you in school?
 - C. Do you think your age is appropriate for your year in school?
RA said: We can check to see if this fits the Va Tech average before you leave.
 - D. What is your major?
 - E. What classes are you most concerned about?
 - F. Do you think that most students have a tough time with these classes?
 - G. Do you think you are average in this regard?

The research assistant recorded all data directly onto a data sheet (Appendix H).

Recovery Phase

Immediately following the experimental phase, each participant was given the State version of the Body Image Anxiety Scale and the Dieting Propensity Scale. Then participants were allowed to relax for approximately three

minutes during which recovery cardiovascular measures were recorded for the recovery phase.

Debriefing and Return-day Baseline

Following the experiment, participants were reminded of their 15-minute return-day baseline appointment and debriefed. Participants were told that the full purpose of the study was to look at stress and how stress affects your body's reactions. Participants in the Stress Condition were told that the exam and interview were meant to be stressful and that most women perceive them to be quite stressful. Participants were assured that all body fat measures were bogus. Return-day HR, SBP, and DBP measures were used as baseline data in the first phase (conceptually) of the experiment, although it took place after the actual one hour experiment. The purpose of a return-day baseline was to capture participants' natural resting cardiovascular status, without potentially confounding influences of anticipation appraisal, movement, or an interpersonal interaction. During this baseline phase, participants sat quietly in a comfortable chair and had their blood pressure and heart rate assessed every minute for ten minutes.

Study 2 Results

All analyses for physiological cardiovascular reactivity (CVR) variables were conducted in a series of 2 (FGRS) x 2 (Condition) repeated measures analyses of variance (ANOVAs) since each female participant was measured repeatedly over the four experimental phases. Additionally, ANOVAs were performed on nonphysiological dependent variables not involving repeated

measures and baseline physiological variables. Each of these analyses were conducted for unequal N's since an unequal number of participants were assigned to each condition: High FGRS x Stress group n=27, High FGRS x Control group n=28, the Low FGRS x Stress group n=26, and the Low FGRS x Control group n=31.

The physiological data across all four experimental phases by the four FGRS X Condition groups is presented in Table 7. Psychological dependent variables for FGRS X Condition experimental groups are presented in Table 8.

Physiological Results

There is some evidence that females tend to display more cardiovascular reactivity (CVR) in terms of heart rate (HR) than systolic blood pressure (SBP) and diastolic blood pressure (DBP) especially in response to social psychological stressors such as the feminine stressor used in this study (Baldwin & Clevenger, 1980; Collins & Frankenhaeuser, 1978; Graham, Cohen, & Schmavonian, 1966; Van Egeren, 1979). Therefore, HR analyses will be presented prior to SBP and DBP analyses. Research supporting this will be discussed in greater detail later in the discussion section.

Analyses on heart rate CVR yielded the greatest support for Study 2 hypotheses. A repeated measures ANOVA evaluating HR reactivity between baseline and the experimental phase found a significant interaction with High FGRS women in the Stress Condition evidencing greater heart rate reactivity to the manipulation [$F(1,106) = 2.96, p < .04$, One Tailed].

Figure 1 shows relative heart rate reactivity when the

TABLE 7

DEPENDENT VARIABLES FOR EXPERIMENTAL GROUPS

DEPENDENT VARIABLES	HIGH FGRS STRESS	LOW FGRS STRESS	HIGH FGRS CONTROL	LOW FGRS CONTROL
Return-day baseline SBP	106.2 (11.5)	106.0 (7.2)	106.5 (9.7)	109.3 (7.1)
Return-day baseline DBP	71.39 (8.2)	68.2 (7.0)	72.9 (8.6)	72.7 (7.6)
Return-day baseline HR	72.9 (10.5)	75.5 (10.9)	76.5 (14.8)	84.4 (11.0)
Anticipation SBP	113.9 (9.8)	112.1 (8.4)	113.6 (14.1)	116.0 (11.7)
Anticipation DBP	75.2 (7.6)	74.48 (7.9)	74.6 (9.3)	77.4 (9.5)
Anticipation HR	76.2 (12.3)	76.3 (10.4)	79.5 (14.2)	85.7 (10.4)
Experimental SBP	116.3 (11.2)	115.3 (6.6)	112.0 (9.0)	116.7 (12.1)
Experimental DBP	77.7 (11.1)	75.8 (8.6)	76.3 (9.5)	78.1 (9.7)
Experimental HR	82.0 (13.0)	80.5 (9.0)	81.2 (13.0)	88.7 (11.3)
Recovery SBP	110.1 (12.3)	111.5 (6.1)	110.5 (9.5)	113.4 (12.3)
Recovery DBP	75.5 (9.7)	75.4 (8.0)	74.7 (9.6)	77.1 (8.6)
Recovery HR	77.0 (13.2)	78.2 (9.7)	79.3 (12.7)	85.6 (10.2)

TABLE 8

PSYCHOLOGICAL DEPENDENT VARIABLES FOR EXPERIMENTAL GROUPS

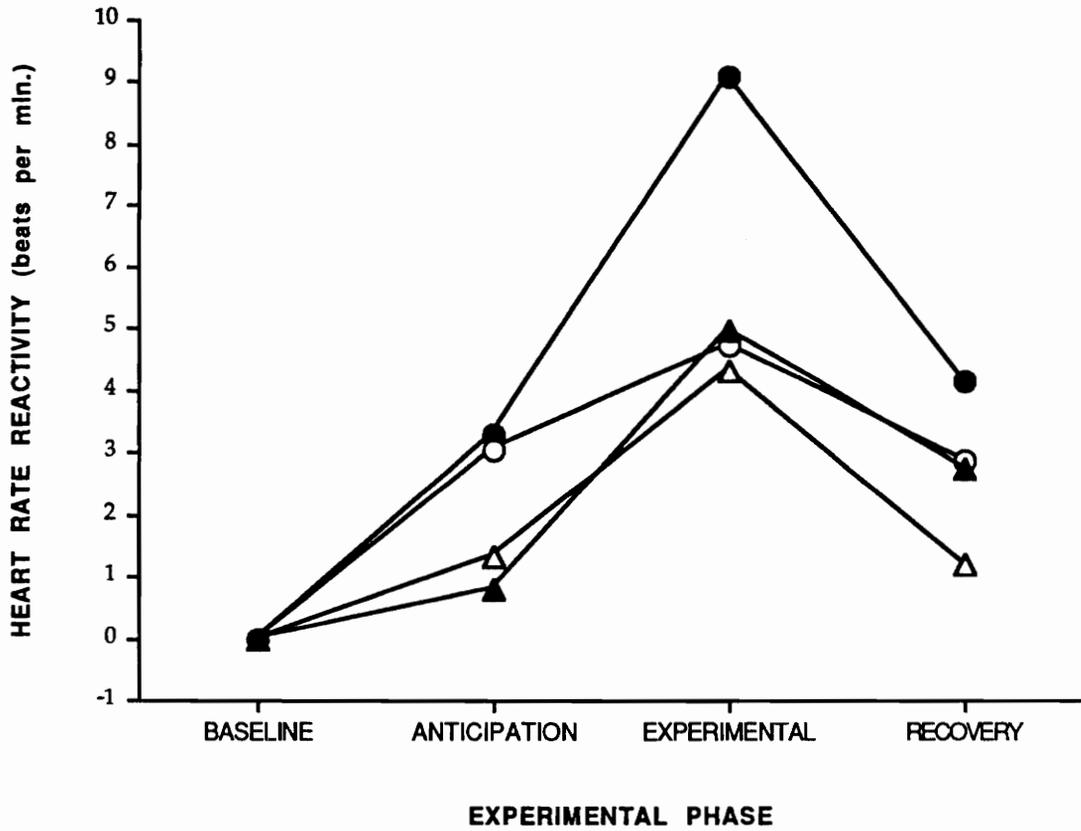
DEPENDENT VARIABLES	HIGH FGRS STRESS	LOW FGRS STRESS	HIGH FGRS CONTROL	LOW FGRS CONTROL
STRESS	1.9 (1.3)	1.1 (.9)	2.0 (1.1)	1.2 (1.0)
FSTRESS	1.7 (1.5)	1.3 (1.2)	1.5 (.8)	1.1 (.8)
COMMITMENT	3.7 (1.9)	2.8 (2.1)	3.6 (2.1)	2.0 (2.0)
DISCOMFORT	3.7 (1.5)	1.7 (1.4)	2.2 (1.5)	1.6 (1.5)
VIDEO	2.7 (1.5)	2.0 (1.8)	3.4 (1.8)	2.3 (1.8)

Standard Deviations are included in parenthesis

return-day baseline for each FGRS by Condition group is set at zero. This graph most accurately represents the statistical model for a repeated measures analysis of variance. Note how High FGRS women showed greater HR elevations than Low FGRS women during the anticipation phase. This finding emphasizes how cognitive appraisal actually may prepare an individual for stress before coping behaviors are required. Also note the significant interaction between the baseline and experimental phases, due to the High FGRS-Stress Condition group's reactivity. This significant finding lends support for Hypothesis # 1, since High FGRS women are showing greater HR reactivity only in the Stress Condition, but not in the Control Condition. Despite experimental condition, Low FGRS women are evidencing similar amounts of lower stress.

Typically, analyses on recovery CVR variables are of minimal interest. However, Heart rate reactivity across all four experimental phases using a repeated measures ANOVA also resulted in a trend for interaction whereby High FGRS women and participants in the Stress Conditions evidenced more HR reactivity than Low FGRS women and participants in the Control Conditions [$F(3, 106)=2.54, p<.06, \text{One Tailed}$].

Analyses for systolic cardiovascular reactivity (CVR) also supported Study 2 hypotheses. However, these findings were not as substantial as heart rate CVR measures. A repeated measures ANOVA between baseline and experimental systolic blood pressure found a trend for interaction [$F(1, 107)= 1.79, p<.09, \text{One Tailed}$]. High FGRS participants in the Stress Condition showed an increase in SBP, while High FGRS-Control group showed a



- HIGH FGRS-STRESS CONDITION
- HIGH FGRS-CONTROL CONDITION
- ▲ LOW FGRS-STRESS CONDITION
- △ LOW FGRS-CONTROL CONDITION

FIGURE 1

**RELATIVE HEART RATE REACTIVITY
BY FGRS AND CONDITION**

decrease in SBP between these phases. At the same time, it appears that Low FGRS–Stress women showed a slightly greater increase in SBP than Low FGRS–Control participants relative to their initial baselines. Figure 2 illustrates this trend in interaction between the baseline and experimental phases.

Analyses for diastolic blood pressure CVR did not support the experimental hypotheses. Figure 3 displays DBP reactivity for the four groups relative to their baselines. Although this graph is somewhat ambiguous, there was a statistical trend for interaction between baseline and experimental phases [$F(1,107)=2.2$, $p<.07$, One Tailed]. Participants in the Stress Conditions appear to increase in DBP at a greater rate than Control Condition participants and Low FGRS women seem to show greater diastolic reactivity than High FGRS women.

Post-hoc Analyses

Post-hoc data analyses determined that participants fell unequally into FGRS by Condition cells on two relevant Study 1 variables. While the experimental groups did not differ on weight or body mass index (BMI), Table 6 displays differences in BULIT and BIAS–Trait group means across the four experimental cells. Since it seems possible that higher body image anxiety and bulimia prone individuals could be more sensitive to the body image threat manipulation in this study, this inequality across conditions of BULIT and BIAS–Trait scores may have compromised experimental effects. However, these differences were a source of unsystematic error resulting from the inadequacy of random assignment.

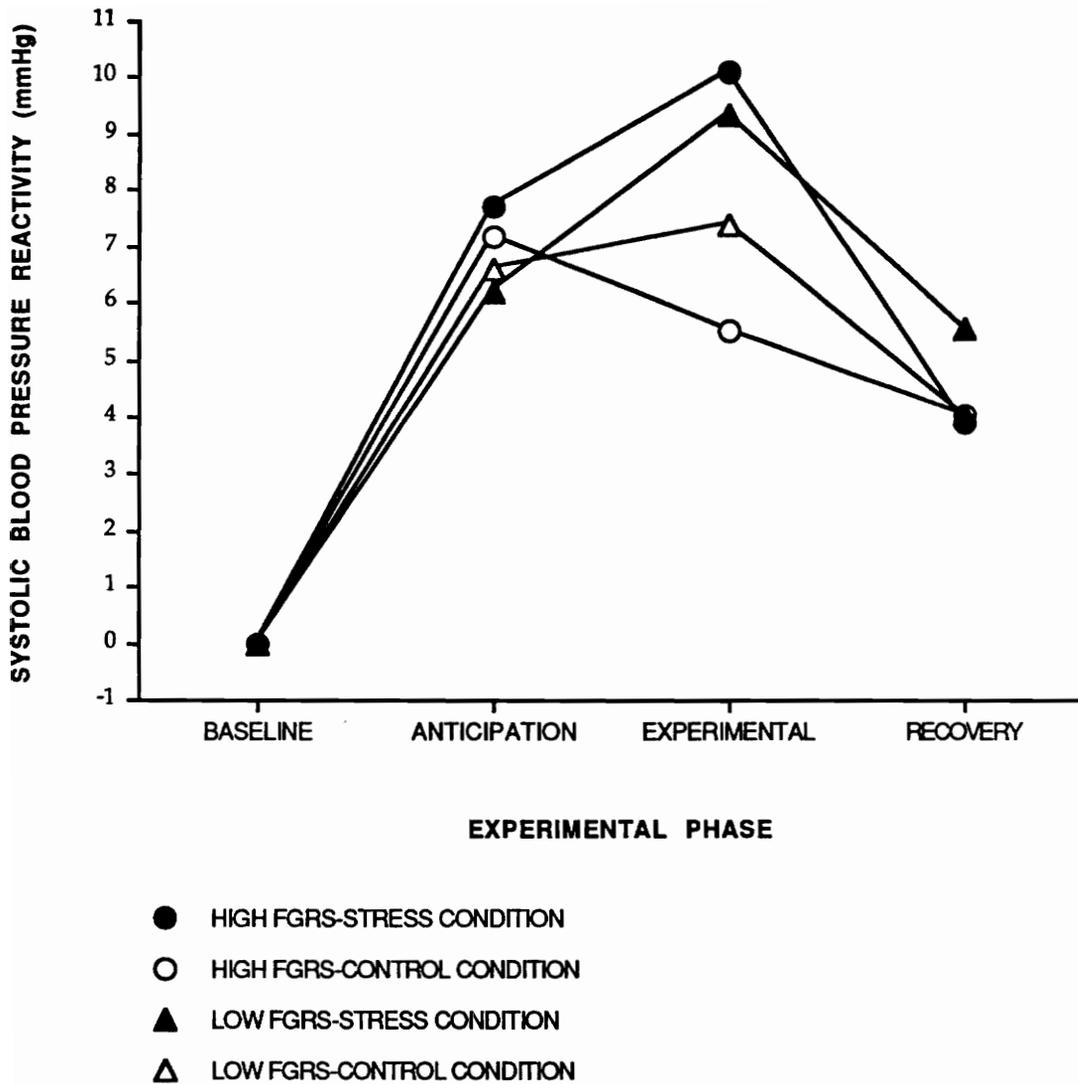
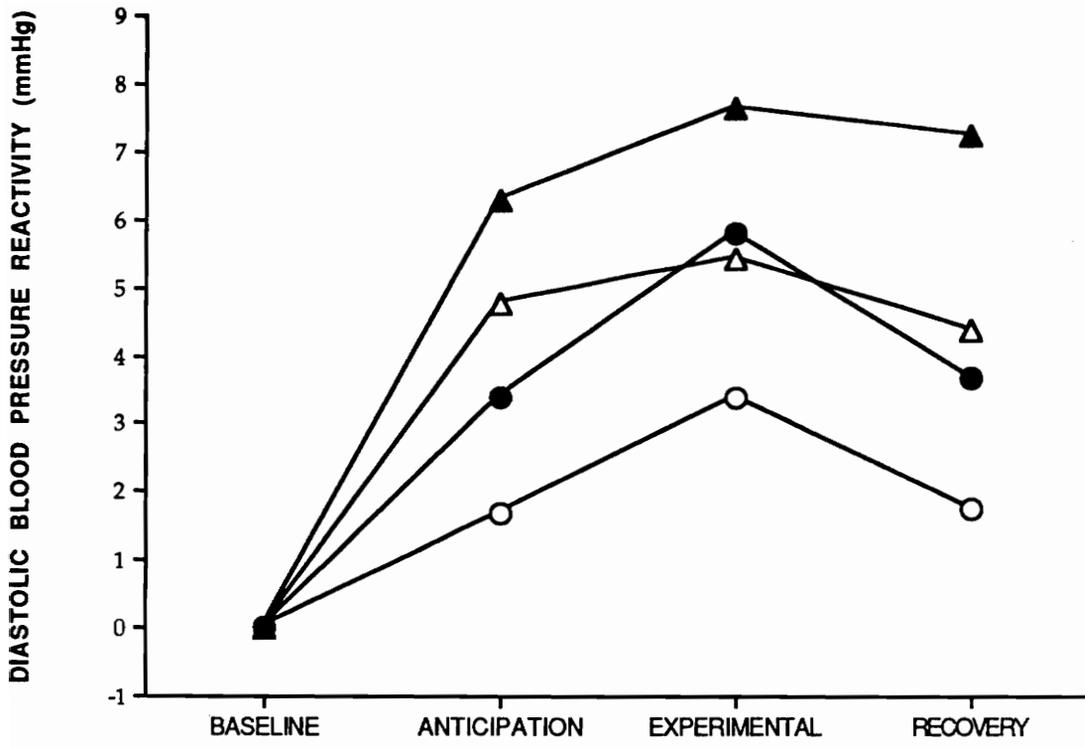


FIGURE 2

**RELATIVE SYSTOLIC BLOOD PRESSURE REACTIVITY
BY FGRS AND CONDITION**



EXPERIMENTAL PHASE

- HIGH FGRS-STRESS CONDITION
- HIGH FGRS-CONTROL CONDITION
- ▲ LOW FGRS-STRESS CONDITION
- △ LOW FGRS-CONTROL CONDITION

FIGURE 3

RELATIVE DIASTOLIC BLOOD PRESSURE REACTIVITY
BY FGRS AND CONDITION

Despite random assignment, participants who were assigned to the High FGRS-Stress Condition had significantly lower FGRS scores than High FGRS participants assigned to the Control Condition [$T(53) = 3.65, p < .001$, Two Tailed]. Since higher FGRS scores were predicted to be more reactive, the fact that the High FGRS-Stress group had lower scores suggests a possible Type 2 error may have occurred. In other words, had the High FGRS groups had equal FGRS means, the several interaction trends may have reached significance. Low FGRS participants had similar FGRS means regardless of experimental condition. Table 6 lists these FGRS x Condition means.

Finally, an unusually high baseline heart rate mean in the Low FGRS-Control Condition group seems to have created a significant heart rate difference between groups during the return-day baseline [$F(1,86) = 4.1, p < .05$]. There is no apparent explanation for this idiosyncratic finding other than random variability. However, this high baseline emphasizes the need for statistical analyses such as repeated measures ANOVA which account for each individual participant's experimental score relative to her own baseline score. Return-day baseline systolic and diastolic blood pressures were not different between experimental groups.

Psychological Results

Analysis of Variance on Body Image Anxiety-State scores revealed no significant differences between groups. Analyses of changes between BIAS-Trait and BIAS-State scores found that all experimental groups experienced a decline in scores which implies that participants were experiencing less body image anxiety after

the experiment than is typical for them. The hypothesized FGRS by Condition interaction was not found in Trait verses State differences. Recall that individuals in the High FGRS-Control and Low FGRS-Stress groups had significantly higher pretest BIAS-Trait scores. It is believed that these pretest differences hindered predicted FGRS by Condition effects for this psychological dependent variable.

A series of FGRS x Condition ANOVAs were conducted for each item on the Dieting Propensity Scale (Appendix E). Table 8 displays means for each of these variables. There were no significant effects for the dieting behavior variables. An ANOVA for self-reported stress showed a significant effect by FGRS score with High FGRS women reporting more stress across conditions than Low FGRS women [$T(105)=3.8$, $p<.0001$, One-Tailed]. The same effect was found for FStress, a variable assessing a hypothetical female research assistant as opposed to the actual male research assistant [$T(105)=1.9$, $p<.03$, One-Tailed]. High FGRS participants reported that it was more important for them than Low FGRS women to do well during the exam and interview [$T(105)=3.2$, $p<.003$, One-Tailed]. High FGRS participants also reported experiencing more discomfort during the exam and interview than Low FGRS participants [$T(105)=1.4$, $p<.045$, One-Tailed]. Likewise, High FGRS women reported more stress due to videotaping than Low FGRS women [$T(105)= 2.6$, $p<.005$, One-Tailed].

Overall, results for experimental manipulation checks were not consistent with the predicted interaction whereby High FGRS

women should have reported more stress only in the Stress Condition, but not in the Control Condition. Instead, a main effect for FGRS with High FGRS participants reporting more stress than Low FGRS women was found. However physiological results showed an interaction effect with High FGRS women in the Stress Condition displaying more distress than High FGRS women in the Control Condition. Thus, one must question why self-reported stress was different from physiological indicators of stress. There are several potential explanations for these findings. First, High FGRS women may have experienced more subjective stress across conditions, whereas physiological variables were sensitive enough only to capture the interaction of FGRS with the situation. Thus, the interaction of FGRS and Condition which was evident by heart rate and a trend in systolic blood pressure reactivity may have not been cognitively detectable for these women. Second, High FGRS as opposed to Low FGRS women may be more likely to disclose feelings of distress indiscriminant of the situation. Finally, the Dieting Propensity Scale which was used to ascertain subjective stress and intentions regarding dieting behavior has questionable validity.

Study 2 Discussion

This validation study suggests that the Feminine Gender Role Stress Scale (Gillespie, 1990) is an accurate predictor of stress as measured by HR reactivity in a situation which challenged femininity. Thus, the FGRS may have utility for predicting physiological stress in given situations and identify women at risk for developing certain psychological disorders, such as body

image disturbance and eating disorders. Support for these conclusions were presented deductively, using general correlational evidence in Study 1 and then more specific behavioral and physiological evidence in Study 2.

Hypotheses #1 and #2 for Study 2

Recall that the first question asked regarding construct validity of the FGRS scale was: Do women who report a tendency on the FGRS scale to appraise stress in situations threatening their femininity actually experience and show more stress during a female relevant stressor?

The first purpose of this experiment was to test the validity of the Feminine Gender Role Stress Scale as a predictor of physiological behavior in situations involving female gender role stressors or challenges. Thus, analyses on dependent variables should have been influenced by FGRS level interacting with situational cues from the experimental condition. Manipulation checks indicated FGRS as a predictor of subjective stress while the physiological variables suggested that FGRS interacted with situational cues to produce this stress.

In this study, the Stress Condition involved a situation in which participants' body image was threatened by having a male evaluate their body fat percentage and ask questions about their least favorite body areas. A previous pilot study suggested that this situation was more stressful for females than males. Thus, this stressor may be called a female gender relevant stressor. The Control Condition protocol mirrored typical "gender neutral" doctor's office procedures such as an eye exam and an evaluation of breathing with a stethoscope, while still producing similar

individual movements. This was necessary since cardiovascular variables are sensitive to physical exertion.

High FGRS women were predicted to show more physiological reactivity in the Stress Condition than Low FGRS women. However, physiological reaction for the Control Condition should not differ among High and Low FGRS women. All women should show more stress in the Stress Condition as opposed to the Control Condition; however, this should be qualified by High versus Low FGRS categorization. Thus, if experimental groups were ranked from highest in predicted stress reaction to lowest, hypotheses would resemble: High FGRS-Stress, Low FGRS-Stress, High or Low FGRS-Controls.

Scores on the FGRS scale were visualized as linear predictors of stress in situations calling upon female gender role imperatives. For this reason, the experimental manipulation of FGRS involved selecting women who score in the upper (FGRS score > 136) and bottom (FGRS scores < 120) thirds on the range of scores. Extreme scores were selected for the purpose of enhancing experimental effects counteracted by regression to the mean. An alternative conceptualization of FGRS assumes that the relationship of FGRS to stress appraisals of female gender role stressors and vulnerability to female disorders is nonlinear. Perhaps extreme scores on the FGRS distribution are positively related to vulnerability for female psychopathology, whereas individuals scoring closer to the mean are more normal or healthy. If this were the case, this experiment lacks design sensitivity to detect a U-shaped relationship since middle FGRS

women were not called back to participate in the Stress versus Control Conditions.

In Study 2 heart rate appeared to be the most sensitive cardiovascular reactivity measure in response to the experimental stress manipulation. Heart rate CVR also yielded the strongest support for experimental hypotheses. Previous research on female CVR has also suggested that heart rate is a more sensitive indicator for detecting stress than systolic and diastolic blood pressure. Watkins and Eaker (1986), in a review of demographic influences on cardiovascular reactivity, concluded that women are less physiologically reactive than men. Lash (1990) in his review of gender differences in cardiovascular reactivity also reported that females tend to be less reactive than males, especially according to systolic blood pressure. There is some evidence that the female hormone, estrogen, plays some role in this diminished systolic reactivity (Saab, Matthews, Stoney, & McDonalds, 1989). However, Lash (1990) suggests that studies have typically shown males to be more reactive than females because these studies involved male gender role stressors which interact with male biology. Likewise, these studies generally involve analyses of CVR based primarily on systolic blood pressure changes. Thus, women may have the potential to show more reactivity than men provided that the situation entails a female gender role stressor and other CVR variables besides systolic blood pressure are evaluated.

Several studies suggest that females can evidence greater heart rate reactivity than males (Collins & Frankenhaeuser, 1978; Graham, Cohen, & Schmajonian, 1966). Generally, heart rate,

measured in beats per minute, results from opposing influences of stimulatory effects of norepinephrine in the sympathetic nervous system and the inhibitory effects of acetylcholine from the parasympathetic nervous system. When the parasympathetic neurons are blocked due to physical exertion or stress, heart rate increases (Spence & Mason, 1987). Baldwin and Clevenger (1980) found that women showed greater heart rate reactivity during public speaking than men. Similar to the public speaking stressor, the stressor in Study 2 was also an interpersonal stressor since a male research assistant was assessing the appearance of a female participant. Van Egeren (1979) found that women showed more heart rate reactivity while playing a competitive game as opposed to playing a game in which cooperation was required. Thus, heart rate CVR may be the strongest physiological variable in detecting a social-psychological stressor for women. In conclusion, females generally evidence lower systolic CVR than males, yet can show greater cardiovascular reactivity than males in terms of heart rate. Therefore, heart rate reactivity will be considered the foremost cardiovascular variable in this study, since females seem to more reliably produce heart rate accelerations during stressors similar to the one in this study. Systolic and diastolic blood pressure measures will serve as auxiliary cardiovascular variables.

Women scoring high on the FGRS scale are self-reporting a tendency to experience stress when faced with situations that threaten or challenge their femininity. Analyses of heart rate

reactivity found the strongest statistical support for the Feminine Gender Role Stress scale as a predictor of women's stress in a situation challenging their body image. As hypothesized, the FGRS scale did not differentiate women in a similar situation that did not involve a female gender relevant stressor (Control Condition). Therefore, it appears that the FGRS scale is valid measure of cognitive stress appraisal for specific female gender relevant challenges.

The FGRS Unattractiveness Factor appears to be the best measure for cognitive appraisal of stress for situations involving body image. The Unattractiveness Factor was the only FGRS scale factor to significantly correlate with body image disturbance or eating disorders scales. Likewise, the stress manipulation used in Study 2 most resembles the content of this factor. Although the entire FGRS served as a sufficient predictor of HR reactivity in Study 2 situations, the Unattractiveness Factor may have been responsible for this CVR in the Stress Condition, since High FGRS scores also corresponded with higher Factor 2 scores. To ascertain whether or not Factor 2 scores were capable of similar prediction, a post hoc analysis of the Unattractiveness Factor was performed. Rather than evaluate a prediction of Upper and Lower third percentile full FGRS scale cutoffs, a median split of Factor 2 was used to create high (Factor 2 \geq 24) and low Factor 2 (Factor 2 $<$ 23) groups in order to examine CVR in Stress versus Control Conditions. Thus, an artificial 2 (High vs. Low FGRS Factor 2) by 2 (Stress vs. Control Condition) design was created. Although Factor 2 was expected to interact with the experimental condition in terms of

HR and SBP, this interaction was not found. Instead, a condition effect was found for HR whereby participants in the Stress Condition evidenced greater HR reactivity than participants in the Control Condition between the return-day baseline and experimental phases [$F(1, 106) = 5.3, p < .01$]. A Factor 2 effect was found for SBP with High Factor 2 participants showing greater SBP reactivity than Low Factor 2 women between baseline and the experimental phase [$F(1, 106) = 4.9, p < .02$]. Appendix I illustrates graphs for HR, SBP, and DBP reactivity which are similar to Figures 1, 2, and 3 except they show relative reactivity for High versus Low Factor 2 score groups rather than High versus Low FGRS score groups.

Several conclusions can be drawn from this post hoc analysis of Factor 2 influences on CVR in Study 2, none of which yield great clarity to the question as to whether the Full FGRS scale or its Factor 2 are better stress predictors. First, Factor 2 may not be as adequate as the Full FGRS scale as a predictor of physiological stress in women even in situations resembling this factor's content. Second, statistical sensitivity may have been compromised in this post hoc analysis, since a median split on Factor 2 was being compared to an Upper and Lower third percentile split for the Full FGRS scale. One would expect better results with scores from the extremes on a scale as opposed to scores closer to the mean. Because of this, it remains unclear as to whether Factor 2 analyses suggest that this factor is unable to predict the interaction between a reported cognitive appraisal style and the situational condition

or that a statistical difference affected the results. Although the Unattractiveness Factor of the FGRS scale was the only factor which was significantly related to body image and eating disorders in Study 1, it may be presumptive to assume that the Stress Condition devised for Study 2 was drawn exclusively from Factor 2. The Stress Condition was more than just a body image threat. Perhaps variance from the other FGRS factors also contributed to the HR and SBP interactions in Study 2. This alternate explanation seems plausible since the Stress Condition involved an interpersonal interaction with a male which may have elicited appraisal of potential victimization or concerns about responding assertively. Finally, the full FGRS scale and Factor 2 are highly correlated [$r=.71$, $p<.05$]. Although it may be conceptually important to understand which FGRS factors are better predictors of stress in certain situations, it seems almost as feasible to use the entire scale while still evaluating its individual components.

Cognitive stress appraisal related to attractiveness, as measured by Factor 2, may be the best female gender role stress predictor in determining which women are most vulnerable to eating disorders. However, the whole FGRS scale is advocated for use in research and clinical work since it measures a more comprehensive assessment of stress appraisal relating to traditional female gender role imperatives.

Female gender role stress appraisal may help to bridge the gap between female gender role socialization and women's preponderance in disorders such as depression, anxiety disorders and eating disorders. Perhaps certain females are socialized to

value feminine qualities such as nurturance, physical attractiveness, and acquiescence. These beliefs, in turn, facilitate a stress and coping response in situations challenging or threatening them. It is important to recognize that these studies focused on primary stress appraisal processes. Further research is necessary to investigate female gender role stress and its relationship to secondary appraisal processes. If a female lacks appropriate coping skills for these challenging gender role situations, then her stress is exacerbated. Over time, repeated female gender role stressors may lead to dysfunctional coping and the development of psychopathology.

Women do not develop eating disorders merely because they are concerned about becoming fat or believe that they are overweight. Other significant factors such as interpersonal conflicts, particularly with family, and ineffective coping techniques, may also contribute to the development of an eating disorder. Although it is expected that the FGRS Factor 2 would be most related to scales which measure body image and eating disorders, it is for this reason that the full FGRS scale is believed to have more utility to identifying individuals at risk for general psychopathology and possibly even eating disorders. This suggestion, however, calls for further empirical exploration.

The second question postulated regarding construct validity of the FGRS scale was: Are women who report higher female gender role stress more likely to have negative body image and engage in dysfunctional eating behaviors?

Several researchers have attempted to pinpoint the link between the female gender role and the development of eating disorders. Boskind-Lodahl (1976) and later Boskind-White and White (1987) were the first clinicians to described their eating disordered clients as excessively feminine and therefore traditional in their gender role orientation. However, research in this area remains inconclusive (Ollerdissen, 1981; Rost et al., 1982; Srikameswaren et al., 1984).

Methodological problems may help to explain the discrepancy between clinicians' perception and lack of empirical support for the influence of traditional gender roles in the development of eating disorders. Each of the previously listed studies involved the use of the Bem Sex Role Inventory (BSRI: Bem, 1974) or the Personality Attributes Questionnaire (PAQ: Spence, Helmreich, and Stapp, 1974) as the measure of gender role schema. However, these instruments measure only positive traits of masculinity and femininity. They fail to capture potentially negative or stressful aspects of being a female or a male in our culture. Since the FGRS scale measures the tendency to appraise negative female gender role situations as stressful, the FGRS scale should have more utility in diminishing the gap between the negative aspects of female gender roles and the development of eating disorders, which incidently, are eight time more prevalent in women than men (Pyle and Mitchell, 1986).

Female gender role stress, a an enduring cognitive style, may directly contribute to the development of body image disturbance and eating disorders. For instance, suppose a woman is High FGRS, especially high on the Unattractiveness Factor,

presumably because she has been socialized to believe that physical attractiveness is extremely important for her social acceptance and self-esteem. Moreover, this woman perceives herself to be heavier than her slender friends and her media role models. Whenever she encounters a situation in which her body image is challenged (such as the Stress Condition in this study) she experiences stress. Eventually, every-day experiences of gender role stress may lead her to resort to maladaptive coping strategies such as severe food restriction in order to initiate weight loss. Polivy and Herman (1985) suggest that stringent dieting is the first step towards developing eating disorders since dieting leads to binge eating, which through guilt, facilitates more dieting, and eventually the negative cycle begins. Thus, a hypothetical pathway can be traced from extreme female gender roles to the development of an eating disturbance.

In this study, the FGRS scale has been shown to predict stress response based on heart rate reactivity, and to a lesser extent systolic blood pressure, in a situation involving a threat to physical appearance. Further research exploring the link between eating disorders and female gender role stress is advocated. This study did not assess a clinical population of eating disordered individuals. Perhaps, women who enter treatment programs for eating disorders could be evaluated using the FGRS scale. It is hypothesized that eating disordered clients would have high FGRS scores, especially high Factor 2 scores. Likewise, effective long-term therapy for eating disorders would be expected to lower FGRS scores. Additional research might

include a longitudinal study in which younger women are tested with the FGRS scale and followed up years later and tested for psychopathology. In a study like this, FGRS may predict the onset of later disorders. Overall, the FGRS scale seems to promise utility as a measure of female stress appraisal and potential vulnerability to later psychological disorders.

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Appendix A
Mass Testing- Attitudes & Health Phase-I- Consent Form

I, _____, freely and voluntarily consent to participate in a research study called "Mass Testing, A&H-1" which is about attitudes and behaviors related to stress, personality traits, physical fitness, and eating behavior. The procedures are as follows. They have been explained to me and I understand them clearly.

1. I will be asked to complete several personality and behavioral questionnaires. These will require that I rate aspects of myself or my life on a specific continuum. My answers will be recorded with a number two pencil on the opscans provided.
2. The questionnaires will take approximately one hour to complete and I will receive one extra credit point toward my grade in Psychology for participation in this study.
3. I understand that my participation involves minimal physical and psychological risk.
4. I understand that all aspects of this research are voluntary and I realize that I may withdraw my consent at any time without penalty.
5. I understand that all information that I supply will be held confidential.

Signature _____

If you are interested in participating in additional research studies for additional extra credit, please list your name, address, and telephone number.

Name: _____

Address: _____

Phone Number: _____

If you have any questions about this research, please contact:

Denise Martz-Ludwig, Principal Investigator 953-1384
Dr. Richard Eisler, Faculty Sponsor 231-7001
Dr. Helen Crawford, Human Subjects Committee Chair 231-6520
Dr. Ernest Stout, Research Administration Department Head 231-5281

Appendix A (Cont.)

Health and Attitudes Study- Phase-II- Consent Form

I, _____, freely and voluntarily consent to participate in a research study called "Attitudes and Health" which is about my attitudes concerning physical fitness and includes having my fitness evaluated. The procedures are as follows. They have been explained to me and I understand them clearly.

1. I will be asked to complete several personality and behavioral questionnaires that will deal with my feelings, my behavior, and my attitudes.
2. I will participate in a short physical exam that will evaluate my fitness and will include having my blood pressure and heart rate monitored as well as other health related measures.
3. The questionnaires and physical exam will take approximately one hour and I will receive one extra credit point toward my grade in Psychology for participation in this study.
4. I understand that my participation involves minimal physical and psychological risk and I may receive information pertaining to my health.
5. I understand that all aspects of this research are voluntary and I realize that I may withdraw my consent at any time without penalty.
6. I understand that all information that I supply will be held confidential.

Signature _____

If you have any questions about this research, please contact:

Denise Martz-Ludwig, Principal Investigator 953-1384
Dr. Richard Eisler, Faculty Sponsor 231-7001
Dr. Helen Crawford, Human Subjects Committee Chair 231-6520
Dr. Ernest Stout, Research Administration Department Head

Appendix B (Cont.)

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 at home alone. _____
23. Having to deal with unwanted sexual advances. _____
24. Losing custody of your children after a 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 at you. _____
28. Turning middle-aged and being single. _____
29. Having your car break down on the road. _____
30. Having multiple sex partners. _____
31. Having to "sell" yourself at a job interview. _____
32. Hearing that a dangerous 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 C

Body Esteem Scale (BES) Franzoi & Shields (1984)

Please rate the following items according to your personal feelings about your body based on the following scale from 1 "Have Strong negative feelings " to 5 "Have strong positive feelings.

 1-----2-----3-----4-----5
 Have Have Have Have Have
 Strong Moderate No Feeling Moderate Strong
 Negative Negative One Way Or Positive Positive
 Feelings Feelings The Other Feelings Feelings

1. Body scent
2. Appetite
3. Nose
4. Physical Stamina
5. Reflexes
6. Lips
7. Muscular strength
8. Waist
9. Energy level
10. Thighs
11. Ears
12. Biceps
13. Chin
14. Body build
15. Physical coordination
16. Buttocks
17. Agility
18. Width of shoulders
19. Arms
20. Chest or breasts
21. Appearance of eyes
22. Cheeks/cheekbones
23. Hips
24. Legs
25. Figure or physique
26. Sex Drive
27. Feet
28. Sex organs
29. Appearance of stomach
30. Health
31. Sex activities
32. Body hair
33. Physical condition
34. Face
35. Weight

Appendix D

The Bulimia Test (BULIT; Smith & Thelen, 1984)

Please respond to each item as honestly as possible; remember, all of the information you provide will be kept strictly confidential.

1. Do you ever eat uncontrollably to the point of stuffing yourself (Going on eating binges) ?
 1. once a month or less (or never)
 2. 2-3 times a month
 3. once or twice a week
 4. 3-6 times a week
 5. once a day or more
2. I am satisfied with my eating patterns.
 1. agree
 2. neutral
 3. disagree a little
 4. disagree
 5. disagree strongly
3. Have you ever kept eating until you thought you'd explode?
 1. practically every time I eat
 2. very often
 3. often
 4. sometimes
 5. seldom or never
4. Would you presently call yourself a Binge Eater?
 1. yes, absolutely
 2. yes
 3. yes, probably
 4. yes, possibly
 5. no, probably not
5. I prefer to eat:
 1. at home alone
 2. at home with others
 3. in a public restaurant
 4. at a friend's house
 5. doesn't matter
6. 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

Appendix D (Cont.)

7. 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)
8. I eat until I feel too tired to continue
 1. at least once a day
 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)
9. How often do you prefer eating ice cream, milk shakes, or pudding during a binge?
 1. always
 2. frequently
 3. sometimes
 4. seldom or never
 5. I don't binge
10. How much are you concerned about your eating binges?
 1. I don't binge
 2. bothers me a little
 3. moderate concern
 4. major concern
 5. probably the biggest concern in my life
11. 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
12. Do you ever eat to the point of feeling sick?
 1. very frequently
 2. frequently
 3. fairly often
 4. occasionally
 5. rarely or never
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

Appendix D (Cont.)

14. I don't like myself after I eat too much
 1. always
 2. frequently
 3. sometimes
 4. seldom or never
 5. I don't eat too much
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. Which of the following describes your feelings after a binge?
 1. I don't binge eat
 2. I feel O.K.
 3. I feel mildly upset with myself
 4. I feel quite upset with myself
 5. I hate myself
17. I eat a lot of food when I'm not hungry
 1. very frequently
 2. frequently
 3. occasionally
 4. sometimes
 5. seldom or never
18. My eating patterns are different from eating patterns of most people
 1. always
 2. almost always
 3. frequently
 4. sometimes
 5. seldom or never
19. I have tried to lose weight by fasting or going on "crash" 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 5 times in the past year
20. I feel sad or blue after eating more than I'd planned to eat
 1. always
 2. almost always
 3. frequently
 4. sometimes
 5. seldom or never

Appendix D (Cont.)

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. One of your best friends suddenly suggests that you both eat at a new restaurant buffet that night. Although you'd planned on eating something light at home, you go ahead and eat out, eating quite a lot and feeling uncomfortably full. How would you feel about yourself on the ride home.
 1. fine, glad I tried a new restaurant
 2. a little regretful that I had eaten so much
 3. somewhat disappointed in myself
 4. upset with myself
 5. totally disgusted with myself
24. I would presently label myself as a "compulsive eater" (one who engages in episodes of uncontrolled eating)
 1. absolutely
 2. yes
 3. yes probably
 4. yes, possibly
 5. no probably not
25. What is the most weight you've ever lost in one month?
 1. over 20 pounds
 2. 12-20 pounds
 3. 8-11 pounds
 4. 4-7 pounds
 5. less than 4 pounds
26. If I eat too much at night I feel depressed the next morning
 1. always
 2. frequently
 3. sometimes
 4. seldom or never
 5. I don't eat too much at night

Appendix D (Cont.)

27. Do you believe that it is easier for you to vomit than most people?
1. yes, it's no problem for me at all
 2. yes, it's easier
 3. yes, it's a little easier
 4. about the same
 5. no, it's less easy
28. I feel that food controls my life
1. always
 2. almost always
 3. frequently
 4. sometimes
 5. seldom or never
29. I feel depressed immediately after I eat too much
1. always
 2. frequently
 3. sometimes
 4. seldom or never
 5. I don't eat too much
30. How often do you vomit after eating in order to lose weight?
1. less than once a month or never
 2. once a month
 3. 2-3 times a month
 4. once a week
 5. 2 or more times a week
31. 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 as most people
 5. more slowly than most people (or not applicable)
32. What is the most weight you've ever gained in one month?
1. over 20 pounds
 2. 12-20 pounds
 3. 8-11 pounds
 4. 4-7 pounds
 5. less than 4 pounds
33. My last menstrual period was:
1. within the past month
 2. within the past two months
 3. within the past 4 months
 4. within the past 6 months
 5. not within the past 6 months

Appendix D (Cont.)

34. I use diuretics (water pills) 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)

35. How do you think your appetite compares with that of most people you know?
 1. many times larger than most
 2. much larger
 3. a little larger
 4. about the same
 5. smaller than most

36. My menstrual periods occur once a month.
 1. always
 2. usually
 3. sometimes
 4. seldom
 5. never

Appendix E

Body Image Anxiety Inventory
(BIAS; Reed, Thompson, Brannick, & Sacco, 1990)

Directions (State): Please read each statement and choose the answer which best indicates the extent to which you feel right now. I feel anxious, tense, or nervous about:

Directions (Trait): Please read each statement and choose the answer which best indicates the extent to which you feel generally. I feel anxious, tense, or nervous about:

-----0-----1-----2-----3-----4
Not at Slightly Moderately Very Much Exceptionally
All So

1. The extent to which I look overweight _____
2. My thighs _____
3. My buttocks _____
4. My hips _____
5. My stomach (abdomen) _____
6. My legs _____
7. My waist _____
8. My muscle tone _____
9. My ears _____
10. My lips _____
11. My wrists _____
12. My hands _____
13. My forehead _____
14. My neck _____
15. My chin _____
16. My feet _____

Appendix F

Dieting Propensity Scale

Directions: Please rate the following items according to the scale provided.

1-----2-----3-----4-----5-----6-----7

Never Usually Sometimes Occasionally Often Usually Always
or Not But True True True or
almost True infrequently True True True Almost
Never True Always
True True

- *****
1. How often would you say that you would like to lose weight?

 2. How often are you engaged in a weight reduction plan?

 3. How stressful was this experiment for you?

 4. If this experiment had been conducted by a female experimenter, how stressful do you think it would have been then?

 5. What is your height?

 6. What is your weight?

 7. How much weight do you desire to lose at this time?

 8. How important was it for you to do well on this exam? ____
 9. How often did this exam and interview cause you to feel uncomfortable? ____
 10. How stressful was it for you to know that you were being videotaped? _____
 11. As you go home today, do you believe that you will think much about this experiment? How will you cope with your present feelings ? _____

Appendix G

Phase-II Study (Health and Attitudes) Protocol

SET UP

- Turn Red/Orange Power Switch On -Also Emerald switch
- Boot Up Computer in Room 208
 - get C:> type CD\BITCOM hit enter
 - get C:\> type BITCOM hit enter
 - get a menu screen type "1" for screen phone numbers
 - get a menu screen move cursor to BP hit enter
 - For next subject, hit OPTION 2 * 6 (disconnect)
 - get a menu screen, move cursor to BP hit enter
 - To quit, hit F2 key two times, cut computer off
- Turn TV power on- set channel 3
- Turn Blood Pressure Machine On in Room 204
 - cycle at 1 minute
 - deflate 3.5
 - inflate 150 (if inconclusive reading, try 180)
 - plug in BP cuff, place cord around partition
 - set cuff in chair
- Turn Computer Display on, tilt out of sight from subject
- Get inventory packet, pencils or pens, and a lapboards
 - Store these behind recliner & out of sight
 - consent form
 - Individual DATA Sheet for Your Records
 - "Health and Attitudes Study" inventories including BIAS, DPS
 - orange opscan for their extra credit
 - skin calipers - tuning fork
 - measuring tape - stethoscope
 - stopwatch or watch - lap board
- Fix Sign On the Door

Set Up With the Subject

- Greet subject
- Ask her to "sit in the chair and make herself comfortable."
- Ask to "sit relaxed with arms on chair arms with both palms facing upward."
- Ask the subject "if she has smoked or drank caffeine or alcohol within the past hour." If yes, record on data sheet.
- Ask subject "which hand she uses to write with."
- Measure her arm and explain that you are "measuring her arm so you can find the correct size blood pressure cuff for her."
- Set up BP cuff on arm.
 - Say you "will be doing a test run to make sure you are getting a reasonable reading."
 - Do a test run. Push toggle down to test. "Please let me know the first time it inflates if it is too uncomfortable".
- Explain to the subject that the reading was O.K. If not, readjust.

Appendix G (Cont.)

- Tell subject that:

"This is a study that will look at your physical health and attitudes. As you can tell, I will be taking blood pressure readings throughout the experiment. The cuff will periodically inflate on its own."

"For the most part, this exam will be quite similar to a physical that you probably have experienced in a doctor's office, except I won't draw blood or ask you to remove any of your clothes. I will also be asking you some questions, kind of like an interview. Please answer the questions as honestly as possible."

"The most important thing is that you relax before the rest of the exam begins. It is especially important that you do not talk to me once the exam begins, unless of course, you wish to terminate the experiment. This is because talking will alter the accuracy of the blood pressure readings."

(Female Gender Role Stress Condition)

Normally, women have a body fat percentage of around 30%, college age women about 25%, whereas athletic women and models have a body fat percentage around 20%."

"The exam will consist of measures of body size and skin thickness so that I will know your body fat percentage. In other words, I will be calculating how much fat you have."

(Control Condition)

"The exam will consist of several physiological measures so that I will have some ideas about your physical health. We are exploring how individual's attitudes and lifestyles affect their general health."

Ask: "Do you have any questions?"

"O'Kay, we are ready to begin. Please sit and relax with your palms pointing upward and your feet flat on the floor. The exam normally takes about 30 minutes and will begin in a couple of minutes. I will be leaving the room and returning in a few minutes to conduct the exam. Please ignore what I am doing and relax."

- Continue to take one-minute interval BP readings until you get 3 readings in which SBP (SYS on computer) is within 5 mmHg of the first reading.- Record these 3 DBP, SBP, and HR measures on the data sheet as baseline measures.

Appendix G (Cont.)

- After recording the 3rd Baseline scores (Cuff just Deflated)
- Begin stopwatch and walk into other room.

- Pick up tape measure
- At 10 seconds, begin Procedure # 1

Procedure #1

<u>Stress Condition</u>	<u>Control Condition</u>
"Please sit up straight"	"Please sit up straight"
"I will be measuring your waist width "	"I will be listening to your lung fields. Please breath normally."
-Wrap measuring tape around waist, note reading	-Listen with stethoscope for 3 seconds on back
-Record on clipboard in inches	-Record ok on clipboard
"Please sit back and relax"	"Please sit back and relax"

- * Cuff should inflate
 - Record SBP, DBP, HR for Exp.- 1 on data sheet
 - Cuff deflates, count ten seconds
 - At 10 seconds, begin Procedure # 2

Procedure # 2

<u>Stress Condition</u>	<u>Control Condition</u>
"I will be measuring your body fat percentage"	"I will be looking at your eye muscle control."
"Please put your right hand on my left shoulder and relax at the elbow"	"Please follow my finger with both of your eyes."
-Take calipers and pinch skin at the back of the arm. Wait until needle on gauge stops for a reading.	-Move forefinger up, down, left, right
-Record on data sheet	-Record up, down, left, right on clipboard

- * Cuff should inflate
 - Record SBP, DPB, HR for Exp.- 2 on data sheet
 - Cuff deflates, count to ten
 - At 10 seconds, begin Procedure # 3

Procedure # 3

<u>Stress Condition</u>	<u>Control Condition</u>
"I need to get another measure of your body fat percentage."	"I will be testing hemispheric audition with this tuning fork. Please shut your eyes and tell me which ear you the sound moving towards."
"This time I will need to pinch the loose skin on your neck"	
-Pinch with fingers, take caliper and clamp gently, wait for needle to stop. release	-Strike tuning fork, move down left first. Repeat on right.
-Record on data sheet	-Record on data sheet

- * Cuff should inflate
 - Record SBP, DPB, HR for Exp.- 2 on data sheet
 - Cuff deflates, count to ten

Appendix G (Cont.)

- At 10 seconds, begin Procedure # 4

Procedure # 4

-Sit on couch in front of subject. Be direct. Do not display emotion or comment on questions. Scribble answers on the data sheet. Make direct eye contact!

<u>Stress Condition</u>	<u>Control Condition</u>
Ask: What is your height?	Ask: What is your age in years and months?
Ask: What is your weight?	Ask: What year are you in in school?
Ask: Do you think your weight is appropriate for your height?	Ask: Do you think your age is appropriate for your year in school?
Say: We'll double check your weight on our scales before you leave.	Say: We can check this with the Va Tech average before you leave.
Ask: Do you feel heavier than other women?	Ask: What is your major?
Ask: What part of your body are most concerned about?	Ask: What classes are you most concerned about?
Ask: What size shoe do you wear?	Ask: Do you think that most students have a tough time with these classes?
Ask: What size clothes do you wear? (Pants or dress)	Ask: Do you think you are average in this regard?
Ask: Do you think that is about average?	
Say: Please sit back and relax	Say: Please sit back and relax.

- * Wait for cuff to inflate then give inventories
- Note time on sheet for end of experimental condition

Dependent Variable Inventories

- Give BIAS, DPS inventories, aqua opscan, & pencil on lapboard
- Say: "Please read the directions and rate your answers on the aqua opscan according to how you are feeling and thinking right now. If the cuff begins to inflate, please stop writing. Resume writing as soon as it deflates. Let me know when you are finished."
- Take up all inventories and pencils
- Say: "Please sit back and relax for a couple more minutes."
- Record 2 additional SBP, DBP, and HR measures on data sheet.
- When the cuff deflates after the second reading, remove the cuff and say:

"First, I would like for you to step on the scale so that I can get an up-to-date weight measure for you, since weight is such an important variable in our study.

Appendix G (Cont.)

- Push button on scale so LED comes on
- Have her step on the scale
- Say thank you, write weight on data sheet, turn off scale

"O'Kay, the experiment is essentially over. Before you go, there are a few things that I need to ask and tell you. First let me remind you of your 15 minute resting blood pressure session. The only thing that will occur during this next session is that you will relax and have your blood pressure taken for about 10 minutes. There will be no exam or interview. Recall that you will receive two extra credit points during this 15 minute session. Likewise, someone will sign your extra credit sheet at this time.

"The full purpose of this study was to look at stress and how stress affects your body's reactions, especially in terms of blood pressure and heart rate. One of the stresses that we are studying are the stresses related with physical appearance, especially for women. By looking at personality traits and women's stress, we hope to be able to predict which women are most vulnerable to developing body image disturbances and eating disorders."

"The seminars that were offered at PSC are available by one-to-one counseling sessions or a group of women about your age. If you are still interested in either of these services, you may contact the psychological services center at 231-6914 or stop by the psychology undergraduate information center in 5094 Derring."

(FGRS Stress Condition Subjects)

"The exam that I gave you was meant to be stressful. Most women perceive it to be quite stressful and this is natural. Although I pretended to obtain your fat percentage with the skin calipers, I really did not calculate your body fat percentage. Also, I want for you to know that the interview questions that I asked you were also meant to be stress producing. Although I pretended to record your answers to these questions, I want for you to know that I really didn't record your answers."

(Control Condition Subjects)

"The exam that I gave you was devised to be a control exam. Women in the experimental exam received an exam and interview concerning body weight and physical appearance."

-
- Women who appear to be especially distressed should be given a list of local referrals.
 - Women who are interested in obtaining any of the resources that were listed in the DPS should be given this listing also.

Say:

"Because some of your classmates may be participating in this experiment later in this semester and next semester, we ask that you please do not discuss what happened in this experiment with your friends or classmates."

Ask: "Do you have any questions or comments about the experiment?"

Appendix H

Individual Subject DATA Sheet

Subject Number _____ Date _____
 Experimenter _____ Alcohol _____
 Caffeine _____
 Cigarettes _____

Conditions:
 FGRS Condition _____ Control Condition _____

Blood Pressure (Systolic/Diastolic)		Heart Rate	
Resting 1	_____/_____ /	Resting 1	_____ X
Resting 2	_____/_____ /	Resting 2	_____ Baseline
Resting 3	_____/_____ /	Resting 3	_____ _____
Exp. 1	_____/_____ /	Exp. 1	_____ _____
Exp. 2	_____/_____ /	Exp. 2	_____ _____
Exp. 3	_____/_____ /	Exp. 3	_____ Exper.
Exp. 4	_____/_____ /	Exp. 4	_____ _____
Exp. 5	_____/_____ /	Exp. 5	_____ _____
Exp. 6	_____/_____ /	Exp. 6	_____ _____
Exp. 7	_____/_____ /	Exp. 7	_____ _____
Exp. 8	_____/_____ /	Exp. 8	_____ Recovery
Exp. 9	_____/_____ /	Exp. 9	_____ _____
Exp. 10	_____/_____ /	Exp. 10	_____ _____
	Peak: ____/____		Peak: ____/____

FGRS Stress Condition

Waist Circumference: _____ Eyes _____
 Skin Fold Thickness: Triceps _____ HearingL R _____
 Cheek _____ Lung Fields _____

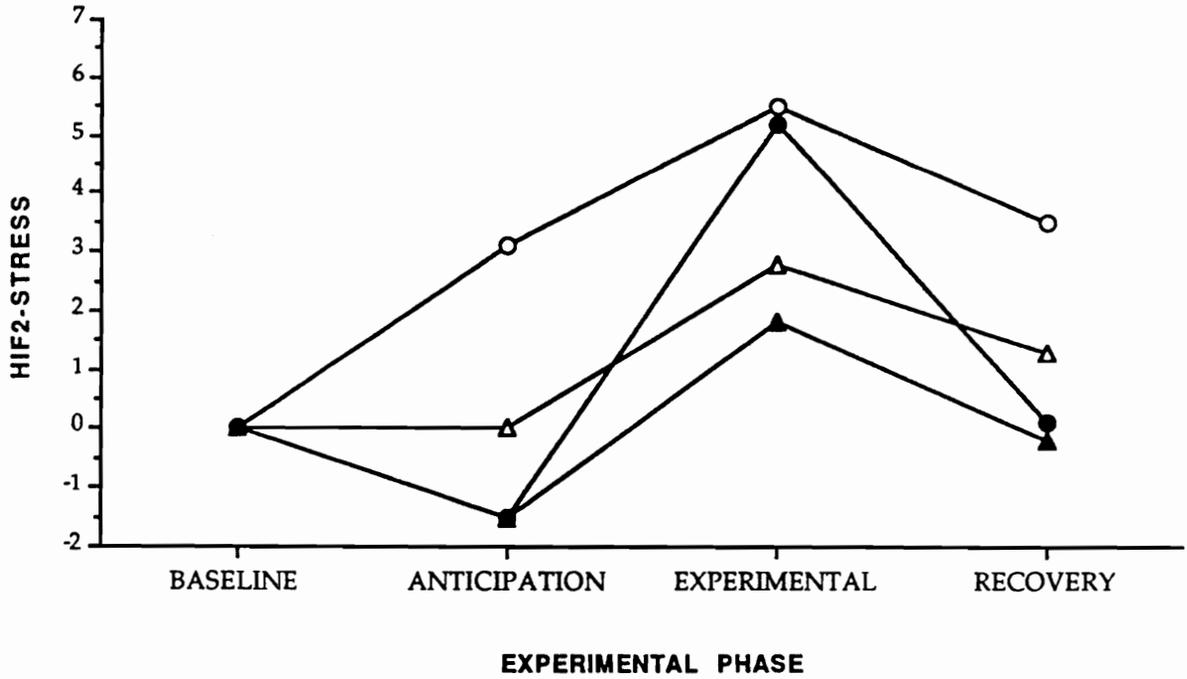
Interview Responses: _____

FGRS Score	_____	Date	_____	Return Day	_____	Baseline	_____
BIAS Trait	_____		SBP		DBP		HR
BIAS State	_____		1.				_____
BULIT Score	_____		2.				_____
BES Score	_____		3.				_____
DPS	_____		4.				_____
Height	_____		5.				_____
Weight	_____		6.				_____
Loss	_____		7.				_____
Program	_____		8.				_____
Stressful	_____		9.				_____
Female Stressful	_____		10.				_____

DPS Responses: _____ Average Of Readings 8, 9, & 10
 _____ SBP _____ DBP _____ HR _____

OPSCAN CODES: Number 6. "1" = Kevin 2=Spen 3=Chad 4=Ryan
 Number 7. "1" = FGRS Stress "2" = Control
 Vicki Codes Number 8. "1" = High FGRS "2" = Low FGRS

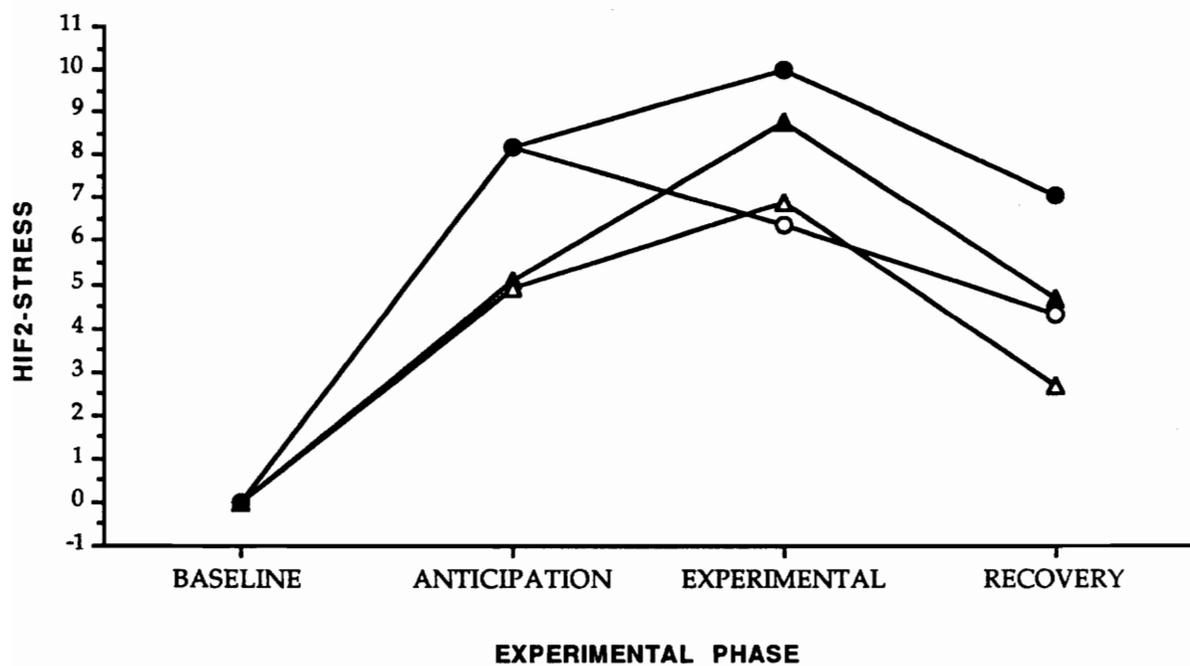
APPENDIX I



- HIGH FGRS-STRESS CONDITION
- HIGH FGRS-CONTROL CONDITION
- ▲ LOW FGRS-STRESS CONDITION
- △ LOW FGRS-CONTROL CONDITION

Relative Heart Rate Reactivity by High vs. Low FGRS Factor 2 Scores and Experimental Condition

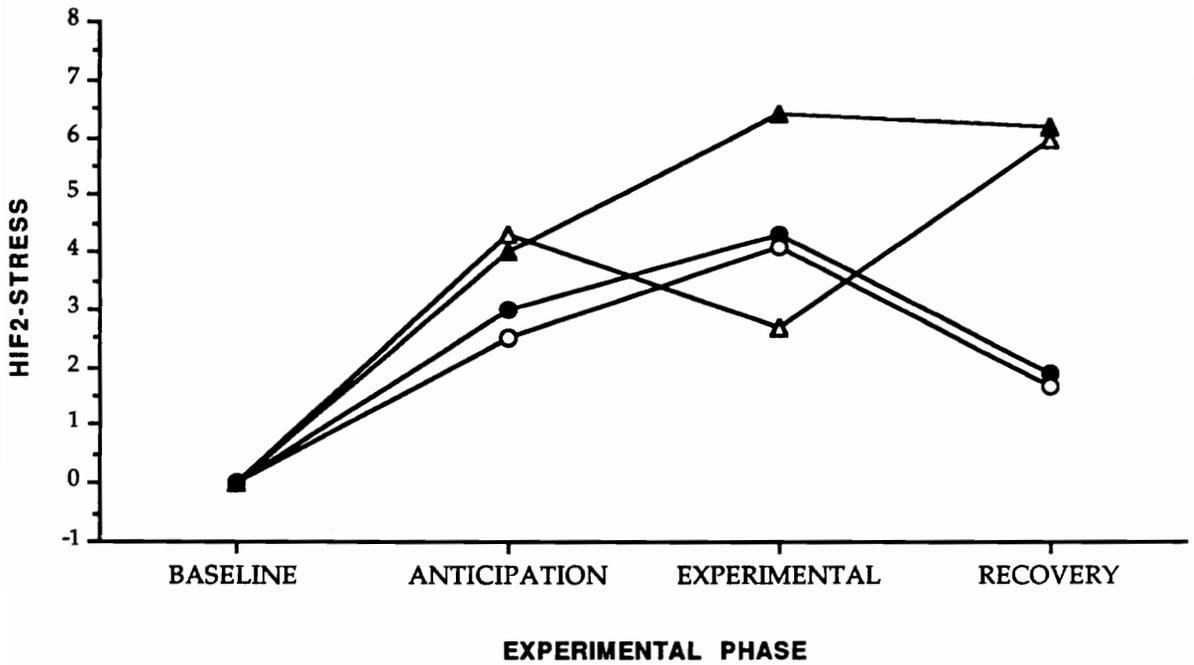
APPENDIX I (Cont.)



- HIGH FGRS-STRESS CONDITION
- HIGH FGRS-CONTROL CONDITION
- ▲ LOW FGRS-STRESS CONDITION
- △ LOW FGRS-CONTROL CONDITION

**Relative Systolic Blood Pressure
Reactivity by High vs. Low FGRS Factor
2 Scores and Experimental Condition**

APPENDIX I (Cont.)



- HIGH FGRS-STRESS CONDITION
- HIGH FGRS-CONTROL CONDITION
- ▲ LOW FGRS-STRESS CONDITION
- △ LOW FGRS-CONTROL CONDITION

**Relative Diastolic Blood Pressure
Reactivity by High vs. Low FGRS Factor
2 Scores and Experimental Condition**

Curriculum Vita

DENISE MICHELE MARTZ-LUDWIG

Personal Information

Birthdate: February 13, 1967
Birthplace: Washington, D.C.
Married: June 2, 1990

Home Address

1100 Scott Alan Circle
Blacksburg, Va 24060
(703) 953-1384

Business Address

5094 Derring Hall
Blacksburg, Va 24061-0436
(703) 231-5388

Education

M.S. in Clinical (Adult/Health) Psychology, Expected May 1991,
Virginia Polytechnic Institute and State University
B.S. in Honors Psychology, May 1989,
Virginia Polytechnic Institute and State University

Clinical Practica

8/90-5/91 Clinical Practicum: Behavior Therapy, Systems Therapy,
Cognitive Therapy
Supervisors: Robert Stephens, Ph.D.
Carolyn Pickett, Ph.D.
Psychological Services Center, Department of Psychology
VPI & SU (330 Hours)

8/90-5/91 Consulting/Community Practicum: "Sexual Politics and the
Male Gender Role," A date rape prevention program.
Supervisor: Richard Eisler, Ph.D.
Program development and presentation in conjunction with
Sal Corbin and David Lombard (20 Hours)

8/89-5/90 Clinical Practicum: Eclectic Therapy
Supervisor: Richard Eisler, Ph.D.
Psychological Services Center, Department of Psychology
VPI & SU (180 Hours)

Presentations

Martz, D.M. (1990). Invited Colloquium. Female gender role
stress and eating disorders. Women's network and women's
studies colloquium series. VPI & SU.

Honors, Awards, and Professional Affiliations

1990 Student Affiliate, American Psychological Association
1990 Student Member, National Anorexic Aid Society
1989 Phi Beta Kappa,
1989 Outstanding Senior Award, College of Arts and Sciences,
VPI & SU
1989 Summa Cum Laude, VPI & SU
1989 Who's Who of American College Students
1989 Senior Honors Scholar Award, VPI & SU \$500
1987 Omicron Delta Kappa, Leadership Honorary
8/88-5/89 Psi Chi/ Psychology Club Vice President
9/87-5/88 Psi Chi/ Psychology Club Secretary

Relevant Manuscripts

Martz, D. M. (1987). Examination of Sex-Typing and Sex Role Ideology in Binge Eaters. Unpublished Undergraduate Honors Thesis.
VPI & SU.

Professional Experience and Employment

8/90-Present: Graduate Assistant for the Department of Psychology,
VPI & SU. Advising and coordinating undergraduate activities.
Supervisor: Joseph Sgro, Ph.D.

5/89-5/90: Graduate Assistant for Residential Programs, VPI & SU.
Managed a residence hall of 108 international and American
graduate students. Published a bimonthly newsletter entitled
The Roomer.
Supervisor: Gail Kirby, M.Ed.

8/88-5/89: Head Resident Advisor, VPI & SU.
Supervised six Resident Advisors, Managed a residence hall of
350 students.
Supervisor: Della Marshall, M.A.

Summer 1988: Arlington Therapeutic Recreation Camp.
Organized recreational activities within a behavior modification
program for emotionally disturbed and autistic children
Supervisor: Beth Zeidman, M.S.

Signature: Denise M. Martz-Ludwig