2013

Internalization of the Thin Ideal, Body Satisfaction, Self Presentation and Disordered Eating in Female Runners

Adriana Piekarewicz
INTERNALIZATION OF THE THIN IDEAL, BODY SATISFACTION, SELF-PRESENTATION AND DISORDERED EATING IN FEMALE RUNNERS

By

ADRIANA PIEKAREWICZ

A Thesis submitted to the
Department of Educational Psychology and Learning Systems
in partial fulfillment of the
requirements for the degree of
Master of Science

Degree Awarded:
Spring Semester, 2013
Adriana Piekarewicz defended this thesis on April 1, 2013

The members of the supervisory committee were:

Robert C. Eklund
Professor Directing Thesis

Gershon Tenenbaum
Committee Member

Beth Phillips
Committee Member

The Graduate School has verified and approved the above-named committee members, and certifies that the thesis has been approved in accordance with university requirements.
# TABLE OF CONTENTS

List of Tables ............................................................................................................................. iv
List of Figures ............................................................................................................................. v
Abstract ...................................................................................................................................... vi

**CHAPTER 1 INTRODUCTION** ........................................................................................ 1

**CHAPTER 2 LITERATURE REVIEW** ..................................................................................... 4

- Prevalence Rates ................................................................................................................ 4
- Common Risk Factors ......................................................................................................... 4
- The Present Study ................................................................................................................ 7

**CHAPTER 3 METHODS** ........................................................................................................ 8

- Participants .......................................................................................................................... 8
- Measures .............................................................................................................................. 8
- Procedure ............................................................................................................................. 11
- Analyses ................................................................................................................................ 12

**CHAPTER 4 RESULTS** ........................................................................................................... 15

**CHAPTER 5 DISCUSSION AND CONCLUSIONS** .............................................................. 23

**APPENDICES** ......................................................................................................................... 27

A. SOCIOCULTURAL ATTITUDES TOWARDS APPEARANCE QUESTIONNAIRE-3 ... 27
B. MULTIDIMENSIONAL BODY SELF-RELATIONS QUESTIONNAIRE ...................... 29
C. PERFECTIONISTIC SELF-PRESENTATION SCALE .................................................... 32
D. EATING ATTITUDESS TEST-26 ..................................................................................... 34
E. IRB APPROVAL FORM ..................................................................................................... 36
F. FSU BEHAVIORAL CONSENT FORM ............................................................................ 37
REFERENCES ......................................................................................................................... 39
BIOLOGICAL SKETCH ............................................................................................................. 42
LIST OF TABLES

Table 1 Descriptive Statistics of all Variables................................................................. 17
Table 2 Correlational Matrix ............................................................................................ 18
Table 3 Means and SD’s for Internalization, Body Satisfaction, and Self-Presentation by Eating Category (EATCAT) ........................................................................................................... 19
Table 4 ANOVA Results for Internalization, Body Satisfaction, and Self-Presentation by Eating Category ........................................................................................................................................ 19
Table 5 Comparison among 4 Extreme Eating Disorder Runners and Group Mean Total ...... 20
LIST OF FIGURES

Figure 1 Structural Equation Model for Disordered Eating in Female Runners ...................... 13
Figure 2 Respecified Model for Disordered Eating in Female Runners ............................... 22
Figure 3 Respecified Model with Standardized Parameters ................................................. 23
ABSTRACT

Over the years, there have been conflicting findings concerning the question of whether athletes are at increased risk for disordered eating. Although there have been many studies examining the relationship between sports demands and eating disorders, the specific risk factors underlying the development of these disorders have been debated. The purpose of this study was to expand on the existing literature, and Petrie, Anderson, and Neumann’s model (2011) in particular, by examining the notion of perfectionistic self-presentation in relation to various other risk factors leading to the development of disordered eating attitudes and behaviors within the female running population. This study was conducted under the assumption that competitive females participating in lean-type sports (e.g., runners) are under the influence of sport pressures, along with societal pressures (Petrie, Anderson, & Neumann, 2011). It was predicted that these pressures would be subsequently related to greater internalization of the thin ideal. Moreover, it was expected that the greater internalization would be associated with lower body satisfaction, and higher perfectionistic self-presentation scores. It was hypothesized that the combination of all these risk factors would relate to a higher rate of disordered eating attitudes and behaviors. A second hypothesis was that, with age, female runners would exhibit less concern about body image and self-presentation, thus producing a lowered incidence of disordered eating attitudes and behaviors. Structural equation modeling analyses were conducted to test the proposed model. After respecification of the hypothesized model, the constructs were predictive of disordered eating attitudes in a manner consistent with expectations, although some of the initially proposed hypothesized pathways were not found to be significant. Higher levels of internalization of the thin ideal were associated with higher perfectionistic self-presentation, and lower body satisfaction, which then related to more disordered eating attitudes and behaviors. These findings provide direction for future research and interventions that could reduce female runners’ risk of developing disordered eating attitudes and behaviors by reducing the importance placed on messages promoting the thin ideal, and instead focusing on communicating the importance of physical health over physical appearance and weight-loss.
Due to Western society’s obsession with being thin and the media’s bombardment of unrealistic images of beauty, it is no surprise that disordered eating and clinical eating disorders afflict many females (Polivy & Herman, 2002). Advertisements and marketing campaigns create such an unattainable image of beauty that ordinary women become obsessed with trying to reach this distorted ideal (Hesse-Biber, Leavy, Quinn, & Zoino, 2006). In the realm of sports, the prevalence of eating disorders is uncharacteristically high compared with the rest of society. (Hausenblas & Carron, 1999). Not only do athletes have to deal with the common societal pressures imposed on them, but also they have additional pressures from their sport that they must deal with simultaneously. Female runners are particularly afflicted by this disorder (Hausenblas & Carron, 1999). Risk factors include sport and societal pressures, as well as external loci of control, negative self-esteem, perfectionism, internalization of the thin ideal, self-presentation issues, and negative affect (Petrie & Greenleaf, 2007). Regardless of many research studies attempting to combat this issue, the problem is a serious concern for female athletes (Sundgot-Borgen, 1993).

“Eating disorders are potentially life-threatening psychiatric disorders typified by severely disturbed eating behaviors and perceptual/attitudinal distortions that require clinical treatment” (American Psychiatric Association, 2000, p. 583). There are three primary clinical eating disorders: Anorexia Nervosa, Bulimia Nervosa, and Eating Disorder Not Otherwise Specified. According to the American Psychiatric Association (2000), Anorexia Nervosa is characterized by a “refusal to maintain normal body weight for age and height, an intense fear of weight gain despite being underweight, disturbed perceptions of body shape and weight, undue influences of weight and shape on self-evaluation, and amenorrhea (in post-menarcheal women)” (p. 583). Bulimia Nervosa is also “characterized by a self-evaluation that is strongly influenced by body shape and weight, but additionally includes episodes of binge eating that are followed by compensatory behaviors, such as self-induced vomiting, diuretic or laxative use, fasting or dieting, or excessive exercising” (American Psychiatric Association, 2000, p. 589). Eating Disorder Not Otherwise Specified is diagnosed when “some, but not all of the criteria for either Anorexia Nervosa or Bulimia Nervosa are met” (American Psychiatric Association, 2000, p. 594).
Subclinical eating disorders, or disordered eating, are more prevalent than the other formally classified eating disorders (Petrie & Greenleaf, 2007). Among female collegiate athletes, the prevalence rate has been reported to be 14.5% (Sanford-Martens, Davidson, Yakushko, Martens, Hinton, & Beck, 2005). Although these disorders are not as severe as Anorexia Nervosa or Bulimia Nervosa, they are nonetheless associated with severe psychological, physical, and behavioral disturbances (Petrie & Greenleaf, 2007). It is common for subclinical eating disorders to precede the development of clinical eating disorders, making the investigation of disordered eating behaviors and the identification of at-risk groups essential for early recognition of the problem (Hinton & Kubas, 2005). Thus, it is imperative for researchers not to overlook subclinical disorders since they have severe physiological and psychological consequences.

In a study of National Collegiate Athletic Association Division 1 female athletes, Sundgot-Borgen (1994) found that athletes were more prone to developing eating disorders than nonathletes, and that disorders were more prevalent among female athletes competing in sports where leanness and/or a specific weight was important for performance. Sundgot-Borgen identified several risk factors associated with the development of eating disorders in female athletes, and provided evidence that elite female athletes in specific sports are at an increased risk for eating disorders. It was found that sports that emphasize leanness, focus on aesthetics, and/or have weight requirements, such as gymnastics, figure skating, swimming and diving, distance running, wrestling, and bodybuilding are at an increased risk for these disorders (Sundgot-Borgen, 1994).

Although physical activity often enhances self-esteem and promotes physical and emotional well-being, there is evidence that engagement in certain sports often leads to disordered eating (Muscat & Long, 2008). Specifically in certain sports, sport demands and pressures from coaches, judges, and trainers have been identified as potential risk factors that may pose a significant threat to the health of many athletes (Sundgot-Borgen, 1994). Moreover, these pressures may put athletes at an even greater risk of developing issues associated with gaining the approval of others, leading to disorders related to self-presentation.

The investigation of self-presentation is the cornerstone of this study. Self-presentation concerns one’s need to attain the approval of others by demonstrating conformity to expectations, as well as an avoidance of appearing imperfect. Self-presentation reflects the
processes by which individuals make an attempt to monitor and control the impressions others form of them in an effort to meet these desired expectations (Shlenker & Leary, 1982). In addition, concepts related to self-presentation such as social approval and social anxiety are also implicated in the development of disordered eating attitudes and behaviors. The significance of studying self-presentation motivation and eating disorders comes from research that has shown that “participating in health-related activities is driven in part by a longing to create a particular image” (Martin, Leary, & O’Brien, 2001, p. 217).

While there have been many studies examining the relationship between sports demands and eating disorders, the specific risk factors underlying the development of these disorders have been debated. The purpose of this study is to expand on the existing literature and Petrie, Anderson, and Neumann’s model (2011) in particular, by examining the notion of self-presentation in relation to various other risk factors leading to the development of disordered eating attitudes and behaviors within the female running population. This study was conducted under the assumption that competitive females participating in lean-type sports (e.g. runners) are under the influence of sport pressures, along with societal pressures (Petrie, Anderson, & Neumann, 2011). It was predicted that these pressures were subsequently related to greater internalization of the thin ideal. Moreover, it was expected that the greater the internalization, the lower one’s body satisfaction, and the higher one’s self-presentation scores. It was hypothesized that the combination of all these risk factors would relate to a higher rate of disordered eating attitudes and behaviors. By identifying certain critical risk factors for female athletes, the prevalence of disordered eating attitudes and behaviors may be greatly reduced. This may lead to superior achievements in performance, as well as healthier and happier lifestyles within the population of female athletes.
CHAPTER 2
LITERATURE REVIEW

In this chapter, I discuss the differing eating disorder prevalence rates that emerge in various subpopulations. Following that, I focus on common risk factors (e.g., Internalization of the Thin Ideal, Body Satisfaction, and an over emphasis on Self-Presentational Concerns) that emerge in the development of many of these disorders. By discerning these risk factors, I expect further insights to be gained in the identification of disordered eating attitudes and behaviors within the female athlete population.

Prevalence Rates

The prevalence of eating disorders greatly differs between males and females, athletes and nonathletes, and among athletes in different sports (Petrie & Greenleaf, 2007). Eating disorders are relatively uncommon in the general population; Anorexia Nervosa occurs in approximately 0.5% of females and 0.05% of males, while Bulimia Nervosa occurs in 1-3% of females and between .01- 0.3% of males (American Psychiatric Association, 2000). Among athletes, however, reported prevalence rates have ranged from 1-62% in females and 0-57% for males in different studies (Hausenblas & Carron, 1999). Much of the discrepancy across studies may be due to methodological issues and sample selection, as well as problems in classification and measurement that are commonly observed in eating disorder studies.

Common Risk Factors

Several risk factors leading to disordered eating were identified in a study conducted by Sundgot-Borgen (1994) including dieting at an early age, a discrepancy between one’s actual and self-defined ideal weight, early start of sport-specific training, and extreme exercise. Sport and societal pressures, negative self-esteem, perfectionism, internalization of the thin ideal, and negative affect are other conditions related to clinical and subclinical eating disorders (Petrie & Greenleaf, 2007). Furthermore, perfectionistic self-presentation can influence eating behavior by “not allowing the individual to display imperfections, or admit to difficulties” (Hewitt, Flett, & Ediger, 1995, p. 321).

The distortion of one’s body image that causes negative view of one’s body and body dissatisfaction can have a devastating effect on one’s health and well-being (i.e., females who have a negative body image tend to have lower self-esteem; Petrie & Greenleaf, 2007). Moreover, body dissatisfaction may develop into body image disturbance, which is an extreme
discontent with one’s body or a preoccupation with an illusory imperfection in one’s physical appearance. Body image disturbance is believed to be a critical risk factor for the development of disordered eating and is associated with depression and poor self-esteem (Petrie & Greenleaf, 2007).

Previous studies support the idea that females with a greater tendency to engage in disordered eating behavior are “more fearful of receiving disapproval and criticism from others and are more aware or sensitive about the impressions and/or opinions of others” (Mack et al., 2006, p. 102). The avoidance of appearing imperfect or disclosing one’s imperfections may be especially important in the negative body image that individuals with disordered eating tend to develop (Hewitt et al., 1995). In this same study, it was found that strong needs to present a flawless appearance to others, or avoid revealing imperfection in the self were related to both anorexic and bulimic tendencies, as well as to anxieties about social reactions or appraisals of one’s appearance (Hewitt et al., 1995). A link has also been found between a perfectionistic self-presentation and low self-esteem. When standards and evaluations are so idealistic, supposed failures and negative self-perceptions are an everyday occurrence. Unrealistically high hopes may be a major reason for individuals with disordered eating to view themselves as failures, which can consequently aid in the development of their disordered eating (Butterfield & Leclair, 1988).

Researchers have suggested that perfectionism may be a pertinent factor in the prevalence of eating disorders (Petrie & Greenleaf, 2007). There is evidence that individuals with eating disorders feel they must do everything perfectly and that these beliefs are self-imposed. Individuals who have perfectionistic personalities have strict evaluative standards, falling only faintly short of a goal is typically construed as a colossal disaster (Hewitt et al., 1995). Thus, these individuals may demand that they meet certain rigid body criteria, and their strong desire for perfectionistic self-presentation can affect eating behavior by not permitting the person to portray any imperfections or admit to struggles (Hewitt et al., 1995). Therefore, these sorts of personality traits may play a substantial role in body dissatisfaction and internalization of the thin ideal, and ultimately, disordered eating attitudes and behaviors. The combination of eating disorders and anxiety are also commonly found, with the pressure of perfectionist behaviors and fear of failure many times leading to anxiety and maladaptive eating habits in athletes (Vardar, Vardar, & Kurt, 2007).
In a review of literature on disordered eating in athletes, Hausenblas and Carron (1999) outlined four possible explanations for the increased risk of disordered eating within athletes: (a) athletes experience societal pressure to be thin and possess an athletic body type; (b) athletes experience specific body image and weight demands associated with ideas relating to low body weight and to improved performance and/or better judgment of one’s external appearance; (c) excessive physical activity plays a direct role in the development of disordered eating attitudes and behaviors; and (d) nonsymptom psychological risk features linked to disordered eating are also connected to athletic success (e.g., perfectionism). Although previous studies have examined these different hypotheses, none has yet to establish a specific relationship between these risk factors and disordered attitudes and behaviors within athletes.

Exercise dependence is another condition related to the occurrence of eating disorders. It is characterized by a preoccupation with exercise accompanied by feelings of guilt and anxiety when unable to exercise, and it “manifests in physiological (e.g. tolerance/withdrawal) and/or psychological (e.g., anxiety, depression) symptoms” (Hausenblas & Symons Downs, 2002, p. 90). In a study conducted on elite female athletes in Norway, many of the athletes avoided giving specific reasons for the onset of their eating disorders and reported a large increase in training volume and a significant weight loss associated with the increased training (Sundgot-Borgen, 1993).

Although there have been mixed findings regarding the prevalence of disordered eating attitudes and behaviors among athletes, it is clear that examination of competitive sport training climates is required to enhance the performance and healthy development of elite athletes. It has been suggested that the identification of disordered eating in athletes can be complicated by certain features of the sport environment, such as stereotypes on the ideal body for certain sports, the idea that thinness enhances performance, and the belief that good performance implicitly implies good health (Sherman et al., 2005, p. 454). Risk factors such as those previously mentioned tend to predispose female athletes to disordered eating attitudes and behaviors, and thus, it is essential to identify these risk factors and try to minimize them as much as possible. The training environment has serious implications for an athlete’s ability to achieve success; hence, it is imperative for researchers to determine what kinds of environments are conducive for obtaining optimal performance for athletes. By eliminating certain sport pressures and educating athletes on the unrealistic expectations of societal ideals, female athletes may enhance their self-
esteem leading to less severe self-presentation issues. Research on the development of eating attitudes and behaviors, treatment, and prevention should be considered a priority due to the severe cost to the athletes suffering from these problems. Moreover, it is imperative to examine the types of environments that exist within competitive sports in an attempt to enhance the performance and healthy development of elite athletes.

The Present Study

Purpose and Hypotheses

To date, a number of factors, including Internalization of the thin ideal, body satisfaction, and self-presentation, have been studied in relation to the development of disordered eating attitudes and behaviors among athletes. Perfectionistic self-presentation in relation to internalization, body satisfaction, and disordered eating in female runners, however, has not been thoroughly investigated. Therefore, the purpose of this study was to examine how internalization of the thin ideal related to body satisfaction, as well as how body satisfaction related to perfectionistic self-presentational concerns, and consequently to the development of disordered eating attitudes and behaviors within the female running population. Does higher internalization of the thin ideal, lead to lower body satisfaction, higher perfectionistic self-presentation scores, and thus a greater prevalence of disordered eating attitudes and behaviors? Furthermore, does age have a moderating effect on the variables, with less concern over body image leading to lower rates of disordered eating symptomology? It was hypothesized that female runners with higher internalization of the thin ideal, lower body satisfaction, and higher perfectionistic self-presentation scores would exhibit a greater prevalence of disordered eating attitudes and behaviors than those without these characteristics. The second hypothesis was that with age, female runners would exhibit less concern about body image and perfectionistic self-presentation, thus producing a lowered incidence of disordered eating attitudes and behaviors. In an attempt to reduce unhealthy eating habits that characterize a wide range of female runners, this study focuses on distinguishing specific factors that put female athletes at risk for developing disordered eating attitudes and behaviors.
CHAPTER 3
METHODS

Participants

A power analysis was conducted to determine how many participants were needed to obtain significant results. This power analysis was run based upon a full latent model using all subscale items as indicators of latent variables. The results of that analysis recommended that 300 participants were needed to obtain enough power to test the model. However, the analysis that was actually performed was a structural model using only the subscales as parcel indicators, rather than all items as indicators of latent variables. Therefore, although the initial power analysis recommended more participants than were obtained, the substantial reduction in the number of model parameters afforded adequate power to appropriately test the hypothesized model. Participants were 192 female runners (n = 192) drawn from various universities and running clubs located across the United States. All participants had run a minimum of three years, and had or were currently running/training at least five days a week and competing in races at least 4 times per year. Age, height, weight, and body mass index (BMI) was captured from the Eating Attitudes Test-26 (EAT-26) measure. Mean age was 30.65 years (SD = 9.39) with the minimum age being 18 years and the maximum age being 57 years. The athletes’ mean body mass index (BMI) was 21.87 kg/m\(^2\) (SD = 3.21). The minimum BMI recorded was 15.46 kg/m\(^2\) while the maximum was 38.01 kg/m\(^2\).

Measures

Internalization of the thin ideal.

(The Sociocultural Attitudes Towards Appearance Scale-3 [SATAQ-3]; Thompson et al., 2003; [Appendix A]). The SATAQ-3 is an instrument used to measure the impact that societal influences have on body image and eating disturbances (Thompson, Van den Berg, Roehrig, Guarda, & Heinberg, 2004). It consists of 30 statements, which are answered on a 5-point Likert-type scale ranging from “Definitely Disagree” to “Definitely Agree.” There are three subscales, which assess internalization (general & athlete), pressures, and information. An example of a general internalization statement is, “I compare my body to the bodies of people on TV.” An example of an athlete internalization statement is, “I wish I looked as athletic as sports stars.” An example of a pressure statement is, “I’ve felt pressure from TV or magazines to lose weight.” Statements such as “TV programs are an important source of information about
fashion and “being attractive” are used for the information subscale. Support for the SATAQ as a sufficient measure has been found (Cashel, Cunningham, Landeros, Cokley, & Muhammed, 2003). The construct displays moderate to strong internal consistencies (Cronbach’s alpha = .71 for Awareness, .88 for Internalization) and construct validity established on results from factor analyses. Cronbach’s alpha for the Pressures and Information subscales were also high (.92 and .86 respectively). Moreover, “moderate convergent validity was reported with the Eating Disorder Inventory (EDI; Garner, 1991), with correlations that ranged from .28 to .35 for the Awareness scale and from .45 to .61 for the Internalization scale” (Cashel et al., 2003, p. 290). Correlations of -.28 and -.42 with the Multidimensional Body Self-Relations Questionnaire (Brown, Cash, & Mikulka, 1990) were conveyed for the Awareness and Internalization scales, correspondingly. Further reliability and validity information supporting the SATAQ-3 can be found in Thompson et al. (2004).

**Body satisfaction.**

(The Multidimensional Body Self-Relations Questionnaire Appearance Scale [MBSRQ-AS]; Cash, 1994; [Appendix B]). The MBSRQ-AS is a 69-item multidimensional scale that measures beliefs relating to body image, including affective/evaluative, cognitive/attentional, and behavioral components (Cash, 1994). The MBSRQ is composed of seven subscales—appearance evaluation, appearance orientation, fitness evaluation, fitness orientation, health evaluation, health orientation, and illness orientation (Cash, 1994). For this study, only the MBSRQ-Appearance Scale was chosen for use based on its emphasis on body attitudes. This scale offers features related to the body satisfaction concept that was being established in this study. The MBSRQ-Appearance Scale (MBSRQ-AS) is a 34-item measure that consists of 5 subscales: Appearance Evaluation, Appearance Orientation, Overweight Preoccupation, Self-Classified Weight, and the Body Areas Satisfaction Scale (Cash, 1994). Total scores range from 1 (low) to 5 (high), and are acquired by adding all the items and then dividing by the number of items in each distinct subscale.

Cash (1994) presented adequate internal consistency (.85) and test-retest reliability (.90) for the AE subscale. Cronbach’s alphas for each scale were calculated and all were deemed to be sufficiently reliable (.88 for Appearance Evaluation, .85 for Appearance Orientation, .84 for Overweight Preoccupation, .77 for Self-Classified Weight, and .68 for Body Areas Satisfaction). Moreover, Petrie, Rogers, Johnson, and Diehl (1996) gave support for the AE subscale’s validity,
and they stated that “noteworthy associations were found between it and bulimic symptoms (r = .49), self-esteem (r = .46), depression (r = -.29), internalization of sociocultural standards regarding attractiveness (r = -.25), and difficulties with body image (r= -.64).”

**Perfectionism/self-presentation.**

(The Perfectionistic Self-Presentation Scale [PSPS]; Hewitt et al., 1995; [Appendix C]). The PSPS is a 27-item instrument measuring three dimensions of perfectionistic self-presentation (Hewitt et al., 1995). The Need to Appear Perfect subscale (10 items) measures the need to present oneself as perfect to others (e.g., “It is very important that I always appear to be ‘on top of things’”). The Avoid Appearing Imperfect subscale (10 items) measures the desire not to appear less than perfect to others (e.g., “I do not want people to see me doing something unless I am very good at it”). The Avoid Disclosure of Imperfection subscale (7 items) measures the need to avoid outward displays of imperfection or failures (e.g., “I try to keep my faults to myself”). Subjects rate their agreement with items on a 7-point scale with higher scores signifying more perfectionistic self-presentation. A large body of research supports the factor structure, reliability, and validity of the PSPS in diverse samples. For example, reliability, internal consistency, and test–retest reliability have been high, with alpha coefficients of .86, .83, and .78 respectively, and correlations between corresponding PSPS subscales over 3 weeks of .83, .84, and .74 for perfectionistic self-promotion, nondisplay of imperfection, and nondisclosure of imperfection. Reliability for each subscale was also high, with alpha coefficients of .91 for The Need to Appear Perfect Scale, .89 for The Avoid Appearing Imperfect Scale, and .83 for the Avoid Disclosure of Imperfection scale. There is also evidence that the PSPS is related to theoretically related constructs, such as self-monitoring, self-concealment, and self-handicapping, along with maladjustment independently of trait perfectionism (Hewitt et al., 2002).

**Eating disorders/disordered eating.**

(The Eating Attitudes Test-26 [EAT-26]; Garner et al, 2002; [Appendix D]). The EAT-26 measures disordered eating attitudes and behaviors (Garner et al., 1982). The EAT-26 is a widely used, standardized, self-report questionnaire designed to measure pathological eating behaviors, attitudes, and thoughts. The EAT-26 is a refinement of the original EAT-40 published in 1979, and is commonly used to screen for psychological and behavioral symptoms of Anorexia Nervosa and Bulimia Nervosa. The intercorrelations between EAT variables
suggest that the EAT-26 is highly predictive of the total EAT-40 (r = .98) (Garner, Olmsted, Bohr, & Garfinkel, 1982). It is a self-report questionnaire containing 26 items to be answered on a 6-point Likert-type scale ranging from 0 (never) to 5 (always). Examples of statements include, “I am terrified of being overweight”, “I find myself preoccupied with food”, and “I feel extremely guilty after eating” (Garner et al., 1982). The EAT-26 yields a "referral index" based on three criteria: (a) the total score based on the responses to the EAT-26 questions, (b) answers to the behavioral questions correlated to eating symptoms and weight loss, and (c) the individual’s body mass index (BMI) calculated from their height and weight. Individuals who score 20 or more on the test are recommended to be interviewed by a qualified professional to determine if they meet the diagnostic criteria for an eating disorder (Doninger, Enders, & Burnett, 2005). The scale presents strong internal consistency with Cronbach’s alpha = .90 for the Anorexia Nervosa group and .83 for the female control group (Garner et al., 1982). In this study, Cronbach’s alpha was found to be .87. Furthermore, the EAT-26 maintains as strong of a parallel with the clinical and psychometric variables as the original scale, implying that the 14 items eliminated from the EAT-40 are superfluous and do not increase the instrument’s predictive capability (Garner et al., 1982). The EAT has not only been validated with Anorexia Nervosa patients, but has also been helpful in identifying eating disturbances in non-clinical samples. Due to these statistics, the EAT-26 has sufficient reliability and validity to be used in this study.

Procedure

Following institution review board approval to conduct the study, participants were recruited from colleges and running clubs throughout the United States via email. The email described the purpose of the study, which was to examine various risk factors leading to the development of disordered eating attitudes and behaviors within the female running population. To participate, athletes were told to email the researcher conducting the study, providing their age and years they had been running. Once the researcher made sure the athletes met the running qualifications to take part in the study, emails were sent to the athletes directly containing the informed consent form, as well as an attached link containing the survey comprised of the four questionnaires.

Age was recorded at the beginning of the study after gaining informed consent from all who agreed to participate in the study. All participants were required to provide informed
consent before participating in this study. Participants were informed that the study concerned eating behaviors and attitudes, and were sent a survey link that contained all four questionnaires. Participants were also informed of the confidentiality of the study, and college participants were assured that the results would not have an impact on their sport participation and/or academic endeavors. The questionnaires were administered to the participants via email with an included link to the website survey where they could answer all of the required questions. The order of questions was randomized by section (each instrument) to eliminate any order effects from occurring. All participants were be assigned a number randomly (1, 2, or 3), and based on their number, they were emailed the specific website link randomized for their particular group. Email addresses of the collegiate athletes were obtained from the head coach, while email addresses from the running club athletes were obtained by contacting the president of each community running club or from the athlete’s themselves. Participants were asked to fill out the online survey individually without the presence of the coach and/or other runners. At the end of the document, there were clear instructions on how to submit the online survey. Athletes did not put their names or any other identifying information on the survey form. All measures (SATAQ-3, MBSRQ, PSPS, EAT-26) were administered to all participants. Afterwards, collection and analysis of the data was conducted.

**Analyses**

Of the 213 surveys that were sent, 194 were returned. Of these, two had extensive missing data (e.g., entire questionnaires were left blank) and were discarded, giving a participation rate of 90%. Internal consistencies for all scales were computed, as well as descriptive statistics and bivariate correlations for all variables using the SPSS 18.0 software. Additionally, ANOVA results for the comparison of Internalization, Body Satisfaction, and Self-Presentation by Eating Category (Normal vs. Disorder) were conducted. To be considered ‘Normal’, participants had an average of 1 or below on the EAT-26, while ‘Disorder’ participants had an average of above 1.

Structural Equation modeling was conducted to test the proposed model. In structural equation modeling, chi-square is employed to test the fit of the model to the data. A significant chi-square is indicative of a poor fit of a model to the data. The comparative fit index and the root mean square error of approximation are also examined to provide additional information on the model fit when the chi-square test is significant. Comparative Fit Index (CFI) > .95 and Root
Mean Square Error Approximation (RMSEA) < .06 (90% confidence interval) fit statistics are considered to indicate an adequate fit of the model to the data when the chi-square is significant (Anderson, Petrie, & Neumann, 2011). As depicted in Figure 1, a causal sequence was postulated with Internalization of the thin ideal, body satisfaction, and self-presentation modeled as being correlated and having both direct and indirect effects on the eating disorder symptomology (dependent variable). Age was posited as a moderator variable having possible effects on all three dependent variables, as well as the independent variable. This model is depicted in Figure 1. The model provides a possible explanation for the relationship between various risk factors and the prevalence of disordered eating attitudes and behaviors in female runners.

*Figure 1. Structural Equation Model for Disordered Eating in Female Runners*
The first hypothesis was that higher internalization of the thin ideal would lead to significant decreases in body satisfaction, which would lead to more self-presentation concerns, and ultimately, would predict greater disordered eating attitudes and behaviors within the female running population. Moreover, it was predicted that as age increased, internalization of the thin ideal decreased, body satisfaction increased, self-presentation concerns decreased, and hence, disordered eating attitudes and behaviors decreased. This was analyzed by examining the standardized factor loadings via structural equation modeling to determine the relationship between all of the studied variables.
CHAPTER 4
RESULTS

Means, standard deviations, and Cronbach’s alpha coefficients among the variables are presented in Table 1. All alpha coefficients were sufficiently reliable ranging from .83 to .92, with only two exceptions (.68 for the Body Areas Satisfaction subscale and .77 for the Self-Classified Weight subscale) which were also deemed adequate for the purposes of this study. Additionally, correlations among the variables are presented in Table 2.

Participants were categorized into two categories (Normal v. Disorder) based on their score from the EAT-26. To be considered “Normal”, participants had an average of 1 or below on the EAT-26, while potential “Disorder” participants had an average of above 1. Of the 192 participants, 164 were classified in the Normal category, while 28 of the participants fell into the Disorder category. It is important to note that this categorization was not a formal diagnosis because formal clinical interview testing procedures would be required for that purpose. The criteria were employed simply as a way to separate participants into categories indicating different potentialities on eating disorder risk.

The descriptive statistics for the two groups and effect sizes for the differences between the two groups are presented in Table 3. All Cohen’s $d$ effect sizes were moderate to large ranging from .56 to 1.9, with one exception, the MBSRQ Body Areas Satisfaction Scale, which had a trivial effect size of .04. MANOVA procedures were conducted to inferentially assess the observed differences across eating categories. The Omnibus Test was significant, Wilks’ $\lambda = .37$, $F(12, 180) = 17.36; p < .001; \eta^2_p = .537$. Follow up univariate tests indicated significant differences for the comparison of Internalization, Body Satisfaction, and Self-Presentation by Eating Category (Normal vs. Disorder), and are presented in Table 4. There were twelve dependent variables, so a Bonferroni correction for an alpha of .05 resulted in an adjusted alpha p-value of .0042. This adjusted alpha p-value is very stringent, and if used, would risk inflating Type II error. Therefore, an adjustment was made that required p-values to be less than .01 for this exploratory study. There were significant differences ($p < .01$) between categories on all variables except for the Body Areas Satisfaction scale. Even if the more stringent Bonferroni adjustment had been employed, seven of the twelve differences would remain significant.

In Table 5, the four most extreme participants who exhibited severe disordered eating attitudes and behaviors were compared to the Group Mean total for informational purposes. As
would be predicted, these four participants exhibit scores indicating that they are higher on internalization, higher on perfectionistic self-presentation, and lower on body satisfaction as compared to the group mean.

Regarding modeling of study variables, the fit of the full measurement model was found to be poor, $\chi^2 (df = 57) = 263.37, p < .000001$, $CFI = .82$, $RMSEA = .137$. In examining why the fit was poor, I found that the ten largest standardized pairwise residuals among measured variables were unacceptably large ranging from .231 to .359 (in absolute value). Eight of these undesirably large residuals involved the subscales of Appearance Orientation and Self-Classified Weight within the Multidimensional Body Self Relations Questionnaire- Appearance Scale. Additionally, this subscale was not a strong indicator of the factor of Body Satisfaction with a loading of .393. The Self-Classified Weight subscale had a strong loading of .612, but it also was associated with several of the unacceptably large standardized residuals. The Body Areas Satisfaction subscale also had a relatively low loading of -.331, but no problems with the subscale’s standardized residuals were observed.

As a consequence of the empirical concerns identified in the analyses, the items making up the different subscales were examined to understand potential sources of the difficulties. It was concluded that the Appearance Orientation and Self-Classified Weight subscales may not capture the constructs of interest in the investigation. An example item from the Appearance Orientation subscale is, “I am careful to buy clothes that will make me look my best.” This type of statement measures one’s concern with looking good but is not inevitably related to body satisfaction. The Self-Classified Weight subscale had a small number of items (four of the 34 in the larger scale) and included items such as “I’ve tried to lose weight by going on crash diets.” This is a drastic statement that many individuals who are dissatisfied with their bodies may still not agree with. Due to the extremity of the statement, participants may have disagreed with the statement, but still felt dissatisfied with their bodies. Moreover, it is a statement that shares commonality with items in the EAT-26 and hence had the potential to present a confound in the SEM analyses. Consequently, these two subscales were removed and the remaining constructs were analyzed.

After consideration of these matters, the measurement model was rerun without the two subscales of Appearance Orientation and Self-Classified Weight. Although the Body Areas Satisfaction loading remained a bit low (-.331), it was still significant. While the chi-square was
significant, $\chi^2 = 69.119 \ (df = 36) \ p = .0007$, the fit indices suggested a reasonable fit of the model to the data, $CFI = .962$, $RMSEA = .069$.

Table 1
Descriptive Statistics for all Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>SATAQ Internalization</td>
<td>1.21</td>
<td>4.21</td>
<td>3.20</td>
<td>0.62</td>
<td>0.88</td>
</tr>
<tr>
<td>SATAQ Pressures</td>
<td>1.14</td>
<td>4.14</td>
<td>2.82</td>
<td>0.94</td>
<td>0.92</td>
</tr>
<tr>
<td>SATAQ Information</td>
<td>1.33</td>
<td>4.33</td>
<td>2.71</td>
<td>0.75</td>
<td>0.86</td>
</tr>
<tr>
<td>MBSRQ Appearance Evaluation</td>
<td>1.00</td>
<td>5.00</td>
<td>3.59</td>
<td>0.72</td>
<td>0.88</td>
</tr>
<tr>
<td>MBSRQ Appearance Orientation</td>
<td>1.25</td>
<td>4.75</td>
<td>3.40</td>
<td>0.62</td>
<td>0.85</td>
</tr>
<tr>
<td>MBSRQ Overweight Preoccupation</td>
<td>1.11</td>
<td>5.00</td>
<td>3.58</td>
<td>0.65</td>
<td>0.84</td>
</tr>
<tr>
<td>MBSRQ Self-Classified Weight</td>
<td>1.00</td>
<td>5.00</td>
<td>2.88</td>
<td>0.91</td>
<td>0.77</td>
</tr>
<tr>
<td>MBSRQ Body Areas Satisfaction</td>
<td>1.00</td>
<td>5.00</td>
<td>2.95</td>
<td>0.53</td>
<td>0.68</td>
</tr>
<tr>
<td>PSPS Need to Appear Perfect</td>
<td>1.40</td>
<td>6.70</td>
<td>3.97</td>
<td>1.22</td>
<td>0.91</td>
</tr>
<tr>
<td>PSPS Avoid Appearing Imperfect</td>
<td>1.20</td>
<td>6.70</td>
<td>4.11</td>
<td>1.17</td>
<td>0.89</td>
</tr>
<tr>
<td>PSPS Avoid Disclosure of Imperfection</td>
<td>1.29</td>
<td>7.00</td>
<td>3.02</td>
<td>1.07</td>
<td>0.83</td>
</tr>
<tr>
<td>EAT 26</td>
<td>0.00</td>
<td>2.88</td>
<td>0.59</td>
<td>0.44</td>
<td>0.87</td>
</tr>
<tr>
<td>BMI</td>
<td>15.46</td>
<td>38.01</td>
<td>21.87</td>
<td>3.21</td>
<td></td>
</tr>
<tr>
<td>Age (in years)</td>
<td>18.00</td>
<td>57.00</td>
<td>30.65</td>
<td>9.39</td>
<td></td>
</tr>
</tbody>
</table>

*Note. SATAQ = Sociocultural Attitude Towards Appearance Questionnaire, MBSRQ = Multidimensional Body Self Relations Questionnaire, PSPS = Perfectionistic Self-Presentation Scale, EAT 26 = Eating Attitudes Test*
Table 2

**Correlation Matrix**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SATAQ Internalization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 SATAQ Pressures</td>
<td>1.00</td>
<td>.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 SATAQ Information</td>
<td>.58</td>
<td>.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 MBSRQ Appearance Evaluation</td>
<td>-.23</td>
<td>-.30</td>
<td>-.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 MBSRQ Appearance Orientation</td>
<td>.52</td>
<td>.47</td>
<td>.40</td>
<td>-.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 MBSRQ Overweight Preoccupation</td>
<td>-.31</td>
<td>-.36</td>
<td>-.15</td>
<td>.80</td>
<td>-.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 MBSRQ Self Classified Weight</td>
<td>.48</td>
<td>.52</td>
<td>.35</td>
<td>-.41</td>
<td>.50</td>
<td>-.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 MBSRQ Body Areas Satisfaction</td>
<td>.10</td>
<td>.18</td>
<td>.11</td>
<td>-.34</td>
<td>.13</td>
<td>-.33</td>
<td>.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 PSPS Need to Appear Perfect</td>
<td>.24</td>
<td>.23</td>
<td>.12</td>
<td>-.16</td>
<td>.44</td>
<td>-.24</td>
<td>.38</td>
<td>-.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 PSPS Avoid Appearing Imperfect</td>
<td>.26</td>
<td>.17</td>
<td>.09</td>
<td>-.19</td>
<td>.28</td>
<td>-.27</td>
<td>.35</td>
<td>-.13</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 PSPS Avoid Disclosure</td>
<td>.04</td>
<td>.03</td>
<td>-.02</td>
<td>-.24</td>
<td>.11</td>
<td>-.27</td>
<td>.29</td>
<td>-.10</td>
<td>.63</td>
<td>.61</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 EAT 26</td>
<td>.24</td>
<td>.27</td>
<td>.22</td>
<td>-.24</td>
<td>.27</td>
<td>-.36</td>
<td>.52</td>
<td>.11</td>
<td>.28</td>
<td>.20</td>
<td>.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Age</td>
<td>-.08</td>
<td>-.05</td>
<td>-.09</td>
<td>-.06</td>
<td>-.12</td>
<td>-.08</td>
<td>.04</td>
<td>-.02</td>
<td>.03</td>
<td>.05</td>
<td>.04</td>
<td>-.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 BMI</td>
<td>.00</td>
<td>.10</td>
<td>.06</td>
<td>-.11</td>
<td>.10</td>
<td>-.15</td>
<td>.25</td>
<td>.59</td>
<td>-.09</td>
<td>-.18</td>
<td>-.09</td>
<td>.13</td>
<td>.04</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Correlation is significant at the 0.01 level (2-tailed) if $r \geq .18$ and significant at the 0.05 level (2-tailed) if $r \geq .14$.
SATAQ = Sociocultural Attitude Towards Appearance Questionnaire, MBSRQ = Multidimensional Body Self Relations Questionnaire, PSPS = Perfectionistic Self-Presentation Scale, EAT 26 = Eating Attitudes Test*
### Table 3

**Means and SD’s for Internalization, Body Satisfaction, Self-Presentation by Eating Category (EATCAT)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>EATCAT-NORMAL (n = 164)</th>
<th>EATCAT-DISORDER (n = 28)</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>SATAQ INTERNALIZATION</td>
<td>3.13</td>
<td>0.59</td>
<td>3.59</td>
</tr>
<tr>
<td>SATAQ PRESSURES</td>
<td>2.72</td>
<td>0.91</td>
<td>3.37</td>
</tr>
<tr>
<td>SATAQ INFORMATION</td>
<td>2.65</td>
<td>0.73</td>
<td>3.07</td>
</tr>
<tr>
<td>MBSRQ APPEARANCE EVALUATION</td>
<td>3.65</td>
<td>0.67</td>
<td>3.26</td>
</tr>
<tr>
<td>MBSRQ APPEARANCE ORIENTATION</td>
<td>3.33</td>
<td>0.62</td>
<td>3.82</td>
</tr>
<tr>
<td>MBSRQ OVERWEIGHT PREOCCUPATION</td>
<td>3.67</td>
<td>0.59</td>
<td>3.06</td>
</tr>
<tr>
<td>MBSRQ SELF-CLASSIFIED WEIGHT</td>
<td>2.71</td>
<td>0.83</td>
<td>3.88</td>
</tr>
<tr>
<td>MBSRQ BODY AREAS SATISFACTION</td>
<td>2.95</td>
<td>0.50</td>
<td>2.96</td>
</tr>
<tr>
<td>PSPS NEED TO APPEAR PERFECT</td>
<td>3.81</td>
<td>1.13</td>
<td>4.89</td>
</tr>
<tr>
<td>PSPS AVOID APPEARING IMPERFECT</td>
<td>3.40</td>
<td>1.13</td>
<td>4.89</td>
</tr>
<tr>
<td>PSPS AVOID DISCLOSURE OF IMPERFECTION</td>
<td>2.90</td>
<td>0.97</td>
<td>3.72</td>
</tr>
<tr>
<td>EAT 26</td>
<td>0.46</td>
<td>0.28</td>
<td>1.34</td>
</tr>
</tbody>
</table>

**Note.** SATAQ = Sociocultural Attitude Towards Appearance Questionnaire, MBSRQ = Multidimensional Body Self Relations Questionnaire, PSPS = Perfectionistic Self Presentation Scale, EAT 26 = Eating Attitudes Test

### Table 4

**ANOVA Results for Internalization, Body Satisfaction, and Self-Presentation by Eating Category**

<table>
<thead>
<tr>
<th></th>
<th>F(1,181)</th>
<th>p</th>
<th>(\eta^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SATAQ Internalization</td>
<td>14.164</td>
<td>&lt;.001</td>
<td>.069</td>
</tr>
<tr>
<td>SATAQ Pressures</td>
<td>12.160</td>
<td>.007</td>
<td>.060</td>
</tr>
<tr>
<td>SATAQ Information</td>
<td>7.850</td>
<td>.017</td>
<td>.039</td>
</tr>
<tr>
<td>MBSRQ Appearance Evaluation</td>
<td>7.330</td>
<td>.017</td>
<td>.037</td>
</tr>
<tr>
<td>MBSRQ Appearance Orientation</td>
<td>15.650</td>
<td>&lt;.001</td>
<td>.076</td>
</tr>
<tr>
<td>MBSRQ Overweight Preoccupation</td>
<td>23.660</td>
<td>&lt;.001</td>
<td>.110</td>
</tr>
<tr>
<td>MBSRQ Self-Classified Weight</td>
<td>49.188</td>
<td>&lt;.001</td>
<td>.205</td>
</tr>
<tr>
<td>MBSRQ Body Areas Satisfaction</td>
<td>0.021</td>
<td>.885</td>
<td>.000</td>
</tr>
<tr>
<td>PSPS Need to Appear Perfect</td>
<td>20.990</td>
<td>&lt;.001</td>
<td>.099</td>
</tr>
<tr>
<td>PSPS Avoid Appearing Imperfect</td>
<td>15.330</td>
<td>&lt;.001</td>
<td>.074</td>
</tr>
<tr>
<td>PSPS Avoid Imperfection</td>
<td>15.310</td>
<td>&lt;.001</td>
<td>.074</td>
</tr>
<tr>
<td>EAT 26</td>
<td>188.280</td>
<td>&lt;.001</td>
<td>.496</td>
</tr>
</tbody>
</table>

**Note.** SATAQ = Sociocultural Attitude Towards Appearance Questionnaire, MBSRQ = Multidimensional Body Self Relations Questionnaire, PSPS = Perfectionistic Self Presentation Scale, EAT 26 = Eating Attitudes Test
Table 5

Comparison between 4 Extreme Eating Disorder Runners and Group Mean Total

<table>
<thead>
<tr>
<th>Runner #</th>
<th>EAT26</th>
<th>SATALQ1</th>
<th>SATALQ2</th>
<th>SATALQ3</th>
<th>MBSRQ1</th>
<th>MBSRQ2</th>
<th>MBSRQ3</th>
<th>MBSRQ4</th>
<th>MBSRQ5</th>
<th>PSPS1</th>
<th>PSPS2</th>
<th>PSPS3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>2.88</td>
<td>3.71</td>
<td>3.71</td>
<td>4.00</td>
<td>3.29</td>
<td>3.92</td>
<td>3.00</td>
<td>5.00</td>
<td>4.33</td>
<td>4.10</td>
<td>3.71</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>1.85</td>
<td>3.93</td>
<td>4.00</td>
<td>2.00</td>
<td>3.14</td>
<td>4.50</td>
<td>2.78</td>
<td>3.75</td>
<td>2.50</td>
<td>5.70</td>
<td>5.90</td>
<td>2.86</td>
</tr>
<tr>
<td>75</td>
<td>1.85</td>
<td>4.21</td>
<td>4.14</td>
<td>3.67</td>
<td>3.71</td>
<td>3.83</td>
<td>3.56</td>
<td>4.00</td>
<td>2.50</td>
<td>4.20</td>
<td>5.90</td>
<td>3.14</td>
</tr>
<tr>
<td>123</td>
<td>2.27</td>
<td>3.79</td>
<td>3.86</td>
<td>3.00</td>
<td>1.00</td>
<td>3.75</td>
<td>1.11</td>
<td>5.00</td>
<td>3.00</td>
<td>6.70</td>
<td>6.70</td>
<td>7.00</td>
</tr>
<tr>
<td>Group Mean</td>
<td>0.59</td>
<td>3.20</td>
<td>2.82</td>
<td>2.71</td>
<td>3.59</td>
<td>3.40</td>
<td>3.58</td>
<td>2.88</td>
<td>2.95</td>
<td>3.97</td>
<td>4.11</td>
<td>3.02</td>
</tr>
</tbody>
</table>

Note: SATALQ1=internalization, SATALQ2=Pressures, SATALQ3=Information, MBSRQ1=Appearance Evaluation, MBSRQ2=Appearance Orientation, MBSRQ3=Overweight Preoccupation, MBSRQ4=Self Classified Weight, MBSRQ5=Body Areas Satisfaction, PSPS1=Need to Appear Perfect, PSPS2=Avoid Appearing Imperfect, PSPS3=Avoid Disclosure of Imperfection
The hypothesized model (see Figure 1) had a reasonable but less than desirable fit to the data, $\chi^2 (df = 39) = 94.84$, $p < .00001$, $CFI = .936$, $RMSEA = .086$. As a result, an alternate model was proposed (see Figure 2). In the new model, the order of the variables was modified so that internalization of the thin ideal leads first to perfectionism/self-presentation, which then leads to body satisfaction, and finally to disordered eating. After more thorough consideration, it seemed to make more sense to resequence the variables in a respecified model because a stable trait, such as perfectionism, should precede a less stable construct such as body satisfaction. Moreover, because self-presentation is related to the desire of attaining approval from others, it makes sense that there would be a significant direct pathway from internalization to perfectionistic self-presentation concerns.

Within the respecified model, the fit was adequate, $\chi^2 (df = 38) = 79.083$ with a p-value of .0001, $CFI = .95$, $RMSEA = .075$. Furthermore, all of the subscales loaded significantly on their latent variables, and ranged between .992 - .610 with one exception, Body Satisfaction, being -.335.

Within the respecified structural model, Internalization of the Thin Ideal ($\beta = .255$) was related directly to Self-Presentation Concerns and accounted for 7% of its variance. Self-Presentation Concerns was in turn related directly to Body Satisfaction ($\beta = -.231$) and this variable accounted for 5% of the variance. Disordered Eating Attitudes and Behaviors’ variance was accounted for by 14% of the Body Satisfaction variance ($\beta = -.372$). Additionally, there was a significantly direct causal path from Internalization to Body Satisfaction ($\beta = -.312$). Finally, Age as a moderator variable had a significant direct effect on Disordered Eating Attitudes and Behaviors ($\beta = -.181$), but had no further significant effects on the other related latent variables in the model (see Figure 3).
Figure 2. Respecified Model for Disordered Eating in Female Runners

Figure 3. Respecified Structural Model with Standardized Parameter Estimates. *p < .01.
CHAPTER 5
DISCUSSION AND CONCLUSIONS

The purpose of this investigation was to examine various risk factors related directly and indirectly to the development of disordered eating symptomology. Specifically, this study examined how internalization of the thin ideal related to body satisfaction, as well as how body satisfaction related to self-presentational concerns, and consequently to the development of disordered eating attitudes and behaviors within the female running population. The initial test of the structural equation model of disordered eating in female runners revealed a poor fit with the data. Based on non-significant parameter estimates, the model was adjusted so that Internalization of the Thin Ideal predicted Self-Presentation Concerns and Self Presentation Concerns then predicted Body Satisfaction. Body Satisfaction then had a direct pathway to Disordered Eating Attitudes and Behaviors. Age remained as a moderator variable. Furthermore, two of the subscales of the Multidimensional Body Self Relations Questionnaire were justifiably eliminated. This respecified model of disordered eating in female runners fit the data well with many significant pathways in the hypothesized directions.

My first hypothesis was that female runners with higher internalization of the thin ideal, lower body satisfaction, and higher self-presentation scores would exhibit a greater prevalence of disordered eating attitudes and behaviors than those without these characteristics. The more that female runners experience social pressures to be thin and achieve a certain sport prototype, the more likely they are to integrate these beliefs and ideals into their self-evaluation (Thompson et al., 2004). Moreover, Petrie et al. (2007) found that individuals who exhibited eating disorder symptomology reported significantly more pressure regarding their weight from the media and their peers. These findings support the hypothesis that Internalization may lead to perfectionistic self-presentational types of concerns. Because perfectionistic self-presentation is a construct related to the need of attaining approval from others and avoiding displaying imperfection, it would make sense that there would be a significant direct pathway from Internalization to Self Presentational Concerns (Hewitt et al., 1995). Furthermore, concepts related to perfectionistic self-presentation, such as social approval and social anxiety, are also implicated in the development of disordered eating attitudes and behaviors. The importance of studying the relationship between perfectionistic self-presentation and eating disorders comes from research that has shown that partaking in physical activity or exercise is somewhat induced by the desire...
to attain a certain image (Martin, Leary, & O’Brien, 2001). These findings support the direct association that was found between perfectionistic self-presentational concerns and lower body satisfaction.

Body satisfaction is one of the most studied variables related to eating disorders. Stice and Shaw (2002) found body dissatisfaction to be a causal risk factor and central to all models of disordered eating. The distortion of one’s body image may lead to a negative view of one’s body, which can have a drastic effect on one’s health, and is believed to be a critical risk factor for the development of disordered eating (Petrie & Greenleaf, 2007). With the intense pressure to be thin that exists in a sport environment such as running, female athletes may end up restricting their eating in an attempt achieve a leaner body, leading to disordered eating attitudes and behaviors. Due to the fact that athletes have both societal pressures as well as pressures from their specific sport, it is not surprising that they become particularly afflicted by this disorder (Hausenblas & Carron, 1999). Therefore, theoretically it is justified to link Body Satisfaction directly to Disordered Eating Attitudes and Behaviors.

The second hypothesis of this study was that with age, female runners would exhibit less concern about body image and self-presentation, thus producing a lowered incidence of disordered eating attitudes and behaviors. The reasoning behind this hypothesis was that with age, women become more self confident and independent, thus lowering the internalization effect that tends to impact so many less confident, adolescent females (Hausenblas & Carron, 1999). With less internalization, perfectionistic self-presentation concerns would also decrease, body satisfaction would likely increase, and consequently, less females would be afflicted by disordered eating attitudes and behaviors. However, after conducting the structural equation model analysis, the only directly significant pathway with age was the construct of disordered eating attitudes and behaviors. It was somewhat surprising that age did not predict the other variables as well, seeing as though they all are extremely interrelated. Due to the fact that the study did not include a large number of older female runners, the moderating effect of age may have been somewhat hidden. If a greater number of older runners had agreed to take part in the study, the hypothesized effect of age may have been more significant. It would be necessary to conduct similar studies with a significantly larger number of older runners to determine whether or not age truly has an effect on the other constructs of interest.
Limitations

Although it is likely that this study may add useful information to the current research on eating disorders within athletes, it is necessary to note a few limitations. In regards to internal validity, there may be an issue since the measurements used were all self-report. Subjects may have altered their answers based on social desirability imperatives, affecting the validity of the results. It is impossible to know how many participants were entirely honest in their responses. Moreover, it is common for many individuals to try to hide their disordered eating habits in an attempt to convince themselves and others that they do not have a problem (Cockell et al., 2002).

Due to time constraints, random sampling methods were not utilized in participant recruitment. Instead, convenience sampling was implemented. Although all participants had to meet certain gender, age, and fitness criteria, the extent to which the women who completed these surveys are competitive distance runners is hard to know. Additionally, the data collected were cross-sectional so conclusions about causality are not warranted. Those reading this study should know these limitations and should interpret the results accordingly.

Furthermore, external validity issues may have come about due to the fact that all individuals were from only one country (United States) and were only female. Therefore, the results may not generalize to females in other nations with different cultures or to male runners. Because the study was solely conducted on runners, it is not possible to generalize the results of this study to other sports. In the future, it will be necessary to conduct similar studies in an array of different sports to be able to generalize to a wider range athlete population.

Future Research

While these issues should be taken into consideration, this study provided information among a variety of psychosocial variables and disordered eating symptomology in female runners. For these female runners, internalization and self-presentational concerns may play an important role in the development of body satisfaction and disordered eating attitudes and behaviors. One of the criticisms of eating disorder research among athletes is that the majority of studies have focused largely on elite-level competitors (Petrie & Greenleaf, 2007). An advantage to this study is that although it included top-level collegiate athletes, it also included less competitive, older runners. Examining eating disordered attitudes and behaviors within all sport levels is a priority since anyone can be impacted by the severity of these disorders. The findings from this investigation provide a foundation on which sport consultants and
psychologists can develop interventions to target and reduce the psychosocial correlates of disordered eating among female runners. Future research programs may want to implement prevention programs designed to reduce internalization of the thin ideal and then follow athletes who participated in the program over a 6-month to 1 year period to determine if any reductions in disordered eating attitudes and behaviors were experienced. More importantly however, is the need to educate those most involved with female runners, e.g., coaches, trainers, sport psychologists, and the runners themselves. Education regarding proper nutrition, prioritizing physical abilities over physical appearance, and emphasizing physical health over weight loss should be considered a priority in an effort to reduce the unhealthy attitudes and behaviors that have become so prevalent within the sport of running. Future research may also want to incorporate longitudinal designs to test the directionality of the pathways that were supported in this study. More specifically, to examine even further the relationship that age has on certain psychosocial variables, researchers might follow athletes from the time they enter college through their mid years to determine if the pressures to be thin dissipate as time goes on.

Conclusions

Overall, the respecified structural model was supported, although some of the initially proposed hypothesized pathways were not. The greater one’s internalization of the thin ideal was, the higher one’s self-presentational scores, and the lower one’s body satisfaction, which then related to more disordered eating attitudes and behaviors. Furthermore, there was a direct pathway between greater internalization and lower body satisfaction, supporting the claim that societal pressures, as well as sport pressures are related to directly to athlete’s body satisfaction (Anderson, Petrie, & Neumann, 2011). Lastly, age was also directly related to disordered eating attitudes and behaviors, supporting the second hypothesis. Individuals who internalize a certain thin ideal and overemphasize the importance of weight, body size, and appearance in their self-evaluation are predicted to be most at risk for the development of increased body dissatisfaction and ultimately, disordered eating (Petrie & Greenleaf, 2007). One of the criticisms of eating disorder research among athletes is that the majority of studies have focused largely on elite-level competitors (Petrie & Greenleaf, 2007). An advantage to this study is that although it included top-level collegiate athletes, it also included less competitive, older runners. Examining eating disordered attitudes and behaviors within all sport levels is a priority since anyone can be impacted by the severity of these disorders.
APPENDIX A

SOCIOCULTURAL ATTITUDES TOWARDS APPEARANCE SCALE - 3

(SATAQ-3)

Internalization-General: Items: 3, 4, 7, 8, 11, 12, 15, 16, 27
Internalization-Athlete: Items: 19, 20, 23, 24, 30
Pressures: Items: 2, 6, 10, 14, 18, 22, 26
Information: Items: 1, 5, 9, 13, 17, 21, 25, 28, 29
Reverse-keyed items: 3, 6, 9, 12, 13, 19, 27, 28

Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

Definitely Disagree = 1
Mostly Disagree = 2
Neither Agree Nor Disagree = 3
Mostly Agree = 4

1. TV programs are an important source of information about fashion and "being attractive." ____
2. I've felt pressure from TV or magazines to lose weight. ____
3. I do not care if my body looks like the body of people who are on TV. ____
4. I compare my body to the bodies of people who are on TV. ____
5. TV commercials are an important source of information about fashion and "being attractive."____
6. I do not feel pressure from TV or magazines to look pretty. ____
7. I would like my body to look like the models who appear in magazines. ____
8. I compare my appearance to the appearance of TV and movie stars.____
9. Music videos on TV are not an important source of information about fashion and "being attractive."____
10. I've felt pressure from TV and magazines to be thin. ____
11. I would like my body to look like the people who are in movies. ____
12. I do not compare my body to the bodies of people who appear in magazines. ____
13. Magazine articles are not an important source of information about fashion and "being attractive."____
14. I've felt pressure from TV or magazines to have a perfect body. ____
15. I wish I looked like the models in music videos. ____
16. I compare my appearance to the appearance of people in magazines. ____
17. Magazine advertisements are an important source of information about fashion and "being attractive."____
18. I've felt pressure from TV or magazines to diet. ____
19. I do not wish to look as athletic as the people in magazines. ____
20. I compare my body to that of people in "good shape." ____
21. Pictures in magazines are an important source of information about fashion and "being attractive."____
22. I've felt pressure from TV or magazines to exercise. ____
23. I wish I looked as athletic as sports stars. ____
24. I compare my body to that of people who are athletic. ____
25. Movies are an important source of information about fashion and "being attractive." ____
26. I've felt pressure from TV or magazines to change my appearance. ____
27. I do not try to look like the people on TV. ____
28. Movie starts are not an important source of information about fashion and "being attractive." ____
29. Famous people are an important source of information about fashion and "being attractive." ____
30. I try to look like sports athletes. ____
APPENDIX B

MULTIDIMENSIONAL BODY SELF RELATIONS QUESTIONNAIRE (APPEARANCE SCALE)

THE MBSRQ-AS

INSTRUCTIONS--PLEASE READ CAREFULLY

The following pages contain a series of statements about how people might think, feel, or behave. You are asked to indicate the extent to which each statement pertains to you personally.

Your answers to the items in the questionnaire are anonymous, so please do not write your name on any of the materials. In order to complete the questionnaire, read each statement carefully and decide how much it pertains to you personally. Using a scale like the one below, indicate your answer by entering it to the left of the number of the statement.

There are no right or wrong answers. Just give the answer that is most accurate for you. Remember, your responses are confidential, so please be completely honest and answer all items.

<table>
<thead>
<tr>
<th>Definitely Disagree</th>
<th>Mostly Disagree</th>
<th>Neutral</th>
<th>Mostly Agree</th>
<th>Definitely Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

_____ 2. I am careful to buy clothes that will make me look my best.
_____ 3. My body is sexually appealing.
_____ 4. I constantly worry about being or becoming fat.
_____ 5. I like my looks just the way they are.
_____ 6. I check my appearance in a mirror whenever I can.
_____ 7. Before going out, I usually spend a lot of time getting ready.
_____ 8. I am very conscious of even small changes in my weight.
_____ 9. Most people would consider me good-looking.
_____ 10. It is important that I always look good.
_____ 11. I use very few grooming products.
_____ 12. I like the way I look without my clothes on.
13. I am self-conscious if my grooming isn't right.
14. I usually wear whatever is handy without caring how it looks.
15. I like the way my clothes fit me.
16. I don't care what people think about my appearance.
17. I take special care with my hair grooming.
18. I dislike my physique.  continued on the next page
19. I am physically unattractive.
20. I never think about my appearance.
21. I am always trying to improve my physical appearance.
22. I am on a weight-loss diet.

For the remainder of the items use the response scale given with the item, and enter your answer in the space beside the item.

23. I have tried to lose weight by fasting or going on crash diets.


24. I think I am:

          4. Somewhat Overweight  5. Very Overweight

25. From looking at me, most other people would think I am:

          4. Somewhat Overweight  5. Very Overweight
26-34. Use this 1 to 5 scale to indicate how dissatisfied or satisfied you are with each of the following areas or aspects of your body:

<table>
<thead>
<tr>
<th>Very Dissatisfied</th>
<th>Mostly Dissatisfied</th>
<th>Neutral</th>
<th>Mostly Satisfied</th>
<th>Very Dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

____ 26. Face (facial features, complexion)
____ 27. Hair (color, thickness, texture)
____ 28. Lower torso (buttocks, hips, thighs, legs)
____ 29. Mid torso (waist, stomach)
____ 30. Upper torso (chest or breasts, shoulders, arms)
____ 31. Muscle tone
____ 32. Weight
____ 33. Height
____ 34. Overall appearance
**APPENDIX C**

**PERFECTIONISTIC SELF-PRESENTATION SCALE**

**(PSPS)**

Listed below are a group of statements. Please rate your agreement with each of the statements using the following scale. If you strongly agree, circle 7; if you disagree, circle 1; if you feel somewhere in between, circle any one of the numbers between 1 and 7. If you feel neutral or undecided the midpoint is 4.

<table>
<thead>
<tr>
<th></th>
<th>Disagree Strongly</th>
<th>Neutral</th>
<th>Agree Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1. It is okay to show others that I am not perfect……………………………1 2 3 4 5 6 7
2. I judge myself based on the mistakes I make in front of other people………1 2 3 4 5 6 7
3. I will do almost anything to cover up a mistake……………………………1 2 3 4 5 6 7
4. Errors are much worse if they are made in public rather than in private……1 2 3 4 5 6 7
5. I try always to present a picture of perfection……………………………1 2 3 4 5 6 7
6. It would be awful if I made a fool of myself in front of others……………1 2 3 4 5 6 7
7. If I seem perfect, others will see me more positively……………………1 2 3 4 5 6 7
8. I brood over mistakes that I have made in front of others…………………1 2 3 4 5 6 7
9. I never let others know how hard I work on things………………………1 2 3 4 5 6 7
10. I would like to appear more competent than I really am…………………1 2 3 4 5 6 7
11. It doesn’t matter if there is a flaw in my looks…………………………1 2 3 4 5 6 7
12. I do not want people to see me do something unless I am very good at it….1 2 3 4 5 6 7
13. I should always keep my problems to myself……………………………………1 2 3 4 5 6 7
14. I should solve my own problems rather than admit them to others………1 2 3 4 5 6 7
15. I must appear to be in control of my actions at all times…………………..1 2 3 4 5 6 7
16. It is okay to admit mistakes to others………………………………………1 2 3 4 5 6 7

---

32
<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>17. It is important to act perfectly in social situations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>18. I don’t really care about being perfectly groomed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>19. Admitting failure to others is the worst possible thing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>20. I hate to make errors in public</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>21. I try to keep my faults to myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>22. I do not care about making mistakes in public</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>23. I need to be seen as perfectly capable in everything I do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>24. Failing at something is awful if other people know about it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>25. It is very important that I always appear to be “on top of things”</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>26. I must always appear to be perfect</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>27. I strive to look perfect to others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
APPENDIX D

EATING ATTITUDES TEST- 26 (EAT-26)

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

Part A: Complete the following questions:
1) Birth Date   Month:   Day:   Year:    2) Gender:   Male   Female
3) Height   Feet:   Inches:
4) Current Weight (lbs.):
5) Highest Weight (excluding pregnancy):
6) Lowest Adult Weight:
7) Ideal Weight:

Part B: Check a response for each of the following statements:

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

<table>
<thead>
<tr>
<th></th>
<th>Never or less</th>
<th>Once a month or less</th>
<th>2-3 times a month</th>
<th>Once a week</th>
<th>2-6 times a week</th>
<th>Once a day or more</th>
</tr>
</thead>
</table>

A. Gone on eating binges where you feel that you may not be able to stop? *

B. Ever made yourself sick (vomited) to control your weight or shape?

C. Ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape?

D. Exercised more than 60 minutes a day to lose or to control your weight?

E. Lost 20 lbs or more in the past 6 months.

*Defined as eating much more than most people would under the same circumstances and feeling that eating is out of control.*
APPENDIX E

IRB APPROVAL FORM

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM
Date: 12/19/2012
To: Adriana Piekarewicz
Dept.: EDUCATION
From: Thomas L. Jacobson, Chair
Re: Use of Human Subjects in Research

The application that you submitted to this office in regard to the use of human subjects in the research proposal referenced above has been reviewed by the Human Subjects Committee at its meeting on 12/12/2012. Your project was approved by the Committee.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 12/12/2013 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee. You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.
APPENDIX F

FSU BEHAVIORAL CONSENT FORM

You are invited to be in a research study examining eating attitudes and behaviors. You were selected as a possible participant because you have met the criteria for being a competitive runner and are a female between the ages of 18 and 50. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

The researcher conducting this study is Adriana Piekarewicz. She is a Masters Student in the Educational Psychology and Learning Systems Department at Florida State University.

Background Information:

The purpose of this study is to examine various risk factors leading to the development of disordered eating attitudes and behaviors within the female running population. By identifying certain critical risk factors for female athletes, the prevalence of disordered eating attitudes and behaviors may be greatly reduced, which could lead to superior achievements in performance, as well as healthier and happier lifestyles within the population of female athletes.

Procedures:

- If you agree to be in this study, please complete the online survey attached as a link in this email.
- Complete this survey on your own without the presence of any coaches, friends, family, etc.
- Suggested time allotted to answer all the questions is 45 to 60 minutes.
- At the end of the survey, simply hit the “submit” button.

Risks and benefits of being in the Study:

There are no known risks of participating in this study. While participating in this study may not benefit you directly, it will help us learn more about the risk factors leading to disordered eating, which may have a positive impact on the female running population as a whole.

Confidentiality:

The records of this study will be kept private and confidential to the extent permitted by law. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records.
Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Florida State University or any university that you currently attend. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

If you have concerns with the study and would like to talk to someone other than the researcher or her advisor, you are encouraged to contact Florida State University’s Research Compliance Hotline:

FSU IRB
2010 Levy Street
Research Building B, Suite 276
Tallahassee, FL 32306-2742
850-644-8633
humansubjects@magnet.fsu.edu

Statement of Consent:

I have read the above information. I have had the opportunity to have all of my questions regarding the survey answered to my satisfaction. I consent to participate in this study.

____________________  _________________
Signature                                             Date

____________________  _________________
Signature of Investigator                     Date
REFERENCES


BIOGRAPHICAL SKETCH

EDUCATION

FLORIDA STATE UNIVERSITY – TALLAHASSEE, FL  
Candidate for Master of Science - Sports Psychology  
GPA 3.93/4.00  
May 2013

DUKE UNIVERSITY – DURHAM, NC  
Bachelor of Arts Psychology  
Certificate in Markets and Management  
Major GPA 4.0/4.0   Cumulative GPA 3.92  
- Graduated Summa Cum Laude  
- Member of Psi Chi Honor Society  
May 2011

RELATED COURSEWORK

PSYCHOLOGY:

- Human Memory  
- Statistical Methods in Psychology  
- Sport Psychology  
- Diet and Nutrition  
- Exercise Physiology and Anatomy  
- Motor Skills and Learning  
- Applied Sport Psychology

EXPERIENCE

VITAL BRIDGES – CHICAGO, IL  
May – July 2010  
- Shadowed social workers who counseled clients with HIV/Aids  
- Logged data/notes pertaining to client home visits  
- Volunteered at various locations to give out free groceries/home necessities to clients

AWARDS

DUKE UNIVERSITY’S DEAN’S LIST WITH DISTINCTION – Awarded to students with GPA in top 10 percentile  
FLORIDA BRIGHT FUTURES ACADEMIC SCHOLAR – 100% Scholarship awarded for academic excellence  
MACLAY HIGH SCHOOL SALUTATORIAN – Awarded to student with 2\textsuperscript{nd} highest GPA