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**BODY IMAGE DIFFERENCES IN SPECIFIC LEVELS
OF FEMALE RUNNERS**

Tabby Bewley

**A dissertation presented to the
Graduate Faculty of Middle Tennessee State University
in partial fulfillment of the requirements
for the degree Doctor of Arts**

December, 2001

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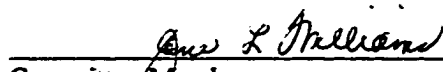
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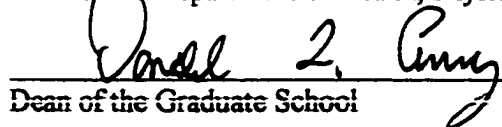
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ABSTRACT

BODY IMAGE DIFFERENCES IN SPECIFIC LEVELS OF FEMALE RUNNERS

by

Tabby Bewley

The purpose of this study was to determine if differences existed in body image between low and high mileage female runners based on the Multidimensional Body Self-Report Questionnaire-Appearance Scale (MBSRQ-AS) (Cash, 2000). The sample consisted of 119 female runners between the ages of 25 and 55 who had incorporated running into their daily lives for the past 12 months, and were categorized into one of two groups based on frequency and commitment to running. The female runners were recruited from professional conferences, marathons, 10k and 5k road races, running clubs, health/fitness clubs, and running stores. Women who were professional athletes, self-identified with an eating disorder or users of tobacco were excluded from the study. Each of the participants were administered the Multidimensional Body Self Report Questionnaire-Appearance Scale (MBSRQ-AS), a demographic information form, a brief running questionnaire, and a consent form. An Independent t-Test was utilized to establish if differences existed in body image between low and high mileage female runners based on each of the five independent subscales of the MBSRQ-AS. Independent t-Test results indicated there were no significant differences ($p > .05$) in body image between the two groups of female runners. Further statistical tests utilized were Spearman rho and Pearson r correlations. These two tests were utilized to identify relationships between subscales of the MBSRQ-AS and demographic questions among female runners in this study. The results from the Spearman rho revealed significant relationships between: 1) number of days run per week and appearance orientation

($p=.013$); 2) level of education and body areas satisfaction ($p=.044$); 3) time it takes to run one mile and body areas satisfaction scale ($p=.009$); 4) inverse correlation between number of road races run and self-classified weight ($p=.019$); and 5) inverse correlation between number of marathons run and self-classified weight ($p=.039$). The Pearson r correlation investigated relationships between body image and the demographics of age, weight, and height among female runners. Significant relationships occurred among the following: 1) inverse correlation between weight and appearance evaluation ($p=.001$); 2) inverse correlation between weight and body areas satisfaction ($p=.002$); 3) correlation between weight and overweight preoccupation ($p=.003$); and 4) correlation between weight and self-classified weight ($p=.000$). In conclusion, this study indicated no significant differences in body image between low and high mileage female runners. However, evidence was provided that established significant correlations between the subscales of body image and related demographics of female runners.

DEDICATION

This research study is dedicated to my husband Jimmy Bewley for his loving generosity and patience over the past three years. He has provided unconditional love, support, and cheered me on from the sidelines. He makes me a better person, and I am blessed to have him in my life.

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TABLE OF CONTENTS

	Page
List of Tables.....	iv
List of Appendices	v
Chapter	
1. Introduction	1
Statement of the Problem	1
Purpose of the Study	6
Significance of the Research	6
Research Questions	7
Hypotheses	8
Assumptions	8
Delimitations	9
Definition of the Terms	9
Chapter	
2. Review of Related Literature	11
Definitions of Body Image.....	11
Sociocultural Pressures and Effects on Body Image.....	14
Eating Disorders and Body Dissatisfaction.....	16
Body Image Among Females	19
Body Image Among Females Who Exercise	22
Obligatory Runners	25
Female Runners and Body Image	27
Summary	31

Chapter	
3. Methods	33
Design.....	33
Description of Volunteers	33
Data Collection Procedures	35
Description of Instruments	36
Analysis of MBSRQ-AS Data by Groups	39
Analysis of Descriptive Variables by MBSRQ-AS Data	40
Informed Consent	40
 Chapter	
4. Results	41
Participants	41
Demographic Data	42
Running Variables	45
Body Image Subscales	51
Correlations of Body Image Subscales (MBSRQ-AS)and Variables	55
 Chapter	
5. Summary, Conclusions, and Recommendations	59
Summary	59
Conclusions	73
Recommendations for Future Study.....	75
Appendices	77
References	83

LIST OF TABLES

Tables	Page
1. Mean and Standard Deviation for Age, Height, and Weight of Female Runners...	42
2. Frequency and Percent for Demographics of Low and High Mileage Runners.....	44
3. Frequency and Percent for Number of Days Run by Female Runners.....	45
4. Frequency and Percent for Pace Per Mile by Female Runners.....	46
5. Frequency and Percent for Number of Roadraces Run by Female Runners.....	47
6. Frequency and Percent for Number of Marathons Run by Female Runners.....	48
7. Frequency and Percent for Primary Reason Reported for Running by Female Runners.....	49
8. Mean and Standard Deviation for Running Variables of Low and High Mileage Female Runners.....	50
9. Mean and Standard Deviation for Body Image Subscales of Female Runners.....	52
10. Correlations Between Body Image Subscales and Variables.....	57
11. Correlations Between Body Image Subscales and Demographics..	58

LIST OF APPENDICES

Appendix	Page
A. Consent Form	78
B. Demographic Information Form	79
C. The Multidimensional Body Self-Report Questionnaire.....	80
D. Brief Running Questionnaire	81
E. Institutional Review Board Approval	82

CHAPTER 1

INTRODUCTION

Statement of the Problem

Body image is a serious health concern in current American culture. Research concerning body image has been abundant in recent years due to the identification of eating disorders such as anorexia nervosa and bulimia nervosa among women.

Today, American women feel the need to conform to a cultural standard that values being attractive, thin and fit (Brownell, Rodin, & Wilmore, 1992). According to Garner, Garkinkel, Schwartz, & Thompson (1980), attractiveness is now characterized as being a thin woman, and some women use various forms of exercise and physical activity, in particular running, to reach cultural expectations of thinness (Slay, Hayaki, Napolitano, & Brownell, 1998). Although much research has been conducted in regard to running, especially among high mileage runners, female runners as a group have not been adequately researched (Estok & Rudy, 1996; Blumenthal, 1985; Yates, Leehay, & Shisslak, 1983). Few studies have reported the degree to which body image issues exist among the female low mileage runner population as compared to the female high mileage runner population (Crossen & Raymore, 1997).

Over the past three decades, women have demonstrated a significant increase in their desire to become thin or to change their body shape (Davis & Fox, 1993; Hill, Oliver, & Rodgers, 1992; Singh, 1993; Wooley & Wooley, 1984). Women have been influenced by sociocultural pressures to look a certain way and to value appearance as a means to accomplishing personal goals (Rodin, Silberstein, & Striegel-Moore, 1985). In this culture, the universal belief is that attractiveness is equated with being "thin."

According to Snaith (1992) the pressures our cultural standards have placed on women to be thin are evidenced in those who suffer from anorexia nervosa, bulimia, obligatory behavior, depression, and low self-esteem. The evidence of women's dissatisfaction with their appearance is influenced by featured articles in the media on dieting, cosmetic plastic surgery, and exercise/fitness (Downs & Harrison, 1985).

Although much of the contemporary literature on body image consists of studies of college students and eating disordered patients, large sample surveys of body image were conducted in 1972 and 1985 (Berscheid, Walster, & Bohrnstedt, 1973; Cash, Winstead, & Janda, 1985). Both were mail-in surveys from which a stratified random sample was taken to represent the sex-by-age distribution in the United States population. Comparisons of these surveys' results provided evidence that from 1972 to 1985 both men's and women's body image had become more negative (Cash, Winstead, & Janda, 1985).

A decade later, Cash & Henry (1995) conducted a national consumer survey study in regard to body image attitudes among adult women. The study sample included 803 women, ranging from 18 to 70 years in age. The instrument used was the Multidimensional Body Self Relations Questionnaire-Appearance Scale (MBSRQ-AS), which had been utilized in the Cash, Winstead, & Janda (1985) study. The results indicated substantial levels of body dissatisfaction, possibly surpassing levels observed in the 1985 study. Nearly one-half of the women reported negative evaluations of their appearance and a preoccupation with being or becoming overweight. In addition, the majority of women were not satisfied with their middle or lower torso, weight, or muscle tone. The Cash, Winstead, & Janda (1985) study suggested that 30% of women between 18 and 70 years of age had an unfavorable MBSRQ-AS Appearance Evaluation score. In

comparison to the 1985 study, Cash and Henry (1995) study revealed the MBSRQ Appearance Evaluation score had unfavorably increased to 48%. Therefore, Cash and Henry concluded that body image concerns among women had reached an epidemic level in America. Cash and Henry's research is one indication of the extent to which body dissatisfaction represents a "normative discontent" among women in our society.

Therefore, given the cultural pressures on women to be thin and substantial levels of body dissatisfaction, running may be the way some women control and maintain their weight. In addition, running may provide an outlet for women who suffer from a negative body image without developing full blown anorexia nervosa (Weight & Noakes, 1987). Regardless of the reason for running, Estok & Rudy (1996) have reported that women runners at various levels of exercise intensity may represent a group at risk for inadequate nutritional intake and the development of associated health problems.

In 1996, Estok & Rudy conducted a study of eating disorders among high mileage runners. These researchers gathered a stratified sample of 265 women runners and nonrunners between the ages 20 and 35 years. The groups were classified by level of running in the past three months as follows: Group 1, sedentary; Group 2, running less than or equal to 15 miles per week; Group 3, running 15.1 to 30 miles per week; and Group 4, running greater than 30 miles per week. An EAT-26 item questionnaire was utilized to assess psychological and behavior traits common in women with anorexia and/or bulimia. A finding of this study was that 22% of the women who ran more than 15 miles per week and 25% of those who ran more than 30 miles per week scored in the anorexic range on the EAT-26. These results indicate that women runners who run more than 15 miles per week represent a population at increased risk for eating disorders.

However, running is an exercise and sport in which people of all levels of fitness can participate and benefit. Running, when done in moderation and under appropriate conditions, can reduce the risk of coronary heart disease, hypertension, and obesity, and can contribute to a positive lifestyle of wellness (Cooper, 1985). However, when running is done excessively or with the wrong intent, it can be a negative contribution to wellness.

Cooper has stated that “runners might stay healthier and fitter if they ran less” (Cooper, 1985, p. 90). He also concluded that “recent research has shown that unless a person is training for marathons or other competitive events, it’s best to limit running to around 12 to 15 miles per week. More than that will greatly increase the incidence of joint and bone injuries, and other ailments. However, less mileage will fail to achieve the desired improvement in the body.”

Cooper and his staff at the Aerobics Center in Dallas were overwhelmed in 1985 by the high incidence of injuries reported by people who ran more than 25 miles a week. Although a competitive runner might willingly take the risks associated with higher mileage, Cooper argued that running beyond a 15 mile weekly limit could yield at first diminishing fitness returns and eventually negative ones in the form of medical problems. Cooper’s (1985) prescription for optimal running is two to three miles, three to five days a week. For nonracers, he set minimum and maximum running distances: no less than two miles three times a week, and no more than three miles on five days. John Duncan, Cooper’s associate at the Aerobics Center, stated that “people running five three-milers a week have the same low risk of developing heart disease as someone running 80 miles per week.” Cooper added, “If you run more than 15 miles per week, you are running for something other than fitness” (Henderson, 2000, p.91).

Similar to Cooper's (1985) findings, which revealed those who run more than 15 miles per week are running for reasons other than fitness, Davis, Fox, Cowles, Hastings, and Schwass (1990) found that non-eating disordered women who exercise beyond average levels have another agenda than just maintenance of good health. They concluded the women in their study were feeling the cultural pressures to be thin; therefore, exercised beyond normal levels. The acknowledgment of weight related concerns may be attributed to the surge of interest in the fitness movement and may explain why running provides some women with an active way to address body dissatisfaction (Davis, Fox, Cowles, Hastings, & Schwass, 1990).

Currently, in the United States the largest growing group of runners are women between the ages of 20 and 40. They often make up 50 percent of the runners at many races (Henderson, 2000). Today more than 400,000 runners participate in marathons throughout the United States (Running's Second Wind, 1999). The growth has been spurred in large part by women, who in 1998 accounted for 34% of marathon finishers (Bingham, 1999). Running participation in 5k road races has grown an average of 11% from 1998 to 1999 (American Sports Data, 2000). Other distances still favored by runners include the marathon and half-marathon with estimated total of 445,000 race finishers in the United States in 1999 (American Sports Data, 2000). The Superstudy of Sports Participation in 1999 reported that 34 million people are runners in the United States, and of these 34 million runners, 55% are male and 45% are female (American Sports Data, 2000).

In conclusion, researchers have reported Cash & Henry (1995) that body image concerns among women exist for more than 50% of adult women. Cooper has stated that

runners who run more than 15 miles per week are running for something other than fitness, and Henderson (2000) has reported that the largest growing group of runners are women. Because of this increase in the number of female runners, the question arises whether women who run more than 20 miles per week have different perceptions of their body image than women who run less than 15 miles per week. This study will investigate that question.

♦

Purpose of the Study

The purpose of this study was to identify differences in perceptions and attitudes about body image between high mileage female runners and low mileage female runners based on each of the 5 independent subscales of the Multidimensional Body Self Report Questionnaire -Appearance Scale (MBSRQ-AS): 1) Appearance Evaluation, 2) Appearance Orientation, 3) Body Areas Satisfaction Scale, 4) Overweight Preoccupation, and 5) Self-Classified Weight.

Significance of the Research

An understanding of the associations between body image and running could enable coaches, mental health professionals, health club personnel, sports psychologists and physical educators to readily recognize problem attitudes and behaviors associated with running (Smith, 1998). These data may also have relevance to clinical and medical professionals who work with non-clinical groups of female runners experiencing negative body image.

Body image for nonclinical, non-eating disordered groups, including excessive

exercisers, has not been extensively studied (Powers & Erickson, 1986). It has been suggested that female runners' tendency to express elevated dissatisfaction with their current physical appearance is grounded in negative body image (Pasman & Thompson, 1988), and the importance of physical appearance to female runners may be influential in aspects of her body image.

Such research of this nature may assist psychologists and other clinicians by providing a basis for assessing, intervention, and prevention aimed at better understanding attitudes about body image.

Research Questions

- 1) Are there differences in body image on the MBSRQ-AS Appearance Evaluation subscale between high mileage female runners and low mileage female runners?
- 2) Are there differences in body image on the MBSRQ-AS Appearance Orientation subscale between high mileage female runners and low mileage female runners?
- 3) Are there differences in body image on the MBSRQ-AS Body Areas Satisfaction Scale subscale between high mileage female runners and low mileage female runners?
- 4) Are there differences in body image on the MBSRQ-AS Overweight Preoccupation subscale between high mileage female runners and low mileage female runners?
- 5) Are there differences in body image on the MBSRQ-AS Self-Classified Weight

subscale between high mileage female runners and low mileage runners?

Hypotheses

1. Female high mileage runners will demonstrate greater feelings of general unhappiness with their physical appearance than the low mileage runners based on the MBSRQ-AS Appearance Subscale.
2. Female high mileage runners will demonstrate a greater investment in their appearance than the low mileage runners based on the MBSRQ-AS Appearance Orientation Subscale.
3. Female high mileage runners will demonstrate greater unhappiness with the size or appearance of several body areas than the low mileage runners based on the MBSRQ-AS Body Areas Satisfaction Subscale.
4. Female high mileage runners will demonstrate greater fat anxiety, weight vigilance, dieting and eating restraint than the low mileage runners based on the MBSRQ-AS Overweight Preoccupation Subscale.
5. Female high mileage runners will demonstrate less ability to accurately perceive their weight than the low mileage runners based on the MBSRQ-AS Self-Classified Weight Subscale.

Assumptions

- 1) Participants were honest in answering the questions on the surveys.

Delimitations

This study was delimited by the following factors:

- 1) participants consisted of female runners;
- 2) female runners were divided into two groups: low and high mileage runners;
- 3) a sample of convenience was used;
- 4) participants were screened and excluded for eating disorders;
- 5) participants were between the ages of 25-55;
- 6) participants were not professional athletes; and
- 7) participants were not smokers or users of smokeless tobacco;
- 8) mileage was not validated - (self-reports of number of miles run per week).

Definition of the Terms

Definitions are based on nonclinical populations.

Body image - size perception and subjective assessment of one's body (Cash, 1995).

Obligatory runners - women who exercise a minimum of six hours per week (Davis & Fox, 1993; Nudelman, Rosen, & Leitenberg, 1988; DeCoverly-Veale, 1987).

Professional athletes - women who train for purposes of earning money through competition.

Low mileage runners - women who run 3 to 15 miles per week on average (Burfoot, 1997; Estok & Rudy, 1996; Cooper, 1985).

High mileage runners - women who run more than 20 miles per week (Burfoot, 1997; Estok & Rudy, 1996; Cooper, 1985).

10K runners- women who participate in races consisting of 6.2 miles.

5K runners - women who participate in races consisting of 3.1 miles.

Marathoners - women who participate in races consisting of 26.2 miles.

Body satisfaction - the degree to which individuals are satisfied with their bodies and themselves (Cash, 1995).

Body dissatisfaction - the degree to which individuals are dissatisfied with their bodies and themselves (Cash, 1995).

Body image disturbance - the accuracy of perceptions regarding one's size (the belief that one is larger than one's actual size) (Thompson, 1990).

CHAPTER 2

REVIEW OF RELATED LITERATURE

The concept of body image has long been the source of much exploration, analysis, and debate. The sections of this chapter will provide a review of the following topics: 1) definitions of body image, 2) sociocultural pressures, 3) eating disorders, 4) body image among females, 5) body image among females who exercise, 6) obligatory runners, and 7) female runners and body image.

Definitions of Body Image

Contemporary literature reflects an awareness among researchers that body image may be related to many aspects of human development including self-esteem, sexuality, familial relationships, and identity (Attie & Brooks-Gunn, 1989; Fabian & Thompson, 1989; Jackson, Sullivan, & Hymes, 1987). In the developmental stages, body image is generally considered to be an important component of identity development, particularly at adolescence when accommodation to pubertal change is a key development task (Attie and Brooks-Gunn, 1989; Blyth, Simmons, & Zakin, 1985). For girls, the onset of menarche serves as a potent biological and social stimulus for maturation, introducing a new set of changes and challenges to the physical and psychological integrity. In addition, the conflicting and largely unattainable cultural messages that are sent by the media for young girls to be thin may result in confusion and a sense of inadequacy, especially at puberty when the female body gains approximately 30% more fat with the onset of menarche (Steiner-Adair, 1986). Body image is clearly not objective. Rather, both an individual's subjective experience and evaluation of her body, as well as her actual physical

characteristics, are vital to an understanding of body image (Blyth, Simmons, & Zakin, 1985).

While difficult to define clearly, there is agreement in the literature that body image is multidimensional and complex, involving both internal-biological and psychological factors, as well as external social factors (Blyth, Simmons, & Zakin, 1985). The following paragraphs in this section provide various definitions of body image as conceptualized by highly regarded and well established researchers in this field.

The first concept of body image was formulated by the German writer Schilder (1950), as an important and integral psychological phenomenon in his monograph The Image and Appearance of the Human Body, which was published in English in 1935. Schilder (1950) spoke of body image as “the picture of our own body which we form in our mind, that is to say the way in which the body appears to ourselves” (p. 36).

Cash, Winstead, & Janda (1985) contributed to the research of body image by utilizing a valid instrument that investigated body image as “multidimensional” in respect to self-attitudes toward one’s body, particularly its appearance. In addition, these researchers conducted one of the first national studies that revealed significant levels of body dissatisfaction among the general population.

Similar to the research of Schilder (1950), Cash & Pruzinsky (1990) referred to body image as the way people perceive themselves and, equally important, the way they think others see them. Cash (1990) suggested that body image is a mental construct a person has of the physical appearance of his/her body, and of all the ways people think of themselves, none is so essentially immediate and central as the image of their own bodies. Cash & Pruzinsky also contended that body image is constantly changing, continuously

modified by biological growth, trauma, or decline; it is significantly influenced and molded by life circumstances.

During the same time period of Cash and Pruzinsky (1990), Slade (1994) contributed to the research of body image by maintaining that body image has two main components 1) perceptual component, which focuses on the accuracy of an individual's body size estimation; and 2) attitudinal component which focuses on the attitudes/feelings an individual has towards his/her own body. Slade defined body image as "the picture we have in our minds of the size, shape, and form of our bodies; to our feelings concerning these characteristics and our constituent body parts" (p. 497).

Similar to Slade, Thompson (1995) suggested that body image was comprised of perceptual and attitudinal components; however, unlike Slade, he added a behavioral component. Thompson contributed to the research of body image by subdividing the physical appearance construct into three main components: 1) perceptual; 2) attitudinal or subjective; and 3) behavioral. The perceptual component is commonly referred to as size perception accuracy or estimation of body size. The perceptual aspect is often discussed in reference to eating disorders, and is a recognized diagnostic feature of anorexia nervosa in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994). The attitudinal or subjective component deals with facets such as satisfaction, concern, cognitive evaluation, and anxiety. Thompson describes the subjective component of body image as satisfaction with one's body size or specific body parts. He suggests that it is often the more subjective aspects of body image that are examined in nonclinical populations. Fabian & Thompson (1989) and Thompson (1992) studies offered multiple theories to explain the prevalence of subjective body image

disturbance in non-eating-disordered individuals. Thompson divided these theories into developmental and sociocultural factors. In respect to developmental factors, Thompson contributed a great deal of research upon the important role of childhood and adolescent development in later body image disturbance. Lastly, Thompson added a behavioral component in assessing body image, which focuses on avoidance of situations that cause the individual to experience physical appearance-related discomfort. The behavioral component usually addresses those patients who are clinically disturbed in regard to body image distortion. Thompson (1990) defined body image as an evaluation of one's size, weight, or any other aspect of the body that determines physical appearance.

Body image has been defined as "the way we see ourselves." The research involved in this study on body image was based on a nonclinical population, and has focused on the perceptual and attitudinal components of body image. People who have serious problems with body image or who might be defined as clinically disturbed in regard to body image, were beyond the scope of this study.

Sociocultural Pressures and Effects on Body Image

Most researchers agree that the strongest influences on our society's increased level of body image disturbance are sociocultural pressures on women to be thin and in today's society there is the added pressure to be fit (Heinberg, Thompson, & Stormer, 1995; Fallon, 1990).

Standards for the female body have changed over time (Mazur, 1986). This worship of female thinness is the culmination of a trend in American's collective taste that began in the early 1960's (Garner, Garfinkel, Schwartz, & Thompson, 1980). During the

last three decades, fashion models and Miss America pageant contestants have grown steadily thinner (Colburn, 1992; Garner, Garfinkel, Schwartz, & Thompson, 1980). While the average weight of women has risen over the last two decades, the weight of Miss America winners has fallen, becoming an unrealistic target for women to emulate (Mazur, 1986; Garner, Garfinkel, Schwartz, & Thompson, 1980). Although the ideal figure has become thinner while the average women's figure has become larger, it appears that many women continue to accept the thinner ideal as a goal (Garner, Garfinkel, Schwartz, & Thompson, 1980).

In many ways the media have fostered the view that "thinness is synonymous to beauty." Therefore, a wealth of research has indicated that our society negatively values the opposite of thinness - obesity (Rothblum, Miller, & Garbutt, 1988; Rodin, Silberstein, & Striegel-Moore, 1985; Hawkins & Clement, 1984; Allon, 1982). Although current societal ideals promote thinness, additional evidence suggests that women are pressured to achieve appearance goals that are sometimes contradictory to thinness- for example, the possession of large breast (Thompson & Tantleff, 1992) or a muscular physique (Striegel-Moore, Silberstein, & Rodin, 1986). Although some changes may be possible through cosmetic or plastic surgery, sociohistorical changes favoring an aging population and increasing prevalence of obesity will result inevitably in increasingly fewer women who are able to meet the cultural "ideal" of beauty.

It is evident the mass media plays a powerful role in communicating the thin standard to the average woman. In a study by Heinberg and Thompson (1995) college-aged women viewed 10 minute videotapes of commercials that either contained stimuli emphasizing societal ideals of thinness and attractiveness or contained neutral stimuli not

related to appearance. Results indicated that subjects who viewed the videotape stressing the importance of thinness and attractiveness reported greater depression, anger and appearance dissatisfaction than subjects given the neutral manipulation. All subjects exposed to the neutral, control video demonstrated a decrease in appearance-related dissatisfaction.

In this widening gulf between the cultural norm and biological reality, the number of people who take diet aids has flourished. Throughout the 1980's, revenues of commercial diet centers grew 18% annually, reaching two billion dollars in 1990. The clientele of these centers are 85 to 90 % women, most of whom regain lost weight within two years (Schroeder, 1991). It is well documented that enormous time and commitment is spent by women in efforts to diet (Myers, & Biocca, 1992). In a study by Wiseman, Gunning & Gray (1993) the number of television commercials for diet foods, diet aids, weight loss products, and weight loss programs were tabulated for the years 1973 to 1991, demonstrating a steady increase in the prevalence of these advertisements. The authors concluded that the sociocultural pressure to lose weight and conform to the thin ideal remains strong; however, alternative methods (such as exercise) are being offered in place of traditional dieting.

Eating Disorders and Body Dissatisfaction

Eleven million women and one million men in the United States suffer from eating disorders that are either self-induced semi-starvation (anorexia nervosa) or a cycle of bingeing and purging with laxatives, self-induced vomiting, or excessive exercise (bulimia nervosa) (Dunn 1992; Fairburn, Cooper, & Cooper, 1986). According to the American

Anorexia and Bulimia Association, 150,000 American women die of anorexia each year. Body image is often associated with anorexia nervosa and bulimia nervosa. In 1994, The American Psychiatric Association included body image dissatisfaction as a diagnostic criteria for both anorexia and bulimia. There is remarkable agreement among researchers that eating disorders involve a disturbance of body image.

The DSM-III-R criteria for anorexia nervosa are: a) a refusal to maintain body weight over a minimal normal weight for age and height, b) an intense anxiety about "gaining weight or becoming fat, even though underweight," and c) a disturbance of body experience "feeling fat" or believing a body area is "too fat" even when emaciated. Among females, amenorrhea is an additional criterion (American Psychiatric Association, 1994). In most cases of anorexia nervosa, weight loss is achieved through fasting or reduction in food intake, but as many as 50 % of subjects in clinical, descriptive studies use vomiting and purging as a form of weight reduction (Fairburn & Garner, 1986).

Bulimia nervosa refers to a severe eating disorder in which individuals, almost always women, habitually vomit or more rarely abuse laxatives after binge eating or after eating even minimal amounts of "forbidden" foods that they consider dangerously fattening. Vomiting is self-induced and typically occurs daily. As many as 10 episodes of self-induced vomiting per day have been reported in the literature, but the mean frequency per week typically reported is between 7 and 15 (Russell, 1979). According to Russell, bulimia nervosa is also accompanied by a morbid fear of becoming fat.

Furthermore, most bulimic women maintain normal weight because they are able to eat some food without vomiting, whereas anorexic women are emaciated because they engage in starvation. Anorexia nervosa tends to occur in young adolescents who are still

living at home (Cash, 1990). Social attention plays a less important role in bulimia nervosa because the disorder is inconspicuous, and it tends to be secretive. Both disorders are associated with widespread psychopathology and eventually interfere with normal functioning in relationships, work, and school (Cash, 1990).

In a study by Wolf (1991), at least nine out of ten eating disorder sufferers are female, and patients with eating disorders tend to perceive themselves as unrealistically big or fat and as being grossly out of proportion or protruding at certain body regions. The distortion of normal size is often evident in the unrealistic standards that the patient attempts to achieve. No matter what feedback the patient may receive about her size, she relies on her own perceptions and feelings of being too big (Cash, 1990).

Body dissatisfaction in females also appears to encourage disturbed eating behaviors. It has led to eating disorders, depression, and poor self-esteem. Once limited to the domain of eating disorders, body image has become the subject of discussion in literature about nutrition, exercise, and fitness. Wooley and Wooley (1984) conducted a survey of 33,000 females aged 15 to 35. Participants were questioned regarding attitudes toward their bodies and their methods of weight control. Though only 25 percent were actually overweight according to weight norms, 75 percent believed that they were fat, with 18 percent using laxatives or diuretics and 15 percent using forced vomiting to control their weight. Cash (1995) reported that body dissatisfaction has been a concern among women for the past decade.

Similar to the findings of Wooley and Wooley (1984), a study from the Melpomene Institute of Women's Health Research, 1990 (as cited in Cool, 1992) reported that 30 percent of the female participants chose an ideal body shape that was 20 percent

underweight and an additional 44 percent chose one that was ten percent underweight. Whether or not they are too heavy, females who see themselves as overweight show decreased satisfaction with their bodies, reduced levels of self-esteem and lowered psychosocial well-being (Cash & Hicks, 1990).

In addition, Noles, Cash, & Winstead (1985) surveyed 643 nonobese, nonanorexic undergraduate women and found that the degree of disturbed eating depended strongly on level of body satisfaction. One-third of their respondents reported using laxatives or self-induced vomiting at least once a month for weight control purposes.

The recognition of this relatively new clinical entity, body dissatisfaction, has led researchers to conduct treatment investigations focused narrowly on body image problems in normal populations (Rosen, Saltzberg, & Srebnik, 1989; Butters & Cash, 1987).

Body Image Among Females

Body image problems for women begin in childhood. The majority of 10 year olds are already afraid of becoming too fat, and body image dissatisfaction is expressed by over one third of adolescent females and two thirds of adult females (Freedman, 1988; Cash, Winstead, & Janda, 1985). Dieting resulting from negative body image is common for women, although obesity is actually less prevalent for women than men (Rothblum, 1990; Saltzberg, 1990; Barron & Lear, 1989; Cash, Winstead, & Janda, 1985; Polivy & Herman, 1983; Gray, 1977). About half of 10 year olds, two-thirds of high school girls, and one-third of adult women are dieting, and rates of dieting among adolescent girls have doubled in the last twenty years (Freedman, 1988).

Cash, Winstead, & Janda (1985) in a nationwide survey of 30,000 individuals (a

sample of 2,000 was analyzed in order to accurately represent the adult population, by gender and age) found high levels of dissatisfaction with body image in females and males. Only 18% of the men they surveyed and 7% of the women expressed little concern with their appearance. A comparison of the 1985 study figures with a previous survey conducted by Berscheid, Walster, & Bohmstedt (1972) revealed an increased dissatisfaction by both genders. Cash, Winstead, & Janda concluded women were more unhappy than men in all body areas except the face and height.

Cash & Henry (1995) conducted a follow up study of body image attitudes among adult women in the United States based on a larger consumer survey and used the preferable methodology of a more randomly selected, representative sample. The sample included 803 women, ranging from 18 to 70 years, residing in 19 cities in five regions of the United States (Northeast, Southeast, Southwest, West Coast, and Midwest). Sampling was conducted in 1993 by a survey research organization to represent the United States population of adult women in terms of age, race, income, education, and geographical region based on 1990 census data. Among the women sampled, 84% were white, 58% were employed, 60 % were married, and 44% were educated beyond high school. Experienced interviewers called door-to-door and selected respondents were based on pre-established demographic quotas. The research was presented as a consumer survey, and the survey instrument included three well-validated subscales of the MBSRQ: 1) Appearance Evaluation; 2) Body Areas Satisfaction Scale (BASS); and 3) Overweight Preoccupation (Cash, 1986 as cited in Cash & Henry, 1995; Cash, 1994; Brown, 1990). The results from Cash & Henry's 1995 study indicated substantial levels of body dissatisfaction, possibly surpassing levels observed in the Cash, Winstead, & Janda 1985

study. As reported earlier in this review of literature, nearly one-half of the women reported negative evaluations of their appearance and a preoccupation with being or becoming overweight. Whereas age effects were minimal, significant race/ethnicity effects were found, with clearly more positive body images among African American than Anglo or Hispanic women (Cash & Henry, 1995). Relative to the 1985 sample, the women in 1995 reported a more negative Appearance Evaluation, yet indicated less Overweight Preoccupation .

The Cash & Henry (1995) study attests to the substantial dissatisfaction American women feel about their physical appearance. Their research provided the extent to which body dissatisfaction represents a “normative discontent” among women in our society. Therefore, relative to survey data collected by Cash, Winstead, & Janda (1985), Cash & Henry’s study indicated that women’s global body-image evaluations seem to have worsened appreciably over a decade. In the 1980’s, 30% of women between 18 and 70 years old had an unfavorable MBSRQ Appearance Evaluation Subscale score. In 1995 this percentage had increased to 48% (Cash & Henry, 1995).

This 1995 national study indicated that body-image concerns continue to be prevalent among American women. Thompson, Berland, Linton, & Weinsier (1986) found that approximately 95% of women overestimated the size of their bodies, and that overestimation for females was approximately twice that of males. As Cash & Henry (1995) indicated, body image concerns among women are prevalent at a high level in America.

Body Image Among Females Who Exercise

Statistics indicate that people exercise on a regular basis more now than ever before. The popularity of fitness centers, workout videos, and personal exercise equipment may be indications of a trend in industrialized societies toward an increasing dedication to health and fitness (Cash, 1994). It is not clear, however, whether these phenomena reflect a conscientious pursuit of healthy lifestyles or an exaggerated and narcissistic preoccupation with physical appearance (Davis, Claridge, & Brewer, 1996). Because exercise has been recognized as an important component of physical and psychological health, researchers continue to investigate factors that motivate people to engage in physical activity (Potvin, Gauvin, & Nguyen, 1997).

Research by Davis & Fox (1993) found lower body dissatisfaction in excessive exercising women when compared to non-exercisers. This study revealed that non-eating disordered women who exercise beyond average levels have another agenda than just maintenance of good health. As in the literature on appearance for women in general, the motivation behind exercise is due to the pressures to be thin (Davis, Fox, Cowles, Hastings, & Schwass, 1990). Therefore, the acknowledgment of weight related concerns may be attributed to the surge of interest in the fitness movement and may explain why exercise provides some women with an active way to address body dissatisfaction.

There are opposing views concerning the relationship between body image and exercise participation (Davis & Fox, 1993; Davis & Cowles, 1991; Yates, 1991; Dishman, 1986). Some investigators have found that frequent exercisers have a negative view of their bodies and are dissatisfied with their shape and view their bodies from an aesthetic dimension (Imm & Pruitt, 1991). Recognizing the health benefits (physical and

mental) that accompany participation in a fitness regime, exercise for some may become an obsession; that is, the pursuit of a more perfect body and physical demeanor may reflect a deeper psychological and societal preoccupation with narcissism (Crisp, Hsu, Harding, & Hartshorn, 1980).

Researchers have proposed that a preoccupation with body image is also characteristic of the narcissistic personality (Fine, 1986; Lasch, 1979). Appearance enhancement may be the primary focus of the exercise activity and suggestive of narcissistic vanity. In their study on narcissism and body image in a nonclinical sample, Jackson, Ervin, & Hodge (1992) found that when narcissistic individuals were compared with non-narcissistic controls, the narcissists had a body image that was more favorable and a level of self-esteem that was higher than controls. Also, these investigators found that narcissism was positively related to body awareness.

A number of studies have investigated the role that body-image satisfaction plays in exercise motivation (Frederick & Shaw, 1995; Cash, 1994; Crawford & Ecklund, 1994; McDonald & Thompson, 1992; Davis & Cowles, 1991). It is generally agreed that body satisfaction is influenced by a number of intrinsic and extrinsic variables which interact in ways that ultimately affect psychological well-being (Brown, Cash, & Mikulka, 1990). Researchers have suggested that given a disparity between perceived body image and ideal body image, dissatisfaction with one's physical appearance may lead to lower self-esteem, higher social anxiety, and intense self-consciousness (Cash, 1994).

In a study by Smith (1998), inventory scores were correlated with frequency of exercise and standardized measures of body image satisfaction. Smith used the responses of 101 female nursing students to examine the validity and factor structure of the Reasons

for Exercise Inventory. Reasons for Exercise Inventory had four internally consistent factors of Appearance/Weight Management, Fitness/Health Management, Stress/Mood Management, and Socializing (Cash, 1994). Smith concluded that only the Appearance/Weight Management factor was significantly correlated with frequency of exercise, and respondents who reported higher body dissatisfaction named not only weight control but mood regulation as primary motives for exercise.

An additional study conducted by Smith (1998) in regard to reasons for exercise included 78 male and 100 female undergraduates between the ages of 18 and 25 years of age. The participants completed a demographics/frequency of exercise survey, two body assessment inventories and the Reasons for Exercise Inventory (Cash, 1994). The results indicated that only health and fitness reasons were predictive of women's frequency of exercise, and women's dissatisfaction with specific bodily attributes was not significantly related to any reasons for exercising; however, the women who did experience more situational body dissatisfaction exercised for appearance and weight control. Women reported higher situational body dissatisfaction and exercising for appearance-related reasons more than men.

A comparison study was conducted by Davis & Cowles (1991) using a group of physically active women ($n = 112$) and men ($n = 88$) from a broad range of ages. Comparisons were made on a number of variables related to body image such as weight, diet concerns, and degree of exercise participation. Interrelationships between these measures were also examined. Results indicated that men and women were equally dissatisfied with their current weight. Although most women wanted to lose weight, the men were evenly divided between those who wanted to lose and those who wanted to

gain. Women were more dissatisfied with their bodies and placed greater importance on their appearance as an influence on their feelings of well-being. Although there were no sex differences in degree of physical activity, women were more likely than men to exercise in order to lose weight. These results continued to support many previous studies indicating that women are in assiduous pursuit of thinness (Davis & Cowles, 1991). There is also evidence suggesting that the current emphasis on exercise as an important health behavior may very well serve to encourage, in both sexes, an exaggerated and narcissistic investment in the body (Davis, Fox, Cowles, Hastings, & Schwass, 1990).

The degree to which physical activity is effective as a means of narrowing the gap between current self and ideal self may help explain the very different pattern of correlations between men and women. Older men reported to a greater extent than younger men that they exercised for the purpose of losing weight. For women it may be the case that the more they focus on their appearance, the more likely they are to engage in some form of exercise, but the degree to which they exercise does little to achieve the very slender shape they desire. Therefore, a woman's degree of body satisfaction is not affected (Davis & Cowles, 1991).

Obligatory Runners

Research has established that women more than men use exercise as a means of weight loss and societal approval (Davis, Claridge, & Brewer, 1996). It has also been documented that obligatory exercise exists for many women who participate in marathons and 10k road races (Yates, 1991; Yates, 1987; Blumenthal, O'Toole, & Chang, 1984; Yates, Leehey, & Shisslak, 1983). The elite/professional and obligatory runner in relation

to eating disorders and body image have also been examined (Blumenthal, 1985; Yates, 1991). Most of the empirical literature which addresses the issue of the obligatory runner has focused on the addictive aspects of a heavy commitment to running (Hailey and Bailey, 1982; Morgan, 1980).

Yates, Leehey, and Shisslak (1983) compared the behaviors of obligatory runners with those of patients with anorexia nervosa, and suggested that similarities exist between those who suffer from obligatory running and those with eating disorders in regard to level of physical activity, restricted food intake, depressive symptomatology, and episodes of binge-eating. Although the details of their methodology are unclear, the researchers interviewed more than 60 runners during workouts, at road races, over the telephone, and at a sports medicine clinic. They also included 3 illustrative case histories in their study. A major feature characterizing both obligatory runners and anorectics was an all-consuming pursuit of the "ideal" which entailed physical attractiveness for anorectics and physical effectiveness for runners. Stringent dieting and exercise were seen as different means for achieving the same idealized goals, and both groups were reported to exhibit withdrawal symptoms of anxiety and depression when efforts to achieve their goals were thwarted. Both obligatory running and anorexia nervosa appeared to develop during a period of increased stress and conflict centering around self-identity. The researchers considered both disorders to be age related. The particular developmental trigger for runners differed from anorectics; however, while anorexia nervosa developed during adolescence, obligatory running occurred during middle age. As a result of these situations, Yates, Leehey, & Shisslak (1983) concluded that anorexia nervosa and obligatory running were manifestations of the same underlying psychopathology. Obligatory runners, like

anorectics, were believed to harbor underlying conflicts in identity. Through the ritualistic involvement in socially accepted activities like running and dieting, runners and anorectics were presumed to achieve a heightened sense of control over themselves and their environment.

In view of the potential impact that the Yates, Leehey, & Shisslak (1983) study would have on society's attitude toward the serious runner, Blumenthal (1985) conducted a similar study examining the relationship between obligatory runners and anorectics in relation to eating disorders and body image. He used a standard objective measure of personality and psychopathology - the Minnesota Multiphasic Personality Inventory (MMPI). Anorectics were carefully diagnosed by DSM-III criteria. Obligatory runners were recruited by advertisements at local road races and newspaper advertisements. Participants were chosen on the basis of their responses to a self-report questionnaire derived from the description of obligatory runners by the Yates, Leehey, & Shisslak study in 1983. Blumenthal's data contradicted the 1983 study and suggested that obligatory runners and anorectic patients do not share either a form of psychopathology or a common set of personality attributes. However, this study did not rule out the possibility of similarities in factors such as negative body image not measured by the MMPI .

Female Runners and Body Image

Running as it relates to body image has by far received the most attention of all forms of aerobic exercise since it began to enjoy widespread popularity in the early 1970's (Burfoot, 1997). Running is an exercise and a sport in which people of all levels of fitness can participate.

According to Wheeler, Wall, Belcastro, Conger, & Cumming (1986), many benefits have been associated with running. Psychological benefits include better stress management, reduction of depression, improved self-esteem, and an improved feeling of well being along with a heightened sense of personal control. Physiological advantages include improved aerobic capacity and reduced body fat. As mentioned in the introduction, running, when done in moderation and under appropriate measures, can reduce the risk of coronary heart disease, hypertension, obesity, and can contribute to a positive lifestyle of wellness. However, when running becomes excessive or done with the wrong intent, it can be a negative contribution to one's wellness (Cooper, 1985). For example, overuse muscular skeletal injuries have increased in recreational and competitive runners as they attempt to run further and faster.

Wheeler, Wall, Belcastro, Conger, & Cumming's (1986) conducted a cross-sectional study of 49 female runners (31 high mileage, 18 low mileage) and 18 non-running sedentary controls to investigate whether runners displayed any of the abnormalities characteristic of patients with anorexia nervosa. Runners ranged in age from 18-59 years and were divided into two groups depending upon their weekly training load. Those training 40 or more miles per week were described as high mileage runners, and those running 20-39 miles per week were called low mileage runners. Eighteen sedentary men were accepted as controls on the basis of their having no involvement in physical exercise. All subjects completed a questionnaire on their social background, Eating Attitudes Questionnaire (EAT), and in the case of runners only, on their attitudes to running. The results indicated there was no significant evidence of anorexia nervosa on testing the runners with the Eating Attitudes Questionnaire (EAT). Although

overestimation of waist size provided some evidence of a distortion of body image in the high mileage runners, runners displayed no clear abnormalities characteristic of patients with anorexia nervosa. In addition, no evidence was found to suggest that a high percentage of runners regularly neglected their occupation and family responsibilities.

This finding is in contrast to the anecdotal evidence provided by Morgan (1980) & Sours (1981) who found that the social backgrounds of obligatory runners tend to be similar to those of the typical anorexic patient, and the groups may share similar personality traits and behaviors. Sours believed that both the runner and the anorexic patient are caught up in a partially successful attempt to establish a self identity. The social background of anorexic patients has been described as predominantly social class I and II associated with high achievement and achievement motivation (Garner, Olmstead, & Polivy, 1983). Previous studies have provided consistent evidence that runners come from the same background (Yates, Leehey, & Shisslak, 1983).

Studies have been conducted on the high mileage female runner with respect to eating disorders (Estok & Rudy, 1996; Wheeler, Wall, Belcastro, Conger, & Cumming's 1986), but few studies have reported to what degree body image issues exist among the female low mileage runner population as compared to the female high mileage runner and non-exerciser (Crossen & Raymore, 1997). Estok & Rudy's (1996) study focused on the high mileage runner with respect to eating disorders. They recruited a stratified sample of 265 female runners and non-runners (ages 20-35), and categorized them into four groups: 66 non-runners, 69 low level runners, 67 medium level runners, and 63 high intensity runners. The groups were then classified by level of running as follows: Group 1, sedentary, not running as a leisure time activity and exercising less than or equal to 60

minutes per week; Group 2, running less than or equal to 15 miles per week; Group 3, running 15.1 to 30 miles per week; and Group 4, running more than 30 miles per week. The females were weighed, measured, and had body fat and a four day nutritional intake assessed. A questionnaire was utilized to assess psychological and behavior traits common in women with anorexia and/or bulimia, general addiction, and running addiction. ANCOVA with age and income as covariates and multiple regression analyses were used. There were significant differences among the groups on the eating disorder measures and running addiction. A major finding of this study was that 22% of the females who ran more than 15 miles per week and 25 % of those who ran more than 30 miles per week scored in the anorexic range on the EAT-26. Based on this, female runners represent a population at increased risk for eating disorders. Running may be the way some females control their weight without developing full blown anorexia nervosa or running dependence, and eating disorders may occur in women who have a general tendency toward addiction (Weight & Noakes, 1987 as cited in Estok & Rudy, 1996). Regardless, female runners at various levels of exercise intensity may represent a group at risk for inadequate nutritional intake and the development of associated health problems (Estok & Rudy, 1996).

In 1991, Prussin & Harvey found a relatively high prevalence of bulimia nervosa in 179 female runners, but found no association between bulimia and running competence, activity, or weight. No subgroup of runners was at extra risk for bulimia or binge-eating symptoms. Limitations of the study were the use of self-reported height and weight and the absence of a control group of non-exercising women.

Gleaves, Williamson, & Fuller (1992) examined the hypothesis that weight loss

through running leads to the development of eating disorders and concluded that despite considerable weight loss, the runners demonstrated no psychopathology suggesting bulimia nervosa, and loss of body weight was not related to the development of eating disorders.

While previous research has established links between adolescent female body satisfaction and negative outcomes such as eating disorders, the nature of the relationship between body satisfaction and participation in physical activity has yet to be determined; different authors have found different types of relationships. Crossen & Raymore (1997) sought to examine whether attitudes toward the body were related to leisure-time involvement in fourteen types of physical activity for females between the ages of 14 and 17. A sample of 266 female adolescents completed a self-administered questionnaire that examined involvement in physical activity and body attitudes as measured by the Body Attitude Questionnaire. The results of this study suggested that, in terms of a specific activity, the population who appeared to be most at risk for the negative outcomes associated with negative body attitudes were those adolescent females who were highly involved in running and athletics during their leisure time. Also, it was noted that females participating in strenuous activities were not necessarily serious athletes, a common focus of previous research. Participation may have therefore been motivated by attitudes towards the body rather than competition or other such reasons for extensive involvement in sport.

Summary

In conclusion, research has reported that women are the fastest-growing segment of runners (Henderson, 2000). As a result of the increased pervasiveness of running as a

widespread and legitimate form of exercise, much has been written of an anecdotal nature about the psychologically related aspects of running (Glover & Schuder, 1983; Bridge, 1980; Fixx, 1977). Furthermore, there is evidence that body image dissatisfaction has become normative for adult women in the United States (Cash & Henry, 1995; Davis & Fox, 1993; Wooley & Wooley, 1984). However, due to the lack of empirical investigation of these issues in the literature, many questions are left unanswered, and these may include important questions about the relationship between running and a positive body image among women.

CHAPTER 3

METHODS

Design

This study was designed to describe body image differences between low mileage and high mileage female runners by utilizing a Multidimensional Body Self-Report Questionnaire - Appearance Scale (MBSRQ-AS). The MBSRQ-AS is composed of five independent body image subscales that are principally appearance related. The independent subscales are: 1) Appearance Evaluation, 2) Appearance Orientation, 3) Body Areas Satisfaction Scale, 4) Overweight Preoccupation, and 5) Self-Classified Weight (Cash, 2000). Additional demographic variables of age, height, weight, and running characteristics were evaluated among the female runners to determine if relationships existed between the 5 subscales of the MBSRQ-AS and the demographic information variables.

Prior to actual data collection for the study, a pilot study was conducted and research questionnaires were distributed to 9 females. The pilot test provided an opportunity to refine data collection procedures and practice administering the questionnaires in order to determine potential difficulties or questions that might occur during the study.

Description of Volunteers

The 169 female runners were recruited from professional conferences, health clubs, road races and running stores. The 5k, 10k and half marathon road races were attended on weekends by the researcher. The Nashville Striders, Inc. running club gave permission for

the researcher to attend monthly board meetings and advertise this study on its website and monthly newsletter. Participants who responded to the advertisement were given the research packet to complete. The running store, Team Nashville, collaborated by offering 10% off any store purchase for participation in this study.

There were 169 female runners who volunteered to complete a consent form, brief running questionnaire, body image questionnaire (MBSRQ-AS), and demographic information form. There were 119 female runners who qualified for participation in this study. The female running participants were between the ages of 25 and 55, and were classified into two groups: high mileage runners or low mileage runners based on information gathered from the demographic information form. The low mileage running group consisted of 65 participants and the high mileage running group consisted of 54 participants.

Selection of Participants:

The following criteria were used to screen and classify participants:

- a. Participants must be female, between the ages of 25 and 55.
- b. High mileage runners run more than 20 miles per week (Estok & Rudy, 1996; Cooper, 1985).
- c. Low mileage runners, run 3 to 15 miles per week (Estok & Rudy, 1996; Cooper, 1985).
- d. All participants must have maintained their current level of exercise for a minimum of one year.

- e. All participants must never have been diagnosed with an eating disorder by a physician.
- f. Participants were not professional athletes.
- g. Participants were not cigarette smokers or users of smokeless tobacco.
- h. Volunteers were excluded if they ran between 16 and 20 miles per week.

Data Collection Procedures

Research packets included: 1) a consent form (Appendix A) which provided a brief explanation of the nature of the study, confidentiality issues, and the right to withdraw from the study at any time; 2) a demographic information form (Appendix B) which included demographics of the participants and their running history; 3) the **Multidimensional Body Self-Report Questionnaire - Appearance Scale (MRSRQ-AS)** (Appendix C), a measure of body image; and 4) a running questionnaire (Appendix D).

After research packets were completed, participants were given two envelopes in which to place their questionnaires and consent form. Consent forms were placed in a separate envelope in order to insure anonymity of responses. Data collection steps proceeded as follows:

Introduction to the study:

- 1. **Brief Explanation:** participants were informed that this was a study dealing with female runners' health and fitness issues, feelings about their bodies, attitudes, and behaviors about their body. They were informed that participation would take approximately 10 minutes to complete three questionnaires. It was explained that confidentiality and the right to withdraw would be maintained at all times

throughout the study.

2. Consent Form (Appendix A): was distributed for participant's signature and was collected immediately after completion. Each consent form was placed in a separate envelope in order to insure anonymity of responses.
3. Brief Running Questionnaire (Appendix D): was administered to assure that participants met the criteria for the study.
4. The questionnaires were distributed which included: 1) demographic information form (Appendix B); and 2) Multidimensional Body Self- Report Questionnaire - Appearance Scale (MBSRQ-AS) (Appendix C).
5. The questionnaires were collected immediately after completion and each was placed into a separate envelope.
6. After sealing the envelopes, any further questions were answered, the researcher's telephone number was distributed to participants , and any necessary debriefing was done.

Description of Instruments

Demographic Information Form (Appendix B)

This 16 item demographic information form was divided into three sections: The first section of the demographic information form had questions about age, education, race/ethnicity, and income. The second part of the questionnaire inquired about running history. Questions were asked about frequency of running, that is, total time spent in running (per session, per week, per month), number of running sessions, and the date when running became a weekly regime in terms of months or years. The final section of

the demographic questionnaire asked whether participants have ever had an eating disorder or were users of tobacco. This was followed by a question concerning status as a professional athlete (Appendix B). The demographic information form was based on surveys from the Behavioral Risk Factor Surveillance System Questionnaire from the Centers for Disease Control and Prevention (2000) and National Runners Survey from the National Runners' Health Study (Williams, 1999).

Multidimensional Body Self-Report Questionnaire- Appearance Scale (Appendix C)

The current study utilized the appearance-related subscales of the MBSRQ-AS which is a 34-item version of the original instrument. The MBSRQ-AS included the following subscales: Appearance Evaluation, Appearance Orientation, Overweight Preoccupation, Self-Classified Weight, and the Body Areas Satisfaction Scale.

In order to establish reliability of the MBSRQ-AS, a nationwide survey was conducted with 1,064 female respondents (Cash, Winstead, & Janda 1985). This self-report questionnaire was constructed using a 5-point Likert scale for item responses. The responses included: Definitely Disagree = 1, Mostly Disagree = 2, Neither Agree Nor Disagree = 3, Mostly Agree = 4, and Definitely Agree = 5. Tested and re-tested for reliability, the subscales of the MBSRQ-AS displayed an internal consistency. The five dependent body image variables utilized in this study were:

- 1) Appearance Evaluation (AE): Feelings of physical attractiveness or unattractiveness; satisfaction or dissatisfaction with one's looks. High scorers feel mostly positive and satisfied with their appearance; low scorers have a general unhappiness with their physical appearance;
- 2) Appearance Orientation (AO): Extent of investment in one's appearance.

High scorers place more importance on how they look, pay attention to their appearance, and engage in extensive grooming behaviors. Low scorers are apathetic about their appearance; their looks are not especially important and they do not expend much effort to “look good”;

- 3) **Body Areas Satisfaction Scale (BASS):** Similar to the Appearance Evaluation subscale, except that the BASS taps satisfaction with discrete aspects of one’s appearance. High composite scorers are generally content with most areas of their body. Low scorers are unhappy with the size or appearance of several areas;
- 4) **Overweight Preoccupation (OP):** This scale assesses a construct reflecting fat anxiety, weight vigilance, dieting, and eating restraint;
- 5) **Self-Classified Weight (SCW):** This scale reflects how one perceives and labels one’s weight, from very underweight to very overweight.

The total number of items comprising the five factors was 34. The reliability scores established the MBSRQ-AS as a stable and reliable instrument for assessing body image. Furthermore, convergent, discriminant, and construct validities have been adequately demonstrated for this measure (Cash, 2000). Evidence for convergent validity for the MBSRQ-AS has been provided in a study by Cash, Wood, Phelps, & Boyd (1991) for the four -item Overweight Preoccupation Scale. Greater fear of fatness, great body weight, more body-image dissatisfaction and avoidance, more restrained and bulimic eating patterns, stronger personal investment in appearance, and more depression were all associated with higher scores on the Overweight Preoccupation Scale. Evidence of discriminant validity was provided by the results of a regression analysis that showed that

overweight preoccupation was predictable from anxiety about fatness and eating restraint even after body weight was controlled. Concurrent validity is suggested by a significant positive correlation of .78 between the Body Appearance Subscale and Appearance Evaluation Subscale of the MBSRQ-AS. Additionally, Brown, Cash, & Mikulka (1990) found support for the “conceptual” dimensions by conducting a cross-validated factor analytic study of the original database of the MBSRQ-AS (Appendix C).

Brief Running Questionnaire (Appendix D)

This 5 item questionnaire was utilized to assure that participants met the criteria of the study, and questions included: 1) Are you a professional athlete? 2) Do you currently smoke or use spit tobacco? 3) Have you ever been diagnosed with an eating disorder by a physician? 4) Do you regularly engage in any of the following exercises? and 5) What are the number of years you have run (Appendix D)?

Analysis of MBSRQ-AS Data by Groups

Questionnaires were coded according to the two running groups (low mileage and high mileage). All data collected were entered into an IBM computer for statistical analysis using the Statistical Package for the Social Sciences (SPSS Base 10.0, 1999).

An Independent t-Test was utilized to identify differences in body image mean scores between the two groups of female runners: high mileage and low mileage based on each of the five MBSRQ-AS subscales as follows: 1) Appearance Evaluation; 2) Appearance Orientation; 3) Body Areas Satisfaction Scale; 4) Overweight Preoccupation; 5) Self-Classified Weight.

Analysis of Descriptive Variables by MBSRQ-AS Data

Pearson r correlations were used for parametric data; whereas, Spearman ρ were utilized for non-parametric data. The correlations between descriptive variables and body image variables were examined to determine whether certain descriptive variables may be related to female runners' body image MBSRQ-AS subscale scores. These correlations were based on individual scores from the two running groups combined.

Informed Consent

Informed written consent was obtained from all participants. Participants were informed that they did not have to complete the study if they found any of the questions to be offensive in nature. They were also informed that they had the right to withdraw from the study at any time and that information collected for the study was confidential. Participants were informed that they had the right to obtain the results of the study if requested. Before collection of data, approval from the Middle Tennessee State University Institute Review Board (IRB) was obtained.

CHAPTER 4

RESULTS

The purpose of this chapter is to present the results of this study on differences in body image between low and high mileage female runners. The first section describes the study's population by demographic variables. The remaining sections present data that were obtained from 119 female participants who completed the Multidimensional Body Self-Report Questionnaire - Appearance Scale (MBSRQ-AS) survey. Means, standard deviations, and p-values were generated for the following demographics and running variables: age, height, weight, days run per week, pace per mile, number of road races run, and number of marathons run. An alpha level of .05 was used for statistical significance.

Participants

One hundred and sixty nine female runners volunteered to complete the 34 item version of the MBSRQ-AS questionnaire. Of the 169 questionnaires completed, 119 female runners between the ages of 25 and 55 qualified for this research study. The study population consisted of 65 low mileage female runners and 54 high mileage female runners. Forty-nine female volunteers in this study were excluded for the following reasons: 38 were not classified as low or high mileage runners as they ran between 16 and 20 miles per week; eight had been diagnosed with an eating disorder; two were users of tobacco; and, one was a non-runner. No participants were excluded for being a professional athlete. A sample of convenience was utilized to recruit participants through attendance at professional conferences, health clubs, road races and running stores.

Possible scores for body image on all the independent subscales of the MBSRQ-AS ranged from 1 to 5.

Demographic Data

Age, Height, and Weight

Among the 119 females who participated in this study there were no significant differences between low and high mileage runners with respect to height and weight. The mean height (in inches) of female participants was 65.4 (SD = 2.64) with a range between 58 -72 inches. The mean weight (in pounds) was 133.1 (SD = 15.75) with a range between 103 - 190 pounds. However, the running groups did differ significantly by age ($p < .05$). The mean age of female runners was 34.7 (SD = 8.58). The older female participants in this study were high mileage runners (see Table 1).

Table 1.

Mean and Standard Deviation for Age, Height and Weight of Female Runners

Characteristics	Low Mileage (n = 65)		High Mileage (n = 54)		Total (n = 119)		p
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Age(years)	33.2	(7.95)	36.5	(9.02)	34.7	(8.58)	.032*
Height (inches)	65.2	(2.71)	65.6	(2.55)	65.4	(2.64)	.478
Weight (lbs)	133.2	(14.6)	132.8	(17.1)	133.1	(15.7)	.890

Note: Low mileage = 3 to 15 miles per week; high mileage = over 20 miles per week.

* Significant at ($p < .05$)

Education, Income, and Ethnic Background

Table 2 indicates educational level, annual income and ethnic background of groups. Educational level of participants ranged from high school to beyond a bachelor's degree. The majority of participants (87.4%) had earned either a bachelor's degree or a degree beyond a bachelor's. Only 12.6% of the female participants had a high school degree or less. High mileage runners (55.6%) had a higher degree of education (beyond a bachelor's) than did low mileage runners (36.9%). This can be seen in Table 2, which reveals the greater the educational level of the participants, the more high mileage runners.

Income level of participants ranged from \$10,000 to over \$50,000 per year. Approximately one-fourth (28.6%) of female runners had an income level of over \$50,000 per year. There were more high mileage female runners (35.2%) who earned over \$50,000 per year than low mileage female runners (23.1%). The higher the annual income of the participant the more miles the participant ran (see Table 2).

The majority of females in this study were Caucasian (91.6%). The remaining portion of the population was composed of African American (3.4%); Hispanic (1.7%); Other (1.7%); Asian (.8%), and Native American (.8%).

In summary, the average female participant in this study was 35 years old and weighed 133 pounds with a height of 5'5" inches. Average participants were Caucasian with a reported average income of over \$30,000, and were well educated with either a bachelor's or beyond bachelor's degree. Furthermore, the high mileage runners were significantly older and had earned a higher degree of education and income than did the low mileage runners.

Table 2.**Frequency and Percent for Demographics of Low and High Female Runners**

Characteristics	Total (n=119)		Low Mileage (n=65)		High Mileage (n = 54)	
	N	%	N	%	N	%
Education						
less than high school	0	0	0	0	0	0
high school (12 yrs)	15	12.6	9	13.8	6	11.1
bachelor's (16 yrs)	50	42.0	32	49.2	18	33.3
beyond bachelor's (17+)	54	45.4	24	36.9	30	55.6
Income						
10-20,000	28	23.5	16	24.6	12	22.2
20-30,000	17	14.3	13	20.0	4	7.4
30-40,000	23	19.3	12	18.5	11	20.4
40-50,000	17	14.3	9	13.8	8	14.8
Over 50,000	34	28.6	15	23.1	19	35.2
Ethnic Background						
Caucasian	109	91.6	60	92.3	49	90.7
African American	4	3.4	2	3.1	2	3.7
Hispanic	2	1.7	1	1.5	1	1.9
Other	2	1.7	1	1.5	1	1.9
Asian	1	.8	1	1.5	0	0
Native American	1	.8	0	0	1	1.9

Note: Low mileage = 3 to 15 miles per week; high mileage = over 20 miles per week.

Percentages do not add to 100 due to round off.

Running Variables

There were significant differences between low and high mileage female runners in the number of days run ($p < .05$). The majority of the high mileage runners (87.1%) ran 4 days or more per week while the majority of the low mileage runners (64.6%) ran 3 days or less per week (see Table 3).

Table 3.

Frequency and Percent for Number of Days Run by Female Runners

Number of Days Run	Total (n = 119)		Low Mileage (n = 65)		High Mileage (n = 54)	
	N	%	N	%	N	%
1 day/week	3	2.5	1	1.5	2	3.7
2 days/week	13	10.9	13	20.0	0	0
3 days/week	33	27.7	28	43.1	5	9.3
4 days/week	34	28.7	17	26.2	17	31.5
5 days/week	26	21.8	6	9.2	20	37.0
6 days/week	7	5.9	0	0	7	13.0
7 days/week	0	0	0	0	0	0
more than 1 run/day	3	2.5	0	0	3	5.6

Note: Low mileage = 3 to 15 miles/wk; high mileage = over 20 miles/wk

Percentages do not add to 100 due to round off.

There were no significant differences between groups with respect to pace per mile ($p > .05$). The pace per mile of female runners was between 8 and 10 minutes. The majority of low mileage runners (74.8%) and high mileage runners (74.1%) ran between

an 8 and 10 minute pace; however, the low mileage runners ran a slower mile per minute than did high mileage runners (see Table 4).

Table 4.

Frequency and Percent for Pace Per Mile by Female Runners

Pace per Mile	Total (n = 119)		Low Mileage (n = 65)		High Mileage (n = 54)	
	N	%	N	%	N	%
5 min/mile	0	0	0	0	0	0
6 min/mile	3	2.5	1	1.5	2	3.7
7 min/mile	12	10.1	6	9.2	6	11.1
8 min/mile	30	25.2	15	23.1	15	27.8
9 min/mile	29	24.4	18	27.7	11	20.4
10 min/mile	30	25.2	16	24.6	14	25.9
11 min/mile	15	12.6	9	13.8	6	11.1

Note: Low mileage = 3 to 15 miles/wk; high mileage = over 20 miles/wk

Percentages do not add to 100 due to round off.

There were significant differences in the number of road races run over the past 3 months between groups ($p < .05$). Slightly more than one-fourth (26.1%) of participants ran in no road races excluding marathons. However, 21.8% of the females had run in more than 6 road races. High mileage runners ran in more road races than did low mileage runners (see Table 5.).

Table 5.**Frequency and Percent for Number of Roadraces Run by Female Runners**

Number of Roadraces	Total (n = 119)		Low Mileage (n = 65)		High Mileage (n = 54)	
	N	%	N	%	N	%
0 roadrace	31	26.1	25	38.5	6	11.1
1 roadrace	17	14.3	7	10.8	10	18.5
2 roadraces	10	8.4	5	7.7	5	9.3
3 roadraces	16	13.4	13	20.0	3	5.6
4 roadraces	13	10.9	6	9.2	7	13.0
5 roadraces	6	5.0	2	3.1	4	7.4
6 roadraces	26	21.8	7	10.8	19	35.2

Note: Number of roadraces run were based on a 3 month period

Low mileage = 3 - 15 miles/wk; high mileage = over 20 miles/wk

Percentages do not add to 100 due to round off.

Significant differences ($p < .05$) existed between groups regarding number of marathons run during the past 12 months. The majority of females (67.2%) in this study had not run in any marathons during the past 12 months. The participants who ran in 1 marathon included 12.3% of the low mileage runners and 33.3% of the high mileage runners. More high mileage runners ran in marathons than did low mileage runners (see Table 6.).

Table 6.**Frequency and Percent for Number of Marathons Run by Female Runners**

Number of Marathons	Total (n = 119)		Low Mileage (n = 65)		High Mileage (n = 54)	
	N	%	N	%	N	%
0 marathons	80	67.2	54	83.1	26	48.1
1 marathon	26	21.8	8	12.3	18	33.3
2 marathons	10	8.4	2	3.1	8	14.8
3 marathons	2	1.7	1	1.5	1	1.9
4 marathons	1	.8	0	0	1	1.9

Note: Number of marathons run was based on a 12 month period.

Low mileage = 3 - 15 miles run/wk; high mileage = over 20 miles/wk.

Percentages do not add to 100 due to round off.

The majority of participants reported they ran for general health reasons.

However, 18% reported that they ran for mental health reasons. More high mileage runners reported they ran for health reasons and to relieve stress than low mileage runners (see Table 7).

Table 7.**Frequency and Percent for Primary Reason Reported for Running by Female****Runners**

Primary Reason*	Total (n = 119)		Low Mileage (n = 65)		High Mileage (n = 54)	
	N	%	N	%	N	%
To lose weight	19	16.0	14	21.5	5	9.3
To change shape	5	4.2	3	4.6	2	3.7
For health reasons	55	46.2	29	44.6	26	48.1
For mental health (stress)	21	17.6	9	13.8	12	22.2
Other	19	16.0	10	15.4	9	16.7

Note: * "What is your primary reason for running?"

Low mileage = 3 - 15 miles/wk; high mileage = over 20 miles/wk

Percentages do not add to 100 due to round off.

The mean scores for low and high mileage female running participants in respect to the running variables is depicted in Table 8. There were significant differences ($p < .01$) between low and high mileage runners on the following 3 running variables: 1) days run per week; 2) number of road races run; and 3) number of marathons run during the past year.

As depicted by Table 8, the high mileage runner ran more days per week ($M = 4.64$; $SD = 1.34$) than the low mileage runner ($M = 3.21$; $SD = .927$), participated in more road races ($M = 3.53$; $SD = 2.28$) during the past 3 months than did the low mileage runner ($M = 2.03$; $SD = 2.06$), and ran in more marathons ($M = .759$; $SD = .909$) during the past year than the low mileage runner ($M = .230$; $SD = .580$). There were no

significant differences between groups in regard to pace per mile. The mean pace per mile for low mileage runners was 9.06 minutes ($SD = 1.24$), and for high mileage runners was 8.87 ($SD = 1.33$) (see Table 8).

Table 8.

Mean and Standard Deviation for Running Variables of Low and High Mileage Female Runners

Running Variables	Low Mileage (n = 65)		High Mileage (n = 54)		p
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
# Days Run Per Week	3.21	(.927)	4.64	(1.34)	.000**
Pace Per Mile	9.06	(1.24)	8.87	(1.33)	.422
# Roadraces	2.03	(2.06)	3.53	(2.28)	.000**
# Marathons Per Year	.230	(.580)	.759	(.909)	.000**

Note: Low mileage = 3 to 15 miles per week; high mileage = over 20 miles per week.

Number of roadraces run was based on a 3 month period.

** Significant at ($p < .01$)

The average runner in this study ran 3 to 4 days per week at a pace of 8 to 10 minutes per mile. They ran in 2 to 3 roadraces during the past 3 months and the majority of participants had not run a marathon during the past year. Their primary reason for running was for health.

The high mileage runner ran in more miles per week and participated in more roadraces and marathons than did the low mileage runner. High mileage runners ran more for reasons of mental health.

Body Image Subscales

The data gathered in this research focused on five subscales of the **Multidimensional Body-Self Relations Questionnaire-Appearance Scale (MBSRQ-AS)**: 1) **Appearance Evaluation**, 2) **Appearance Orientation**, 3) **Body Areas Satisfaction Scale**, 4) **Overweight Preoccupation**, and 5) **Self-Classified Weight**. The MBSRQ-AS is principally interested in the appearance related subscales of body image. An independent t-test was utilized and the results indicated no significant differences ($p > .05$) between low mileage ($n = 65$) and high mileage ($n = 54$) female running groups on all five independent subscales of the MBSRQ-AS. Therefore, Table 9 indicates that low and high mileage female runners have similar body images (see Table 9).

Five major research questions were proposed. This section addresses each of the five independent subscales of body image based on the MBSRQ-AS and related research questions regarding body image in low and high mileage female runners.

Table 9.**Mean and Standard Deviation for Body Image Subscales of Female Runners**

Subscales	Low Mileage (n = 65)		High Mileage (n = 54)		p
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
AE	3.650	(.5573)	3.611	(.6177)	.715
AO	3.484	(.5352)	3.496	(.6414)	.909
BASS	3.567	(.5817)	3.479	(.5202)	.390
OWPREOC	2.753	(.8844)	2.574	(.7688)	.244
WTCLASS	3.115	(.4218)	2.981	(.4654)	.103

Note: AE = Appearance Evaluation; AO = Appearance Orientation; BASS = Body Areas Satisfaction Scale; OWPREOC = Overweight Preoccupation; WTCLASS = Self-Classified Weight. Low mileage = 3 to 15 miles per week; and High mileage = over 20 miles per week.

Appearance Evaluation Subscale

Question one: Are there differences in body image on the MBSRQ-AS Appearance Evaluation subscale between high mileage runners and low mileage female runners?

Appearance Evaluation subscale of the MBSRQ-AS represents general unhappiness or positive feelings and satisfaction with physical appearance. Participants who scored high were more satisfied with physical appearance, and those who scored low tended to exhibit general unhappiness with physical appearance.

Question one compared high mileage female runners to low mileage female runners to see if differences existed in Appearance Evaluation. In the first subscale of body image, Appearance Evaluation, there were no significant differences ($p > .05$) between high mileage and low mileage runners ($t = .366$; $df = 117$; $p = .715$) (see Table 9).

Appearance Orientation Subscale

Question Two: Are there differences in body image on the MBSRQ-AS Appearance Orientation subscale between high mileage female runners and low mileage female runners?

Appearance orientation represents the extent of investment in one's appearance. Those who have a high score place more importance on how they look, pay attention to their appearance, and engage in extensive grooming behaviors. Those who score low are apathetic about their appearance, and their looks are not especially important. In the second subscale of body image, Appearance Orientation, there was no significant difference ($p > .05$) between high mileage and low mileage female runners ($t = -.114$; $df = 117$; $p = .909$) (see Table 9).

Body Areas Satisfaction Scale (BASS)

Question Three: Are there differences in body image on the MBSRQ-AS Body Areas Satisfaction Scale between high mileage and low mileage female runners?

Similar to the Appearance Evaluation subscale, the Body Areas Satisfaction Scale (BASS) taps satisfaction with discrete aspects of one's appearance which would entail placing focus on certain areas of the body such as the hips, thighs, or gluteals. Those with a high composite score are generally content with most areas of their body. Individuals who score low are unhappy with the size or appearance of several areas. In the third subscale of body image, Body Areas Satisfaction Scale, there was no significant difference ($p > .05$) between high mileage and low mileage female runners ($t = .863$; $df = 117$; $p = .390$) (see Table 9).

Overweight Preoccupation Subscale

Question Four: Are there differences in body image on the MBSRQ-AS Overweight Preoccupation subscale between high mileage and low mileage female runners?

This subscale assesses a construct reflecting fat anxiety, weight vigilance, dieting, and eating restraint. Those individuals who score high are more preoccupied with their weight and dieting than those who have a lower score. In the fourth subscale of body image, Overweight Preoccupation, there was no significant difference ($p > .05$) between high mileage and low mileage female runners ($t = 1.171$; $df = 117$; $p = .244$) (see Table 9).

Self-Classified Weight Subscale

Question Five: Are there differences in body image on the MBSRQ-AS Self-Classified Weight subscale between high mileage and low mileage female runners?

This subscale reflects how one perceives and labels one's weight, from very underweight to very overweight. In the last subscale of the MBSRQ-AS questionnaire on body image, Self-Classified Weight, there was no significant difference ($p > .05$) between high mileage and low mileage female runners ($t = 1.645$; $df = 117$; $p = .103$) (see Table 9).

Correlations of Body Image Subscales (MBSRQ-AS) and Variables

After utilizing an Independent t-Test to determine differences between low and high mileage female runners based on the five independent subscales of body image, there were eight demographic variables investigated to determine if any relationships existed for the population of female runners ($n = 119$) in this study based on each subscale of the Multidimensional Body Self Report Questionnaire – Appearance Scale (MBSRQ-AS): 1) Appearance Evaluation, 2) Appearance Orientation, 3) Body Areas Satisfaction Scale, 4) Overweight Preoccupation, and 5) Self-Classified Weight. Two separate correlations were utilized in this study to investigate relationships on the five subscales of female runner's body image and eight demographic variables.. These correlations were based on Spearman rho and Pearson r .

Spearman rho correlation was used to investigate relationships between the five independent subscales of body image based on the (MBSRQ-AS) and the following demographics: 1) highest level of education, 2) average number of days run, 3) time it takes to run one mile, 4) number of roadraces run during the past year, and 5) number of marathons run during the past year.

The Spearman rho correlational revealed significant correlations on several subscales of body image based on MBSRQ-AS and the following demographics: 1) number of days run per week and Appearance Orientation (AO); 2) level of education and Body Areas Satisfaction Scale (BASS); 3) time it takes to run one mile and Body Areas Satisfaction Scale (BASS); 4) inverse correlation between number of roadraces run and Self-Classified Weight (WTCLASS); and 5) inverse correlation between number of marathons run and Self-Classified weight (WTCLASS).

Results revealed a significant correlation between number of days run per week and appearance orientation ($\rho = .227$; $p < .05$) (see Table 10). The more days run per week, the greater the investment in one's appearance.

There was a significant correlation between level of education and body areas satisfaction scale ($\rho = .185$; $p < .05$) (see Table 10). The higher the level of education, the greater the body areas satisfaction.

There was a significant correlation between how long it takes to run one mile and Self-Classified Weight ($\rho = .238$; $p < .01$) (see Table 10). The faster one runs, the greater the accuracy of determining weight.

An inverse correlation existed between number of road races run and self-classified weight. The participants with higher weight participated in fewer races ($\rho = -.214$; $p < .05$) (Table 10). Furthermore, an inverse correlation existed between number of marathons run and self-classified weight ($\rho = -.189$; $p < .05$). The participants with higher weight participated in fewer marathons (see Table 10).

Table 10.**Correlations Between Body Image Subscales and Variables**

Subscales	Q35	Q39	Q40	Q42	Q43
AE	.039	-.145	-.013	-.019	-.039
AO	-.100	.227*	.027	-.095	.039
BASS	.185*	-.150	-.135	.027	.004
OWPREOC	-.124	.144	-.039	-.042	.039
WTCLASS	-.060	-.065	.238**	-.214*	-.189*

Note: Q35 = Highest level of education; Q39 = average number of days ran; Q40 = how long does it take to run one mile; Q42 = how many road races run; Q43= how many marathons run.

AE = appearance evaluation; AO = appearance orientation; BASS = body areas satisfaction scale; OWPREOC = overweight preoccupation; WTCLASS = self-classified weight.

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

* Correlation is significant at the .05 level (2-tailed).

The second correlation utilized was the Pearson r which investigated relationships between body image of female runners (n = 119) based on the MBSRQ-AS subscales to the following demographics: 1) age; 2) height; and 3) weight (Table 11). Pearson r revealed the following significant correlations: 1) an inverse correlation existed between weight and appearance evaluation (AE); 2) an inverse correlation existed between weight and body areas satisfaction scale (BASS); 3) a correlation existed between weight and overweight preoccupation (OWPREOC); and 4) a correlation existed between weight and self-classified weight (WTCLASS).

Results indicated a significant inverse correlation between weight and appearance evaluation. The greater the participant's weight, the less satisfied she was with her physical appearance ($r = -.293$; $p = .001$).

There was a significant inverse correlation between weight and body areas satisfaction ($r = -.278$; $p = .002$). The greater the weight, the less satisfied the participants were on specific body areas (hips, buttocks, thighs) (see Table 11).

There was a significant correlation between weight and overweight preoccupation ($r = .271$; $p = .003$). The greater the participant's weight, the greater the preoccupation with weight (see Table 11).

Lastly, there was a significant correlation between weight and self-weight classification ($r = .558$; $p = .000$). The higher the weight, the higher the subjects scored on the self-classified weight subscale (see Table 11).

Table 11.

Correlations Between Body Image Subscales and Demographics

Subscales	Age	Height	Weight
AE	-.063	-.060	-.293**
AO	.121	.056	.088
BASS	-.014	.084	-.278**
OWPREOC	-.092	-.031	.271**
WTCLASS	-.035	-.019	.558**

Note: AE = appearance orientation; AO = appearance orientation; BASS = body area satisfaction scale; OWPREOC = overweight preoccupation; WTCLASS = self-weight classification.

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

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine if differences existed in body image between high mileage and low mileage female runners based on five independent subscales of the Multidimensional Body-Self Relations Questionnaire - Appearance Scale (MBSRQ-AS). These five independent subscales of body image included: 1) Appearance Evaluation, 2) Appearance Orientation, 3) Body Areas Satisfaction Scale, 4) Overweight Preoccupation, and 5) Self-Classified Weight. There were five research questions and five hypotheses examined in this study. The results of this study indicated there were no significant differences in low and high mileage female runners body image based on the five subscales of the MBSRQ-AS. This finding indicates that both groups are similar in the manner they perceive their physical appearance with respect to feelings of happiness, investment in appearance, contentment with specific body areas, dieting, and ability to perceive their weight accurately. The contents of chapter 5 are presented in three sections: 1) summary; 2) conclusions; and 3) recommendations for further study.

Summary

Participant Characteristics

Previous studies have provided consistent evidence that runners share similar profiles in socioeconomic status, education, and age (Yates, Leehey, & Shisslak, 1983; Hailey & Bailey, 1982; Morgan, 1980). The current study revealed no significant differences between low and high mileage female runners at the .05 level with respect to height and weight. However, data revealed the running groups differed significantly by

age. More miles were run per week by the older participants. The average age of female participants in this study was 34 years. The high mileage participant mean age was 36 and the low mileage mean age was 33. Yates, Leehey, & Shisslak's (1983) study considered both the obligatory runner and those with eating disorders to be age related. Although the particular developmental trigger was different for each group, the results indicated that anorexia nervosa developed during adolescence, and obligatory running occurred more during middle age with an increase of miles run per week by runners. Yates, Leehey & Shisslak's (1983) findings and the present study may suggest that high mileage runners who are middle aged may be more at risk of becoming obligatory runners than low mileage runners.

In the current study, the level of education for 87.4% of running participants was either a bachelor's degree or beyond. Based on frequency scores, the high mileage female runners had a higher degree of education (beyond a bachelor's) than did low mileage runners. Therefore, the higher the educational level of running participants in this study, the more miles run per week. Similarly, Garner, Olmstead, & Polivy's (1983) study found that the social background of anorexic patients is predominantly social class I and II which represents high achievement and achievement motivation. Although the current study did not examine those who suffer from anorexia nervosa, the population characteristics of female runners in the current study support those described in other studies of female runners.

The present study revealed that income level of participants ranged from \$10,000 to over \$50,000 per year. There were more high mileage female runners who earned over \$50,000 per year than low mileage female runners.

Running Variables

This study revealed significant differences in low mileage (less than 15 miles per week) and high mileage female runners (more than 20 miles per week) based on the three running variables: 1) days run per week, 2) number of roadraces run, and 3) number of marathons run during the past year. Other running variables described in this section include: 1) running pace per mile and 2) reported reasons for running.

The present study revealed that high mileage runners ran more days per week than did the low mileage runners. Estok and Rudy's (1996) study concerning the relationship between miles run per week and eating disorders revealed significant differences in females who ran less than 15 miles per week and those who ran more than 30 miles per week. The findings of their study suggested that those who run more than 30 miles per week are more at risk of developing an eating disorder. Unlike Estok and Rudy's study, this current study excluded any reports of eating disorders, and did not reveal significant differences in body image between low mileage (less than 15 miles per week) and high mileage female runners (over 20 miles per week) based on each of the five MBSRQ-AS subscales.

In regard to marathons and roadraces, the present study revealed that high mileage runners participated in significantly more roadraces and marathons than low mileage runners. Previous studies have indicated that those who run high mileage (marathoners) have similar personality characteristics to anorexic patients and obligatory runners and, therefore, may be at risk. In 1987, before the Boston Marathon, a survey was conducted to examine body image assessment and eating attitudes in 36 male and 12 female marathon runners. Each runner completed an Eating Disorders Inventory (EDI) measuring eight subscales of attitudes toward food characterizing clinical criteria for anorexia nervosa and

bulimia. Although there were similarities between the marathon runner and the anorexia nervosa patient, the findings suggested that runners do not share the negative body image and abnormal attitudes toward food characteristic of patients with anorexia nervosa and bulimia (Siegel, Stewart, & Barone, 1990). However, another study conducted by Pierce, McGowan, & Lynn (1993), which examined non-competitive runners, 5k runners, marathoners, and ultramarathons in regard to obligatory running, indicated that those who run marathons and ultramarathons are at greater risk of becoming obligatory runners. The current study did not investigate obligatory runners or those who suffer from anorexia nervosa, but supports previous studies (Estok & Rudy, 1996; Yates, 1987) that indicate high mileage female runners participate in more marathons and road races than low mileage female runners.

Although the present study concluded that high mileage runners ran more days per week and participated in more road races and marathons than the low mileage group, there were no significant differences between groups with regard to running pace per mile. Both groups reported that they ran on average between an 8 and 10 minute pace per mile.

Research suggest the primary reasons for exercise are associated with physical and psychological health; however, researchers continue to investigate other factors that motivate people to engage in physical activity. Davis, Claridge, & Brewer (1996) suggest that the increased running phenomena may indicate an exaggerated and narcissistic preoccupation with physical appearance. Unlike the study of Davis, Claridge, & Brewer; Wheeler, Wall, Belcastro, Conger, & Cumming (1986) found that many benefits have been associated with running. Psychological benefits include better stress management, reduction of depression, improved self-esteem, and feeling of well being along with a

heightened sense of control.

Although Davis, Claridge, & Brewer (1996) suggested that running may be connected with narcissistic behavior, the present study revealed the majority of female participants' primary reason for running was for health reasons which was in agreement with the findings of Wheeler, Wall, Belcastro, Conger, & Cummings (1986) study. In addition, the present study found that 22% of high mileage runners ran to relieve stress and to achieve psychological benefits.

Discussion of the Research Questions

The following discussion focuses on the five research questions of this study, results, and previous research findings. It also integrates additional statistical findings from the correlations of analyses. Because analysis of subscale scores suggests that a total instrument score is not interpretable (Cash, 2000), each research question along with the related subscale is discussed separately. The framework of the discussion is guided by the research questions.

Research Question 1: Appearance Evaluation Subscale

Are there differences in body image on the MBSRQ-AS Appearance Evaluation subscale between high mileage female runners and low mileage female runners?

This study revealed no significant difference at the .05 level between high and low mileage female runners based on the MBSRQ-AS Appearance Evaluation subscale. It was hypothesized that female high mileage runners would demonstrate greater feelings of general unhappiness with their physical appearance than the low mileage runners based on the MBSRQ-AS Appearance Evaluation subscale. However, a significant inverse correlation existed between weight and the appearance evaluation subscale ($r < .01$). This

represents that the higher the subjects' weight, the less they are satisfied with their looks.

The normative data presented by Cash, Winstead, & Janda (1985) based on 1,070 females from the general population tended to reveal a lower mean and standard deviation score than the Appearance Evaluation subscale sample mean score of the current study. Based on mean scores of female runners, the current study participants reported a tendency toward a more positive and satisfying body image than the general female population. Subjects who scored high on this subscale are representative of positive feelings and satisfaction with physical appearance. This may reveal that female runners are more content with their appearance than the general population.

In Cash & Henry's (1995) general population study of body image attitudes among 803 adult women in the United States, nearly one-half of the women surveyed reported globally negative evaluations of their appearance and a preoccupation with being or becoming overweight. Unlike Cash & Henry's study, the current study reflected a tendency toward a more positive and satisfying body image among female runners on the Appearance Evaluation subscale..

Research Question 2: Appearance Orientation Subscale

Are there differences in body image on the (MBSRQ-AS) Appearance Orientation subscale between high mileage female runners and low mileage female runners?

This study revealed no significant difference at the .05 level between high and low mileage female runners based on the (MBSRQ-AS) Appearance Orientation subscale. It was hypothesized that female high mileage runners would demonstrate a greater investment in their appearance than the low mileage runners based on the (MBSRQ-AS) Appearance Orientation subscale. However, results did reveal a significant correlation

between number of days run and appearance orientation ($<.05$). Data showed that the more days run per week, the greater the investment reported in one's appearance.

The Appearance Orientation subscale sample mean score of the current study, based on an Independent t-Test of female runners, was lower than results from a general population study conducted by Cash, Winstead, & Janda (1985) which included normative data. This may reflect that female runners are less invested in their looks than the general population.

Research Question 3: Body Areas Satisfaction Subscale

Are there differences in body image on the MBSRQ-AS Body Areas Satisfaction subscale between high mileage female runners and low mileage female runners?

This study revealed no significant difference between high and low mileage female runners based on the MBSRQ-AS Body Areas Satisfaction subscale. It was hypothesized that female high mileage runners would demonstrate greater unhappiness with the size or appearance of several body areas than the low mileage runners based on the MBSRQ-AS Body Areas Satisfaction subscale (buttocks, thighs, hips). However, a significant correlation was found between highest level of education and body areas satisfaction ($<.05$) suggesting that the higher the level of education the greater the body areas satisfaction. Also, a significant inverse correlation was found between weight and body areas satisfaction ($r<.01$). These results revealed that the higher the participants' body weight the lower the satisfaction of specific body areas.

The current study revealed a significant correlation ($r<.01$) between level of education and body areas satisfaction in female runners. The results of this study indicated the higher the education, the greater the body areas satisfaction (buttocks, thighs, hips).

The Body Areas Satisfaction subscale sample mean score of the current study was higher than normative data presented by Cash, Winstead, & Janda (1985) of the general population. Furthermore, the present study findings on female runners in regard to Body Areas Satisfaction and Overweight Preoccupation based on mean scores revealed that female runners tended to be more content with specific areas of their body and less preoccupied with their weight than those female participants in Cash & Henry's (1995) study. This may reveal that female runners are more content with most areas of their body than the general population. However, in 1986 a study was conducted by Wheeler, Wall, Belcastro, Conger, & Cumming to see if runners had any characteristics similar to patients with anorexia nervosa. The results indicated that there was no significant evidence of anorexia nervosa among runners, but the overestimation of waist size among high mileage runners provided some evidence of a distortion of body image. Those females who run high miles per week may be at a greater risk of an inaccurate assessment of specific body areas than the low mileage runner. This finding is consistent with the present study based on the significant correlation between days run per week and the participants' investment in appearance which revealed the more days run, the greater the investment in appearance.

Research Question 4: Overweight Preoccupation Subscale

Are there differences in body image on the MBSRQ-AS Overweight Preoccupation subscale between high mileage female runners and low mileage female runners?

This study revealed no significant difference at the .05 level between high and low female runners based on the MBSRQ-AS Overweight Preoccupation subscale. It was hypothesized that female high mileage runners would demonstrate greater fat anxiety,

weight vigilance, dieting and eating restraint than the low mileage runners based on the MBSRQ-AS Overweight Preoccupation Subscale. However, a significant correlation was found between weight and overweight preoccupation ($r < .01$). This would indicate that the higher the subjects' weight, the greater the preoccupation with weight.

The Overweight Preoccupation subscale mean score in the current study population was lower than the normative data collected by Cash, Winstead, & Janda (1985) for the general population, suggesting that female runners are less preoccupied with their weight and dieting than the general population. Previous studies have suggested that dieting is due to a negative body image and is common among women in the United States (Cash, 1995; Thompson, 1995). About one-third of the adult population of women in America are dieting, while rates of dieting among adolescent girls have doubled in the last twenty years (Freedman, 1988). Running may be a way in which females control their weight without having to diet, and this may explain why running provides some women with an active way to address body dissatisfaction (Davis, Fox, Cowles, Hastings, & Schwass, 1990).

Research Question 5: Self-Classified Weight Subscale

Are there differences in body image on the MBSRQ-AS Self-Classified Weight subscale between high mileage female runners and low mileage runners?

This study revealed no significant difference between high and low mileage female runners based on the MBSRQ-AS Self-Classified Weight subscale. It was hypothesized that female high mileage runners would demonstrate less ability to accurately perceive their weight than the low mileage runners based on the MBSRQ-AS Self-Classified Weight subscale. However, there were significant correlations between the following: 1)

how long it takes to run one mile and self classified weight ($<.01$), revealing that the participants with higher weight ran a slower mile per minute; 2) inverse correlation between how many marathons run and self classified weight ($<.05$), representing that the participants with higher weight participated in fewer marathons; 3) inverse correlation between number of roadraces run and self classified weight ($<.05$), representing that the participants with higher weight participated in fewer races; and 4) significant correlation between weight and self classified weight ($r<.01$), the higher the weight, the higher the subjects scored on the self-classified weight subscale. In a survey by Wooley and Wooley (1984), 33,000 females aged 15 to 35 were questioned regarding attitudes toward their bodies and their methods of weight control. Only 25% were overweight according to weight norms although 75% believed that they were fat. The importance of women having the ability to accurately perceive their weight cannot be overlooked. Previous studies have indicated that women are less satisfied with their bodies than men, and body weight is the primary source of this dissatisfaction (Cash, 1995; Thompson, 1995; Salusso-Dionier & Schwartzkopf, 1991). Survey data also indicated that about one-half to three quarters of females who are normal in weight perceive themselves as too heavy (Stephens, Hill, & Hanson, 1994). The self-classified weight subscale of this present study revealed female runners mean scores to be lower than the normative data presented by Cash, Winstead, & Janda (1985) study, suggesting that female runners are less accurate at perceiving their weight than the normal population.

None of the studies mentioned in the literature to this point have involved subscales of body image between low and high mileage female runners; therefore, the comparison of results from studies involving population normative data, anorexia nervosa,

and bulimia are not completely comparable to the findings in the present study. The previous findings regarding eating disorders and their impact on female runners are not in agreement with the results pertaining to body image among the female runners in this study.

Implications of Body Image, Running, and the Role of Educators

There have been numerous studies that have established that eating disorders and negative body image are prevalent among adolescent females (Yates, 1991; Blumenthal, 1985; Wooley & Wooley, 1984). Therefore, physical educators, health educators, and coaches should continually be aware of the normative discontent among females in our society, in regard to body image, that influences young girls to believe that they must be a certain size in order to be fit. In regard to body image, students should be educated through demonstration and classroom discussion that body image development begins in puberty and is associated with multiple physical and psychological changes for both genders. Fabian and Thompson (1989) compared subjective and perceptual measures of body image for premenarcheal and postmenarcheal girls and found that postmenarcheal girls were more likely to overestimate the size of their thighs. Also, for postmenarcheal girls, size overestimation was correlated positively with a history of being teased about body size.

Girls who mature later than their peers (menarche after the age of 14) have a more positive body image than those who reach menarche early (before the age of 11) or on time (between the ages of 11 and 14). Brooks-Gunn & Warren (1985) noted that girls who mature late are reported to have less body dissatisfaction; however, they also suggested that the same girls exhibited more eating disordered behavior, and higher

overall weight than girls who matured on time or early. Girls for whom puberty was early and coincided with dating had the highest levels of body image dissatisfaction and eating disturbance. Furthermore, what may be even more important is that early maturation and the resulting physical changes may place an adolescent at higher risk for being teased about her weight (Thompson, 1992).

Based on the findings of the current study and other studies, it is evident that a female's weight is instrumental in establishing healthy body image. Educators should be aware of the importance of regular physical activity in maintaining proper weight and developing healthy self-esteem. As mentioned previously in this paper, running when done in moderation and under appropriate conditions can reduce the risk of coronary heart disease, hypertension, obesity, and significantly contribute to a positive lifestyle of wellness. This present study suggests that those who run have body weights well within normal range for their height and weight.

The importance of weight begins with the onset of puberty for both genders. Given the growing number of female runners who participate in road races and marathons each year, running coaches, health educators, personal trainers, and physical educators should be aware of the behaviors, attitudes and personality dynamics that are characteristic to those females who run. In addition, educators and coaches should be aware of the importance of the maturation process and the benefits of regular exercise in establishing healthy body image among young females.

Therefore, the following recommendations are suggested for use in the schools:

- 1) Running coaches, physical educators and health educators should be made aware of the importance that weight plays in establishing positive body image among

females and be able to recognize the signs and symptoms of body image dissatisfaction; 2) Health educators, physical educators, and coaches should include in their curriculum and classroom discussion the negative effects that may be connected with becoming overly concerned with weight issues and provide guidelines for developing a healthy body image; 3) Running coaches, physical educators, and health educators should be aware of the emotional and physical changes associated with body image dissatisfaction; 4) Educators should be able to provide helpful information and materials to those adolescent females who may suffer from a negative body image; and 5) The importance of regular physical activity should not be underestimated by health educators, physical educators, and coaches. The benefits of regular physical activity should be implemented into a physical education curriculum. Educators should be aware of the importance of exercise and the role it plays in developing a healthy and positive body image.

Limitations of the Study

Several general limitations apply to this study. The first centers on this study's failure to find a distinct difference between low and high mileage running groups. This may be due to the operationalization of the group specified as high mileage. Despite the consideration given to determining the groups by using grouping guidelines suggested in the literature for frequency and duration to running, discrete grouping criteria may need revision. For example, low mileage could be defined as those who run (3 to 15 miles per week) and high mileage could be defined as those who run (more than 40 miles per week) providing a greater distinction between groups than did the present study.

Second, it is possible that some extraneous or unmeasurable variables may have affected the outcome being studied; therefore, leading to the possibility of misleading

results. The fact that a relationship between variables was observed cannot be inferred to mean that a causal relationship exists. For example, even though a relationship was found between body areas satisfaction and education, it not possible to definitively state that a causal relationship between these two variables exists.

As the measures in this study relied on self-report, it was assumed that participants gave valid and reliable responses to the study instrument. Specifically, it was assumed that the participants responses were not biased due to a desire to appear in a favorable light. However, it is always possible that participants may have either exaggerated or under reported the behaviors related to this study. Another limitation to self-report measure is that they rely on the participants' own perceptions of their behavior rather than behaviors that are actually observed.

Although eating disordered individuals were screened and eliminated from the study, it is possible that some participants with eating disorders ignored the screening question, either due to their own denial of symptoms or because they were unaware of their eating disorder.

It is also important to recognize that the participants who agreed to participate in this study may or may not have been representative of the general population of female runners. Due to the lack of multicultural and geographical diversity in this study, the participants were more representative of the middle class in Middle Tennessee with respect to income; therefore, reflected less ethnic minorities than is represented in the general population. The findings of this study may not be generalizable to the broader population of female runners and, therefore, should be interpreted with caution.

Conclusions

Do differences exist in body image between low and high mileage female runners based on the five subscales of the (MBSRQ-AS): 1) Appearance Evaluation; 2) Appearance Orientation; 3) Body Areas Satisfaction Scale; 4) Overweight Preoccupation; and 5) Self-Classified Weight?

The following conclusions seemed warranted based on the five independent subscales of body image, and those five subscales guide this section.

Appearance Evaluation Subscale

1. There is no difference in body image based on the MBSRQ-AS Appearance Evaluation subscale between low and high mileage female runners.
2. A significant inverse correlation exists between weight and the Appearance Evaluation subscale. The higher the participants' weight, the less they are satisfied with their physical appearance.

Appearance Orientation Subscale

1. There is no difference in body image based on the MBSRQ-AS Appearance Orientation subscale between low and high mileage female runners.
2. A significant correlation exists between number of days run per week and Appearance Orientation. The more days run per week, the greater the participants' investment in appearance.

Body Areas Satisfaction Scale

1. There is no difference in body image based on the MBSRQ-AS Body Areas Satisfaction subscale between low and high mileage female runners.
2. A significant correlation exists between level of education and Body Areas

Satisfaction subscale (hip, buttocks, thighs). The higher the level of education, the greater the body areas satisfaction.

3. An inverse correlation exists between weight and Body Areas Satisfaction subscale (hip, buttocks, thighs). The higher the participants' weight, the lower the satisfaction of specific body areas.

Overweight Preoccupation Subscale

1. There is no difference in body image based on the MBSRQ-AS Overweight Preoccupation subscale between low and high mileage female runners.

2. A significant correlation exists between weight and Overweight Preoccupation subscale. The higher the participants' weight, the greater the preoccupation with weight.

Self-Classified Weight Subscale

1. There is no difference in body image based on the MBSRQ-AS Self-Classified Weight subscale between low and high mileage female runners.

2. A significant correlation exists between how long it takes to run one mile and Self-Classified subscale. The participants with higher weight ran a slower mile.

3. An inverse correlation exists between how many marathons run and Self-Classified Weight. The participants with a higher weight participated in fewer marathons.

4. An inverse correlation exists between number of road races run and Self-Classified Weight. The participants with higher weight participated in fewer road races.

5. A correlation exists between weight and Self-Classified Weight subscale. The higher the participants' weight, the higher the participants scored on the self-classified weight subscale.

Based upon the demographic and running characteristics of the sample and the

limitations of the study, the following conclusions seem warranted.

1. There is a difference in age between low and high mileage female runners. The participants who ran more miles per week tended to be older.
2. There is no difference in height and weight of participants.
3. There is a difference between low and high mileage female runners based on number of days run per week. The high mileage female runners run more days per week.
4. There is a difference between low and high mileage female runners based on number of road races run during the past year. The high mileage female runners ran in more road races during the past 3 months.
5. There is a difference between low and high mileage female runners based on number of marathons run during the past year. The high mileage female runners ran in more marathons during the past year.
6. The majority of participants' primary reason for running was for health reasons.

Recommendations for Future Study

Based on the outcome of the present study, the following recommendations seem appropriate:

1. Replicate the study by investigating differences in low and high mileage female runners defining high mileage runners as those who run more than 40 miles per week.
2. Replicate the study by investigating differences in low and high mileage male and female runners.
3. Compare female runners to other groups of female exercisers (swimmers, cyclists, body builders, or dancers).

4. Investigate female swimmers, cyclists, body builders, or dancers to explore possible ways in which these groups might differ from each other or individually in regard to body image among other groups of female exercisers.

5. Replicate the study by comparing the body image of female exercisers to a control group.

6. Replicate the study by comparing female runners to a control group of female non-exercisers.

7. Replicate the study by investigating differences in body image between those who participate in team sports and individual sports.

8. Replicate the study by investigating differences in body image among ethnic groups.

9. Replicate the study by investigating the differences in body image between the recreational and elite female runners.

Although this current study demonstrated that females who run (either high or low mileage) do not appear to have body image dissatisfaction; a one-sample t-test was performed which compared the mean scores of Cash, Winstead, & Janda (1985) population-based normative study to the mean scores of the current study. The results suggested that runners may have a healthier body image than the general population.

APPENDICES

Appendix A
Consent Form

APPENDIX A
CONSENT FORM

I agree to be a participant in this study which is being conducted by Tabby Higgs Bewley, in order to satisfy Middle Tennessee State University requirements for a D.A. in Physical Education.

This research project is designed to study the perceptions and attitudes associated with running habits and physical appearance among females. As a participant in this study, I understand that I will be asked to complete two questionnaires.

I also understand that there will be no identification of me as a participant, and that all of my responses will be kept strictly confidential, with the data to be used for research purposes only. The questionnaires are sealed and this consent form is filed separately so that no names are attached to any questionnaire. I am aware that this research will potentially benefit the field of sport and exercise.

I understand that a copy of the results of the study can be made available to me after the study is completed upon request. Finally, I understand that I have the right to have my information withdrawn from the study at any time prior to the completion of the study if I choose to do so.

I have read this form. I understand what it says, and based on the information, I hereby agree to participate in this study.

SIGNATURE _____

DATE _____

Appendix B
Demographic Information Form

APPENDIX B
Demographic Form

Directions: Place appropriate letter in the blank.

_____ ID number (Last 4 digits in telephone number)(Column A-D)

_____ Age (Column E-F)

_____ Height (total inches) (Column G-H)

_____ Weight (in pounds) (Column I-K)

35. _____ Highest level of education:

- a. Less than high school
- b. High School Diploma
- c. Bachelor's Degree
- d. Beyond Bachelor's Degree

36. _____ Annual Income:

- a. 10-20,000
- b. 20-30,000
- c. 30-40,000
- d. 40- 50,000
- e. over 50,000

37. _____ What is your race/ethnic background?

- a. African American
- b. Asian
- c. Caucasian
- d. Spanish or Hispanic
- e. Native American
- f. Other

38. _____ During the past three months, what was the **average distance** you ran each week?

- a. 0-5
- b. 6-10
- c. 11-15
- d. 16-20
- e. 21-30
- f. Over 30

39. ____ During the past three months, what was the average number of days you ran?
- a. 1 day a week
 - b. 2 days a week
 - c. 3 days a week
 - d. 4 days a week
 - e. 5 days a week
 - f. 6 days a week
 - g. Every day (one workout per day)
 - h. Every day (more than one workout per day)
40. ____ On average, how long does it take you to run one mile?
- a. 5 minutes
 - b. 6 minutes
 - c. 7 minutes
 - d. 8 minutes
 - e. 9 minutes
 - f. 10 minutes
 - g. more than 10 minutes
41. ____ What is your primary reason for running?
- a. to lose weight
 - b. to change shape
 - c. for health reasons
 - d. for mental health (relieving stress)
 - e. other/please specify _____
42. ____ During the past 12 months, how many road races (5k,8k,10k) did you run?
- a. 0
 - b. 1
 - c. 2
 - d. 3
 - e. 4
 - f. 5
 - g. More than 6
43. ____ During the past 12 months, how many marathons did you run?
- a. 0
 - b. 1
 - c. 2
 - d. 3
 - e. 4
 - f. 5
 - g. 6
 - h. more than 7

Appendix C

The Multidimensional Body Self-Report Questionnaire

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.

EXAMPLE:

_____ I am usually in a good mood.

In the blank space, enter a **1** if you definitely disagree with the statement;

enter a **2** if you mostly disagree;

enter a **3** if you neither agree nor disagree;

enter a **4** if you mostly agree;

or enter a **5** if you definitely agree with 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.

*(Duplication and use of the MBSRQ-AS only by permission of
Thomas F. Cash, Ph.D., Department of Psychology,
Old Dominion University, Norfolk, VA 23529)*

1	2	3	4	5
Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

- _____ 1. Before going out in public, I always notice how I look.
- _____ 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

1	2	3	4	5
Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

- _____ 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.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Very Often

- _____ 24. I think I am:

1. Very Underweight
2. Somewhat Underweight
3. Normal Weight
4. Somewhat Overweight
5. Very Overweight

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

1. Very Underweight
2. Somewhat Underweight
3. Normal Weight
4. Somewhat Overweight
5. Very Overweight

continued on the next page

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:

1	2	3	4	5
Very Dissatisfied	Mostly Dissatisfied	Neither Satisfied Nor Dissatisfied	Mostly Satisfied	Very Satisfied

- _____ 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
-

MBSRQ-AS © Thomas F. Cash, Ph.D.

Appendix D
Brief Running Questionnaire

APPENDIX D

BRIEF RUNNING QUESTIONNAIRE

Directions: Place appropriate number in the blank.

1. _____ Are you a professional athlete? (defined as competing in athletic events as a primary source of income).
 - (1) Yes
 - (2) No

2. _____ Do you currently smoke cigarettes or use spit tobacco?
 - (1) Yes
 - (2) No

3. _____ Have you ever been diagnosed with an eating disorder by a physician?
 - (1) Yes
 - (2) No

4. _____ Do you regularly engage in any of the following exercises?
 - (1) Walk
 - (2) Run
 - (3) Swim
 - (4) Bike
 - (5) Other

5. _____ Average {sic} number of years running.
 - (1) less than 1
 - (2) 1
 - (3) 2
 - (4) more than 2

Appendix E
Institutional Review Board Approval

on-campus memo:

TO: Tabby Higgs-Bewley
Dr. Malissa Martin

FROM: Dr. Dellmar Walker *Dellmar Walker*
IRB Representative
College of Education and Behavioral Science

Subject: "Body Image Differences in Specific levels of Female Runners"
Protocol no. 01-114

DATE: January 29, 2001

The project has been reviewed and approved. This approval is granted for one year only and must be reviewed by the committee on an annual basis if the project continues beyond the next twelve months. Any changes in the protocol (materials, design, etc.) require resubmission of your project for committee approval.

Best of luck on the successful completion of your project.

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