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THE EFFECTS OF MIRROR CONFRONTATION ON
BODY IMAGE RATINGS

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the degree of

DOCTOR OF PHILOSOPHY

By

Maria Elena Dell'Era, B.A., M.S.

Denton, Texas

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There are conflicting data in the literature regarding the effects of mirror exposure on subjective body-image evaluation. Much of the objective self-awareness research by Duval and Wicklund concluded that the presence of a mirror leads people to evaluate themselves negatively, while other studies have reported contrary findings.

The primary purpose of this study was to determine the effects of mirror confrontation on individuals' body image ratings. Subjects were 88 childless, female university students. Using the Eating Disorders Inventory-Body Dissatisfaction subscale (BDS) as a screener, subjects were assigned to either a High Satisfaction group or a Low Satisfaction group. The subjects then completed the Multidimensional Body-Self Relations Questionnaire (MBSRQ) in either a Mirror or No Mirror condition.

Results suggest that the presence of the mirror had no measurable effect on the subjects' ratings of themselves on the MBSRQ. There was a main effect for satisfaction level, and no interaction was found between the satisfaction level and the mirror condition. Possible explanations for these findings are offered.

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CHAPTER I

INTRODUCTION

The area of body image is one that has received increased attention over the past decade. With the growing prevalence of eating disorders, the area of disturbance in body image has been underscored. Many questions have been raised about the role that body image plays in these conditions. It is only recently that body image has been considered in its own right rather than merely as a feature of eating disorders. It has become apparent that many non-eating disordered individuals exhibit some level of appearance-related body image disturbance, such as general dissatisfaction, specific size/weight dissatisfaction, or size perception inaccuracy (Thompson, Penner, & Altabe, 1990). In recent years there has been a growing effort to examine body image not only in the eating disordered population, but also within the general, non-clinical population.

When investigating body image disturbance, it is important to consider which domain the study will address. Disturbances can be found within the perceptual domain or attitudinal domain. Thus, body image disturbance can range from feelings of self-consciousness regarding one's body to

perceptual distortions of one's shape (Glucksman & Hirsch, 1969).

History of Body Image

The earliest information on body image was derived from neurology. The first investigations of body image examined the effects of brain lesions on body sensations and perceptions. Neurological studies examined brain-injured patients who displayed a variety of symptoms. Patients denied the existence of body parts, were unable to distinguish the right and left sides of their bodies, or even attributed new body parts to themselves following their injuries. Neurologists became interested in determining the specific area of the brain responsible for maintaining a normal pattern of body experience (Fisher, 1990; Gorman; 1969). Given that distortions in body perceptions were witnessed as sequelae to brain damage, investigators of the time began to think that one's perception of one's body is not something that remains constant, but is something that is continually altered. This also inspired the idea that one's body image does not necessarily correspond accurately to the physical body (Schilder, 1950).

From his work with brain injured persons, Pick (1922, in Fischer, 1990) developed a theory about individuals who showed disturbances in body perception. He theorized that people develop an inner representation of their own body as

it outwardly appears from information provided by sensations.

Body image was then explored in the area of "phantom limb" experiences and other biologically based conditions (e.g. deformities, handicaps). The "phantom limb" experience has been described as an incident in which a person continues to perceive an amputated body part as if it were still attached (Gorman, 1969). It was hypothesized that there is a persistence of a central body image that has not yet adapted to the body loss. This central body image distorts the meaning of stimuli in order to negate the loss (Fisher, 1990). Phantom limb sensations were thought to be due to the discrepancy between the previous body configuration and the new altered configuration resulting from the amputation. These theories did not, however, entertain the possibility that psychological factors might play a role in the difficulty of accepting the loss of a limb. It was believed to be solely a physiological reaction (Fischer, 1990).

The issue of body image was then taken up in the realm of psychiatry. Schizophrenic patients were noted to show almost the same types of distortions as observed in patients with neurological disturbances (McCrea, Summerfield & Rosen, 1982). Schilder (1950) was one of the leaders in generalizing beyond the neurological spectrum. He had

interests in psychopathological syndromes and the body image distortions that are associated with them.

From this, scientists began to explore body types in an attempt to understand personality characteristics.

Kretschmer (1929) proposed that there is a regular and fixed relation between physique and temperament (cited in Gorman, 1969). He developed a basic classification of body build, placing all variations of the human body under different combinations of three major patterns. The first of these is the asthenic, which is characterized by a long and drawn out body shape. The pyknic, which is short and stocky, was the second type delineated. The athletic was said to be a more attractive shape found between the two previous types.

Kretschmer also offered observations to support his belief that body types are associated with types of mental illness (in Gorman, 1969). In later years, Sheldon (1963) also attempted to classify body types in an effort to understand personality traits. He, too, delineated three types: the endomorph (fat or chubby), the mesomorph (muscular or average), and the ectomorph (thin or linear). These body types and their combinations were thought to be associated with specific personality traits. Research failed to support this theory.

Schilder's contributions to the field of body image laid the foundation for many of the contemporary beliefs about body image. Schilder incorporated neurology,

psychiatry, biology and psychology in his studies of body image. He submitted that the body image undergoes continual changes in response to the objective environment. He emphasized the controlled use of drawings of the human figure as an auxiliary technique in the study of an individual's body image. Schilder also suggested that the human figure which a subject draws is a significant clue to the body concept of that subject. Schilder's definition of body image expanded beyond the biological foundation and took a more social viewpoint. One of his major contributions was in recognizing the general importance of body attitudes and feelings in explaining behavior. Body image was perceived as encompassing wishes, emotional attitudes and interpersonal interactions. He emphasized the interconnectedness of one's body and one's personality. Schilder asserted that body image is not only important to brain-injured persons, but that it is also germane in people's everyday lives. Schilder set the groundwork for studies regarding size perception, attitudes about one's body, and the effects of physical activity on body image (Fisher, 1990; Schilder, 1950).

A perpetual question in the area of body image research is definitional. What exactly is meant by the term "body image"? Body image has been defined in terms of myriad concepts. Schilder postulated that body image is, ". . . the picture of our own body which we form in our mind, that

is to say, the way which our body appears to ourselves." (Schilder, 1950, p. 11).

Lerner and Jovanovic (1990) offer that, "body image derives from person-social context relations and the individual's cognitive and emotional developments, and also contributes to both of these processes" (p. 111). In other words, how one thinks and feels about one's body will influence one's social relations and one's other psychological characteristics.

In his 1969 book, Gorman defined body image as, "an intimate personal possession which is constantly in a state of exposure and revelation. The body-image is not only a representation of the intimate and the public activities of the body, but also exists within the mind as a concept that affects every bodily action." (p. 8). He conceptualized the body image as an entity that receives stimuli from the internal and external realms which it integrates into the concept of the body. The body image is thus, "a plastic, dynamic entity which is continually being modified by new percepts and new experiences" (p. 8). He added that body image is the conception of the body rather than a perception, so that it is more the picture of one's body in the "mind's eye" than the picture which is developed by the visual apparatus (p. 17). This perspective of body image is still prevalent today. For the purpose of this study, body image will refer to the attitudinal, social, and perceptual

aspects of one's body, which are in a constant state of flux.

Clinical Relevance

As stated earlier, body image has been examined in many different realms, from neurological studies and studies of eating disorders to surveys of the non-clinical, normal population. There are numerous facets of body image and thus many areas that can be explored. The following reviews were drawn mainly from literatures on the physical appearance-related aspect of body image and its components. The essential feature of the physical appearance definition of body image is an evaluation of one's size, weight, or any other aspect of the body that determines physical appearance (Thompson, 1990).

The construct of physical appearance can be divided into three components: 1) perceptual; 2) subjective; and 3) behavioral. The perceptual component refers to size perception accuracy, whereas the subjective component deals with issues such as satisfaction, concern, cognitive evaluation and anxiety. The behavioral component encompasses avoidance of situations that cause the individual to experience physical appearance-related discomfort, as well as exercise and eating patterns (Thompson, 1990, p. 1-2).

Eating Disorders

The area in which body image has been most frequently investigated recently is in eating disorders research. Body image and weight concerns are paramount in the domain of eating disturbances. The primary external force which has been linked to the development of eating disorders is the emphasis on one's physical attractiveness as a critical measure of his or her value in society (Bruch, 1973; Garner & Garfinkel, 1991). Within the American culture attractiveness is greatly valued, especially for women. It has been found that attractive males and females are viewed as being happier, more successful, smarter, more interesting, warmer, more poised and so forth, as compared to their less attractive counterparts (Dion, Berscheid, & Walster, 1982). It is estimated that between .13 to 1.0 percent of adolescent girls are afflicted with anorexia nervosa, which is 10 to 20 times more frequent than the prevalence in males. The prevalence for bulimia is even higher, with 4.5 percent of college freshman reporting histories of bulimia (American Psychiatric Association, 1987; Kaplan & Sadock, 1991). Striegel-Moore, Silberstein, and Rodin (1993) suggested that women are led to be more preoccupied with their appearance due to social pressure and shame, rather than simply vanity. With the strong emphasis on thinness in defining attractiveness in U.S. women, one

can easily discern how eating disorders in this society have become so prevalent.

Even the level of attractiveness in children influences others' ratings of them. As early as kindergarten, chubby and thin children receive fewer positive peer nominations (e.g., "who would you choose as leader?") and more negative nominations (e.g., "who is left out of games?") than is the case for children with average builds. In a study by Lernerz et al. (1987) it was demonstrated that physically unattractive children, as judged by the researchers, were rated more negatively in regard to behavior problems, scholastic aptitudes, athletic abilities and social relations by themselves, peers, teachers, and parents, as compared to the ratings of the children judged as physically attractive. Such findings accent the central role of physical appearance and body image in a person's social development.

Individuals' physical characteristics thus may influence their psychosocial development positively or adversely, depending on how closely they resemble the valued physical attributes of their social context. They come to value personal resources which they believe are held in high regard in societal interactions. There is also a tendency to then define oneself by these particular attributes. Since physical attractiveness is a valued resource in this

society, it becomes a salient factor on which people base their personal value, as well as the value of others.

Lerner and colleagues demonstrated that highly positive stereotypes exist for children and adolescents possessing a mesomorphic body type while children and adolescents with ectomorphic, and especially endomorphic, body types were seen as less favorable by other children and adolescents (Lerner & Javonovic, 1990). The extent to which one measures up to the societal ideal becomes a defining factor in people's development at a young age. It is important to note, however, that while attractiveness is emphasized and valued for both sexes, the majority of individuals with eating disorders are female (Bruch, 1973; Garner & Garfinkel, 1991; Garner & Olmstead, 1984). This discrepancy may have to do with gender differences in sources of personal value.

Lerner, Orlos, and Knapp (1976) asked male and female adolescents to rate their body characteristics in terms of how physically attractive they thought specific body parts were and how physically effective they thought the parts to be. The subjects also completed a self-concept scale. The researchers found that for females, the relationship between attractiveness and overall self-concept was higher than the connection between effectiveness and self-concept. The converse was true for male subjects. Therefore, males' self-concepts were more closely linked to their feelings of

effectiveness, while females more often judged their worth by their perception of their attractiveness. This is important in considering the incidence and prevalence of eating disorders in women. Women's self-worth is defined not by some stable internal competence, but by superficial features which are determined by society's fancy.

Weight and Body Satisfaction

In their 1990 study, Cash and Hicks found that how a normal-weight person classifies his or her weight has a strong bearing on that person's attitudinal body image, eating behaviors, and psychosocial well-being. The subject pool was made up of objectively normal-weight individuals of both sexes. Those subjects (male and female) who declared themselves overweight (even though they were of normal weight) evaluated their bodies more negatively and had greater dissatisfaction not only with their appearance but also with their bodily fitness and health. The authors concluded that there were greater psychological differences among normal weight persons who categorized their weights differently (i.e., normal weight versus overweight) than there were between actual weight groups (i.e., normal-weight versus overweight persons). Thus, the label persons assign to their weight has strong implications for their body-image affect and self-esteem (Cash & Hicks, 1990). These researchers also reported that of these normal-weight subjects, 91 percent of females and 92 percent of males who

viewed themselves as normal in weight felt good about their appearance. Eighty-three percent of women who saw themselves as underweight liked their appearance, compared to only 77 percent of the underweight men. The study also suggested that the more often men and women dieted, binged or purged, the more likely they were to dislike their appearance.

Dissatisfaction with weight-related aspects of one's body has been found to be a strong predictor of overall body satisfaction. It has also been demonstrated that overweight women are often more critical of their appearance (feeling dissatisfied and unattractive) than are normal and underweight women (Thompson & Thompson, 1986). At nearly any body size, a majority of women are consistently dissatisfied with their weight (Cash, Winstead, & Janda, 1986; Thompson, 1990). Some women who are severely underweight (i.e., anorexic) perceive themselves to be fat, or at least larger than they would like to be. However, this is not the only group of females that are dissatisfied with their weight. Women of any size who have internalized the thin societal standard of feminine attractiveness (i.e., who have accepted thinness as a measure of attractiveness) are apt to believe that they appear bigger than average, irrespective of their actual physiques. They are also likely to have negative feelings about their own failure to meet the thin standard.

Body Image, Self-Esteem and Psychological Well-being

Many researchers have found a significant positive correlation between ratings of satisfaction with one's body and ratings of satisfaction with self (Berscheid, Walster, & Bohrnstedt, 1973; Lerner, Karabenick, & Stuart, 1973; Mahoney & Finch, 1976; Secord & Jourard, 1953). Secord and Jourard (1953) demonstrated a significant, moderate, and positive correlation between ratings of satisfaction with one's body and ratings of satisfaction with self. They also found that females cathect their bodies more highly than do males. That is, females attribute some feeling, positive or negative, to almost all body features, whereas males often indicate that they have "no particular feelings one way or the other" for several body features (p. 343). Again, the body and its image has more salience for women than for men. Secord and Jourard suggest that women are more likely than men to develop anxiety concerning their bodies because of the social importance of the female body.

In their 1986 study, Cash, Winstead, and Janda found that over 90% of respondents who reported positive feelings about appearance, fitness, or health also consistently reported favorable psychological adjustment. Favorable psychological adjustment included a positive self-concept, life satisfaction, and the absence of loneliness and depression. In contrast, negative evaluations of appearance, fitness, and health were associated with lower

levels of psychological adjustment (Cash et al., 1986). It was also noted that women as a group had greater difficulty feeling positively about their bodies than did men.

Gibson and Thomas (1991) found that women's evaluations of their weight, shape and appearance, rather than objective weight, are important in relation to their subjective evaluations of social competence but may bear very little relationship to perceived personal competence in other areas of their lives. Evaluations of personal competence however may be influenced by the relative importance the individual places on competent performance in any given domain.

Keeton et al. (1990) also examined the connection between perceptual and subjective indices of body image disturbance and general psychological functioning as measured with the SCL-90-R. There was a positive relationship between several subjective indices of disturbance, such as bulimic behaviors, and global psychological functioning. These findings suggest that increased body image disturbance may be associated with poorer psychological functioning.

In 1986, Cash and Green examined the relationship between stable body weight and body image in a nonclinical, female college population using the Body Self-Relations Questionnaire (BSRQ). This is a measure of affective, cognitive and behavioral components of body images. The subject groups were: stable normal weight, stable

underweight, and stable overweight. Overweight subjects had significantly lower scores on the Appearance Evaluation subscale of the BSRQ than did either normal or underweight subjects. The groups did not differ significantly in their scores on Appearance Attention/Importance subscales or the Appearance Action (Grooming) subscale. Subjects' scores on Valuing and Attending to their appearance were independent of their scores on how they estimated and appraised the size of their bodies.

While most of the research in this area has been done solely with females, Thompson and Thompson (1986) were the first to investigate and demonstrate gender differences in body size distortion. They also described a relationship between self-esteem and distortion level in an asymptomatic population. The subjects of the study completed Rosenberg's Self Esteem Questionnaire and estimated the size of four body sites using an adjustable light beam technique. Women not only had significantly higher body distortion scores than men, but they also had significantly lower self-esteem scores. Within the male subject group, there was a significant positive correlation between self-esteem and distortion level for their waist size. Thompson and Thompson also found a significant negative correlation between overall distortion level and self-esteem for females. Women significantly overestimated their body size as compared with men's size estimations.

In 1986, Cash et al. embarked upon a comprehensive study of body image. Their original study surveyed readers of Psychology Today. They divided the age of the respondents into six categories and found that men and women in their teens and twenties were most concerned about their appearance. There was a steady decline in interest in appearance as age increased, with the exception that women older than 60 were more interested in their appearance. However, this steady decrease with age did not occur in how people judged their appearance. Older people did not report a poorer body image; in fact young women were the most dissatisfied of all with their bodies. Women in general, and young women in particular, hold rather extreme standards for an acceptable body.

A relationship between psychosocial well-being and body image was demonstrated by Cash et al.(1988). While the importance of personal appearance was not shown to be related to psychosocial well-being, people's emphasis on fitness and health were found to be closely linked to psychosocial wellness. Those individuals who cared about fitness and health matters and did things to improve them were generally happier with their lives, and happiest with their appearance. One theory that accounts for the efforts one puts into maintaining health and fitness is Bandura's self-efficacy theory.

According to Bandura's theory, perceived self-efficacy refers to the level and strength of a belief that one can successfully perform a given activity. Self-efficacy expectations influence the choice of activities and settings, the amount of effort expended and the degree of persistence exhibited in continuing the activity. Self-efficacy expectations not only influence behavior, but they are also influenced by the success of the behavior (1977; 1982). This has far-reaching implications for people's level of involvement with exercise and the subsequent benefits one receives as a result. This will be further discussed in the next section.

Another concept which is relevant to this area is competence. Epstein (1973) defined four dimensions as comprising global self-esteem: general competence, power, normal self-approval, and love worthiness. Competence is further broken down into physical and mental abilities. Thus, the perception of personal competence or of capability to master and control oneself and aspects of the environment is a contributing factor to one's self-esteem. This competence factor is particularly important in the study of exercise.

Fitness, Exercise and Body Image

Investigations of fitness level and exercise habits have shown positive relationships with the rating of one's body image. A factor that is salient in this area is self-

acceptance. Self-acceptance has been defined in the literature to mean "respecting oneself, including one's admitted faults" (Wylie, 1974). One who is self-accepting is aware of personal imperfections and weaknesses yet can live a happy, fulfilling life.

The act of exercising leads to increased self-awareness and can lead to increased acceptance and appreciation of oneself as progress and changes are noted (Sonstroem & Morgan, 1989). With the increased feeling of self-efficacy, one's self-esteem is positively affected. It is believed that it takes 15 to 20 weeks before the psychological effects of physical training are fully realized (Sonstroem & Morgan, 1989). As individuals engage in greater amounts of activity and become more familiar with their responses to exercise, they are better able to construct personal self-efficacy judgments.

Explanations of the influence of exercise on body image are plentiful. One theory stems from Bandura's work (1977; 1982) and suggests that improved physical fitness provides people with a sense of mastery, control and self-efficacy, which in turn leads people to evaluate themselves in a more favorable light. Another hypothesis is that exercise is a form of meditation that triggers an altered and more relaxed state of consciousness (Buffone, 1980, cited in Plante & Rodin, 1990). Exercise is also thought to provide distractions, diversions or time out from unpleasant

cognitions, emotions or behaviors, which leads to a reduction in stress and therefore a more positive outlook. Another important factor which receives less consideration in the existing literature is the substantial social reinforcement one receives for exercise, which may improve the exerciser's psychological state.

A comprehensive review of research articles, spanning over a decade of time, by Plante and Rodin (1990) suggests that exercise improves mood and psychological well-being as well as enhances self-concept and self-esteem. The review was limited to studies that employed nonclinical adult subjects, and used random assignment and control groups. The results of the review suggest that moderate physical activity leads to an improvement in mood and well-being immediately following an exercise workout while high-intensity exercise might actually increase negative mood states such as tension and anxiety (Plante & Rodin, 1990). These studies were correlational in nature.

The long term effects of exercise were found to be improvements in well-being and/or mood. In their study, Blumenthal et al. (1982) found that a group of exercisers, at the end of a 10 week program, exhibited less anxiety, tension, depression and fatigue than control subjects (cited in Plante & Rodin, 1990),

Most of the research on exercise and body-image has involved individuals in ongoing exercise programs (Plante &

Rodin, 1990). Some of this research has found that aerobic exercise training programs have been useful for reducing levels of depression and anxiety after repeated participation in exercise activities. Instead of studying subjects involved in exercise training programs, Roth (1989) investigated the effects of a single episode of aerobic activity. In his study, subjects were randomly assigned to 20 minutes of aerobic exercise or to a waiting period control condition. Results indicated that mood was significantly altered by the exercise activity, with reductions in tension and anxiety evident on the self-report Profile of Mood States inventory. The experience of only one session of exercise led to a measurable difference in subjects' moods as compared to their own pre-exercise reported mood, as well as compared to the control group. With this in mind, the present study required subjects to refrain from exercising for a period of two hours prior to their participation in the study, in order to maintain consistency within this domain.

Salusso-Deanier and Schwarzkopf (1991) report results that suggest that involvement in exercise may contribute to improved body-cathexis regardless of initial level of body satisfaction. Even though female subjects in the fitness class improved their physical fitness level, this improvement was associated with reductions in women's concerns about weight. Although regular exercise has

potential for improving body-cathexis as a whole for women and men, it may not improve satisfaction with weight.

Positive changes in body-image and self-perception of physical abilities have been associated with chronic exercise when increase in fitness or skilled movement occur (Skriner et al., 1986). Women subjects were involved in a 6-8 week exercise training program which led to changes in fitness level, body composition and weight. While measures of body competence and private body consciousness (the tendency to focus on internal bodily sensations) increased, scores on public body consciousness ("chronic tendency to focus on and be concerned with the external appearance of the body") were unchanged. Exercise thus appears to affect some but not all dimensions of body-image.

While exercise has been the focus of many studies on body image, few studies investigated how individuals' amount of exercise relates to their body image. Imm and Pruitt (1991) separated subjects into groups by frequency of exercise (High, Moderate, and Non-Exercisers) and explored the relationship between body shape satisfaction and exercise. All subjects were average in body weight and body fat percentage, and none had a diagnosed eating disorders. The researchers found that high frequency exercisers reported feeling more dissatisfied with their body shape than moderate exercisers and nonexercisers, as measured by the Body Shape Questionnaire. The moderate exercisers were

most satisfied out of the three groups. High frequency exercisers were more likely to exercise in order to burn fat/lose weight than the moderate exercising group. Thus a curvilinear relationship was found to exist between the amount of exercise one engages in on average and the level of body satisfaction one experiences.

McDonald and Thompson (1992) found that exercising for mood, health and enjoyment were related to higher self-esteem whereas exercising for weight, tone and for attractiveness reasons was positively correlated with eating disturbances and body image dissatisfaction for both genders. Subjects in the High Frequency group may thus have had some negative body-related reasons for exercising so much. What is especially interesting is that while the High Frequency exercisers were no heavier than the other groups by objective standards, they reported feeling more dissatisfied than the other groups. High Frequency exercisers also reported that they had lost more weight than did the moderate exercisers.

Research carried out by Adame and colleagues (Adame, Johnson & Cole 1989; Adame, Raddell, Johnson & Cole, 1991) demonstrated a relationship between fitness level and body-image rating. The study compared beginning dancers to nondancers and found that dancers were not only more physically fit, but were also more positive about the BSRQ physical fitness and health domains and more internal in

their locus of control than nondancers (Locus of control refers to the extent to which one feels one has control over events in one's life. An internally controlled person perceives that he or she is in control of what happens; a person who is externally controlled feels that what happens is the result of luck, fate, chance or powerful others). The level of dancers' physical fitness also seemed to mediate their scores on the appearance and fitness scale. More physically fit dancers scored more favorably on these scales than did less physically fit dancers. No significant difference on the BSRQ appearance domain was found between dancers and nondancers. The authors attribute this to the fact that dancers spend an inordinate amount of time in front of mirrors and thus become more critical of their bodies' imperfections, whereas the nondancers would typically not spend as much time viewing themselves in mirrors. Given this explanation, one would assume, however, that nondancers would rate their appearances more favorably than dancers.

Spink (1992) found that social anxiety about one's physique has implications for the location where one engages in exercise activity. Those who scored high on the Social Physique Anxiety Scale were individuals who became highly anxious when they perceived that others might be evaluating their physique. The highly anxious on this measure often chose to exercise in places where it would be unlikely that

they would be observed by others. Therefore, being in a situation in which they thought their bodies were being observed or evaluated, these highly anxious individuals might rate themselves more negatively than if by themselves. The current study attempted to control for this variable by having the experimenter leave the room when subjects rated their bodies. It was hoped that this would negate the immediate social factors involved in body-image ratings. Of course, this effect could not be completely eliminated because subjects had to return their ratings to the examiner. It is, however, hypothesized that those who would score high on a measure of social physique anxiety would also be dissatisfied with their bodies.

In summary, even though there is evidence that a long-term exercise program may improve general mood and well being, the more compelling findings are with regard to the immediate effects of exercise on mood and well-being following a workout. The effects of exercise on personality functioning have largely been inconclusive. Current data have failed to provide clear support for the notion that physical exercise improves cognitive functions. A consistent finding, however, is that exercise improves self-concept, self esteem and self-assurance.

Size Estimation and Perceptual Accuracy

Reviews of the literature in the area of size estimation reveal that most individuals, including those who

are obese, anorexic and normal weight, overestimate their body size (Fisher, 1986; Gardner, Gallegos, Martinez, & Espinoza, 1989). There are several different methods for investigating size estimation which have been used in research. These range from simple calipers and mapping techniques to the use of video monitors and light beams.

Some of the less complex methods of measuring a person's size estimation are the Movable Caliper Technique (Slade & Russell, 1973) and the Image Marking Procedure (Askevold, 1975). The Movable Caliper Technique consists of a horizontal bar with two lights mounted on a track. The subject has to adjust the width of the lights to match the width of a specific body site on themselves. Calipers are then used to measure the actual width of the body sites on the subject, and then these measures are compared to the estimates made by the subject. The Image Marking Procedure makes use of a paper hung on a wall, and the subject is asked to mark two points to match the width of a given site on his or her body. Again, these estimates are compared to the subjects actual measurements.

Two more involved measures are the Body Image Detection Device (Ruff & Barrios, 1986) and the Adjustable Light Beam Apparatus (ALBA) (Thompson & Spana, 1988). The Body Image Detection Device uses the same concept as the Image Marking Procedure, but uses a light beam projected onto a wall that the subject must position to match widths of body sites.

Thompson and Spana expanded on this and included four beams of light to mark cheeks, waist, hips and thighs, and named the device the Adjustable Light Beam Apparatus (ALBA) (1988). This procedure is often used to assess the degree of discrepancy between ideal size and actual size.

Another more complex method is utilized by Gardner and his colleagues (1987; 1988). They have made use of a TV-Video method in which subjects adjust the horizontal dimension of a television image of themselves to match perceived size, or to assess ideal size. There are variations of this technique in which the subject is confronted with a distorted image of herself and is asked to adjust is to be an accurate reflection of her body appearance. The aforementioned techniques are just a brief overview of the methods used to investigate size-perception accuracy. (For a more complete outline of commonly used procedures, see Thompson et al., 1990, pp. 25-31.)

Studies have also examined the relationship between size estimation and several different psychological aspects. Thompson and Thompson (1986) found that females with high self-esteem showed lower size overestimation (greater accuracy). On a slight variation of this, Keeton et al. (1990) found that size overestimation was positively correlated with greater psychological disturbance on the Symptom Checklist-90-R Global Severity Index. It is interesting to note that in a sample of normal college

women, Thompson and Dolce (1989) found that estimates based on how subjects "felt" about their bodies produced larger indices of overestimation than estimates based on a rational judgment of size.

Cullari and Trubilla (1989) attempted to measure the level of body image distortion in normal weight female subjects as well as their perceptions of other women. They found that body image distortion is common among college women. The distortion in normal subjects is limited to their own bodies and does not seem to be related to body weight, to a perceptual problem or to low self-esteem. The distortion may be due to various cognitive factors such as an extreme pursuit of thinness and possibly to the difference between real and ideal weight. The study only had 20 subjects and the findings were based on subjective opinions of female observers who presumably would not have been immune to this bias themselves.

Goldsmith and Thompson (1989) attempted to determine whether individuals who overestimate their size can learn to become more aware of their body dimensions. They used a combination of mirror confrontation (Norris, 1984) and performance feedback regarding size estimation accuracy as an experimental intervention. The subjects consisted of normal-weight female undergraduate students. A treatment procedure, consisting of mirror confrontation and performance feedback, reduced subjects' overestimation to a

greater degree than did a procedure involving a discussion of health habits. The increased accuracy obtained from one method (light beam) also generalized to a different method of size estimation (image-marking procedure). However, significant differences were not found at an eight-week follow-up. These results suggest the possible value of mirror confrontation and performance feedback in the modification of inaccurate estimation of body size at least on a short-term basis whether a more permanent alteration in perceptions and beliefs would result if the treatment condition were continued is not known.

While other researchers have found that mirror feedback affected body size judgments in obese differently than in normals or anorexics (Cash et al., 1986; Thompson & Thompson, 1988), a study by Gardner et al. (1989) failed to replicate these findings. In the latter study, both obese and normal weight subjects were significantly more accurate in reproducing their body size (with the use of the TV video method) when they were able to monitor their image in a mirror. There were no group differences and even with the mirror present, both categories of subjects continued to overestimate their body size by over ten percent.

It has been demonstrated in the studies from the above sections that the degree of satisfaction with one's body is associated with the person's level of psychosocial well-being, fitness level, and general satisfaction with the

self. It was hypothesized in the present study that individuals who are satisfied with themselves and their bodies would respond differently to the presence of a mirror than persons who are less satisfied with themselves and their bodies.

Objective Self-Awareness

In 1972, Duval and Wicklund published A Theory of Objective Self Awareness, in which they examined self-awareness and its effects on behavior and self-evaluation. Their theory divides states of awareness into two realms: either directed inward toward an aspect of oneself (objective self-awareness) or outward toward the external environment (subjective self-awareness). In differentiating these two types of awareness, Duval and Wicklund offer the following definitions: "subjective self awareness is a state of consciousness in which attention is focused on events external to the individual's consciousness, personal history, or body;" and objective self awareness exists when "consciousness is focused exclusively upon the self and consequently the individual attends to his [sic] conscious state, his [sic] personal history, his [sic] body, or any other personal aspects of himself [sic]" (1972, p. 2). Within this theory the two states are mutually exclusive. That is, if one is in the state of being subjectively self-aware then by definition one cannot simultaneously be objectively self-aware. For example, if a person's

attention is focused on a movie (subjective self-awareness), then he or she cannot be thinking about himself or herself (objective self-awareness) at the same time. The authors acknowledge that the shift between objective and subjective awareness often happens so rapidly that it seems like the two conditions exist simultaneously. The state of objective self-awareness automatically leads to self-evaluation. According to the theorists, the act of becoming objectively self-aware causes a person to compare himself or herself to a set of pre-existing standards. These principles are referred to as "standards of correctness." They refer to a mental representation of correct behavior, attitudes, and traits. All individuals are presumed to have their own system of standards of correctness on which they base their self-evaluations (Duval & Wicklund, 1972). Examples of standards of correctness are: appropriate ways of making introductions; the perceived ideal body; ideal level of artistic ability; and proper ways of turning down an invitation. In sum, all of the standards of correctness together define what a "correct" person is (Duval & Wicklund, 1972). When a person is objectively self-aware, he or she has an image or belief that is used to judge the level of similarity he or she has with the standard. It is not possible for one to be objectively self-aware and respond in a neutral or impartial manner. Therefore, someone cannot be put in a situation that leads to objective

self-awareness, such as standing in front of a mirror, and not cast judgement upon oneself, according to the theory.

When this spontaneous comparison takes place, the individual becomes aware of the discrepancies between the standard of correctness and the actual self. The self-evaluation will be based on the perceived level of discrepancy between the ideal and the real self. This is also true for the differences between one's perception of oneself and one's actual self. The greater this disparity, the more negative the self-evaluation. Thus, negative self-evaluation develops whenever, in a state of objective self-awareness, one becomes aware of contradictions or discrepancies between ideal and actual self. It follows that if one is not aware of an existing discrepancy, a negative evaluation will not result. However, the greatest negative affect is experienced when there is a considerable discrepancy and the feature is salient for the person. In any event, according to the theory, "the objective state will be uncomfortable when endured for considerable time intervals. As the individual examines himself [sic] on one dimension after another he [sic] will inevitably discover ways in which he [sic] is inadequate. . ." (Duval & Wicklund, 1972, p. 4).

Looking into a mirror, viewing a photograph, listening to one's own recorded voice on an audiotape, or watching one's image on a video tape creates a condition for

objective self-awareness. Also, the mere presence of another may lead one to become more objectively aware.

In an attempt to confirm their theory, Duval and Wicklund (1973) conducted a study in which they manipulated the subjects' state of self-awareness. In the first experiment this was done by having subjects execute a motor task while answering a set of questions. This served as the subjective self-awareness condition, since the subjects were focused on the activity in which they were engaging rather than on themselves. The control condition had the subjects answer the same set of questions which gave hypothetical situations and required each person to assign the level of responsibility they would presume to have, given the situation. The researchers found that those subjects who were involved in an external activity (the motor task) assigned less responsibility to themselves in the situations than did the subjects not in such a subjectively self-aware condition. The second part of the study had subjects answer similar questions, within either a Mirror or No Mirror condition. Those individuals in the Mirror condition attributed more responsibility to themselves in the hypothetical situations than did the subjects in the No Mirror condition. The experimenters hypothesized that the state of self-awareness (subjective vs. objective) mediates how one determines his or her level of influence on a given situation. When individuals are objectively self-aware in a

given situation, they attribute a greater proportion of influence in the situation to themselves than when in a subjective self-awareness state. The primary assumption of the study regarding attribution was that the person's location of responsibility or causality is solely determined by the direction and focus of his or her attention. This is true regardless of the value (i.e., negative or positive) of the event. Incidentally, it should be noted that the presence in these studies the mirror was explained to be in the experimental area unintentionally.

The self-focus induced by the mirror feedback also leads to a greater awareness of one's own emotions and inner feelings (Fisher, 1986). As an example, Pryor et al. (1977) found that when people with enhanced body awareness (mirror condition) rated their degree of sociability, their ratings proved to be more highly correlated with measures of their actual sociable behaviors than was true for subjects with limited body awareness (no mirror condition). The former group of subjects were attuned to how they might be perceived by others, while the latter group lacked this additional piece of information that the mirror offered.

A second major effect of the mirror experience, according to Duval and Wicklund, is a decrease in self-esteem. The mirror experience is believed to induce negative attitudes toward oneself. Ickes, Wicklund, and Ferris (1973) reported that during exposure to a mirror,

persons rated themselves as unusually low in self-esteem. Given that in attending to the self as an object, one automatically compares the self with the "standards of correctness," or ideal, it follows that one would become more aware of one's perceived shortcomings. A perceived discrepancy and resultant negative self evaluation will result to the extent that the self is not identical with the mental representation (Duval & Wicklund, 1972). That is, once individuals focus on themselves in a mirror, they will evaluate themselves according to the disparity between their bodies as they perceive them and a bodies to which they aspire, and the greater the disparity, the more negative their self evaluation. If physical appearance is a salient matter for the individual, and a substantial discrepancy is perceived, strong negative affect will be experienced.

Ickes et al. (1973) also explored the effect of listening to one's own tape recorded voice and the resultant self-awareness. All subjects were asked to make a recording of themselves reading a passage. For the second part of the experiment, subjects either listened to a recording of their own voice (High Objective Self-awareness group (High OSA)) or that of someone else (Low OSA) while rating themselves on bipolar adjective pairs (e.g., generous-selfish; intelligent-stupid). The researchers found that subjects in the High OSA condition rated themselves lower for the first five items than the Low OSA subjects did on these same

items. High OSA subjects also showed greater real-ideal discrepancies on these items. The difference between the first five items, but not the other 15 items is explained by the authors as habituation to the voice recordings. The negative ratings are attributed to self-criticism which they believe transpires under objective self-awareness conditions (High OSA). What the authors do not discuss is the comparison between self and other that might take place when listening to someone else's recorded voice.

The third experiment in the abovementioned study involved giving subjects feedback on an unknown trait and manipulating the condition of self-awareness. The subjects were given feedback on the trait "surgency" and told whether they were toward the top or bottom of the social hierarchy with regards to this obscure trait. Subjects were then assigned to either a High OSA (mirror) or Low OSA (no mirror) condition, and they filled out a self-rating questionnaire which included the term surgency. Again, the presence of the mirror was explained to be accidental and not part of the study. The experiment revealed that subjects receiving positive feedback showed higher self-ratings of surgency than subjects who received negative feedback. There was a tendency for self-rating surgency to be higher under the High OSA condition, but the OSA main effect was just short of significance. Self ratings were higher under High OSA with positive feedback. Given

negative feedback, OSA made virtually no difference. The research suggested that not only did subjects rate themselves higher on the target item "surgency" in the positive feedback High OSA group, but that they also rated themselves higher on the other items on the questionnaire. This interaction implies that the feedback on the target item generalized to other traits. The authors offered a possible explanation that would contradict the original theory; instead of simply engendering self-criticism, OSA may operate to exaggerate the person's estimate of his real-ideal discrepancies no matter whether those discrepancies are positive or negative. Therefore, increased OSA may not lead to self-criticism all of the time, but may serve to exaggerate the person's present state (Ickes et al., 1973).

In 1975, Wicklund similarly argued that mirror exposure magnified affect, i.e., if a female person is feeling bad about her behavior or herself, the mirror exposure will lead her to feeling worse. Likewise, if a female person feels good about herself, in the presence of a mirror she will feel even better about herself.

A central assumption of the original theory is that the objectively self aware person will become increasingly self critical, and that the longer one remains in a heightened self aware state, the more negative one will rate oneself. The focus of attention upon the self will force the individual to be aware of intraself discrepancies, while

such discrepancies would go unnoticed during the subjective state. "It is immaterial whether the awareness of these discrepancies is called self-evaluation or reduced self-esteem: in any case the phenomenon is identical: the more time spent in the objective state, the greater one's awareness of falling short of personal standards of correctness" (p. 23). Duval and Wicklund type research, that is research that manipulates self-awareness without informing the subject of the intended manipulation, concludes that the special awareness created by mirror exposure always leads to negative evaluations of oneself.

Mirror

The use of mirrors in research has spurred a number of differing opinions on the effects that they have on subjects. Wilps (1972) maintained that the mirror cannot provide objective test results because it induces emotionally laden attitudes about the self and it arouses complex patterns of behavior in the subject's reaction to his reflection. The mirror might better be used, according to Wilp, like the inkblot test as a projective technique where the subjects describe the images they see and the associated ideas that come to mind (cited in Goldberg, 1985).

In investigating how mirrors influence body image, Freedman (1990) submitted that they heighten self-consciousness by drawing attention to the physical self.

When self-awareness increases, so does critical self-evaluation as the body becomes an object of scrutiny (Buss, 1980; Carver & Scheier, 1978). Freedman added that mirrors lead to an increased desire to conform to a stereotypic ideal. It is believed that feelings intensify when we are confronted with the discrepancies between our real and ideal images. Mirror exposure thus becomes a set-up for self-rejection. Most women report "mixed feelings" when they look in the mirror; occasionally liking what they see, but mostly feeling negatively about the discrepancies they perceive (Freedman, 1988). This viewpoint is reminiscent of the Duval and Wicklund findings.

Cappon presents an opposing view on the effects of mirror confrontation on an individual's body image. In his book, Eating, Living & Dying, Cappon (1973) noted that very fat and very thin people have distorted self-images. They do not appear to themselves as they objectively appear to others. Cappon thought that if the fat or thin persons stand and look at their reflection studiously, in a full-length mirror on a regular basis, they will rapidly correct their distorted image. This is the antithesis of the Duval and Wicklund type of research. Cappon suggested that not only will mirror confrontation not cause an individual to negatively evaluate his or her image, but it will also reduce distortion of one's body image. In his private practice, Dr. Cappon required his clients to view themselves

for one minute twice a day, using a three-sided mirror (Goldman, 1985).

As noted earlier, physical activity appears to be an important variable in investigating subjective evaluation of body image. Since active people have been found to rate their bodies more positively than inactive people, (Cash et al., 1986; Joesting, 1981), this might be a mediating factor in how people react to their mirror reflections.

Videotape

The use of videotape in more recent years has introduced a new manner in which to investigate self-awareness. While it not only provides an objective portrayal of the self, it also offers a view of the self in process.

In their study, Biggs, Rosen and Summerfield (1980), made use of a video confrontation procedure with groups of anorexics, depressives and control subjects. Each group was given an opportunity to view themselves on video for four minutes. The anorexic group responded to the self-viewing with a reduction in self-esteem, while the control subjects displayed increased self-esteem levels. The authors concluded that the depressed subjects perceived themselves negatively both before and after video-feedback. Again, it is suggested that there are individual differences in response to self-awareness. This is very different from what Duval and Wicklund had predicted. From their studies,

it was suggested that the mere event of being self-aware is a negative experience for all.

Cohen (1974, as cited in Fischer, 1988) reported that level of trait anxiety plays a role in how dissatisfied people feel when they see their videotaped images. Not only did personality mediate the experience, but the significance attached to the self-confrontation experience also affected the evaluation. While self-confrontation did often intensify self-criticism, it led to greater realism, less suggestibility, more intense emotion and greater openness to valid information (Fisher, 1986).

Elfant (1982) studied the effects of psychotherapeutic video-feedback on patients' self-concept and body image. In his practice, Elfant asked clients to consider the possibility that the video medium would likely provide additional and valuable information. The video image could appear to be an objective, eyewitness account. Elfant demonstrated the clinical usefulness of videotape feedback in its facilitation of self-awareness in clients. He presented this as a useful tool which can have positive effects on clients' perceptions of themselves and their body images.

Body Image Measurements

The definition of body image used by researchers is idiosyncratic to the particular type of body image under investigation. Consequently, this may affect the choice of

measurement tool one uses to investigate body image. The following is a brief overview of measurements salient to this particular study.

Body Cathexis Scale

The Body Cathexis Scale was the first widely used self-report questionnaire evaluating body image (Secord and Jourard, 1953). This instrument has been of paramount importance in the foundation of the more recent measures of body image and self-esteem. The Body Cathexis Scale was designed to measure attitudes toward one's physical body. Secord and Jourard defined body-cathexis as, "the degree of feeling of satisfaction or dissatisfaction with the various parts or processes of the body" (p. 343). The scale contains 46 body parts and functions that are rated on a five-point scale, ranging from "have strong feelings and wish change could somehow be made" to "consider myself fortunate" (p. 343).

Rosen and Ross (1968) suggested that if the score on the Body Cathexis Scale is to be an accurate reflection of subjects' attitudes toward their bodies and selves, that score should take into consideration the relative subjective importance of the aspects being rated. Rosen and Ross contended that one needs to take into account that certain parts or processes may be more important to a subject than other parts or processes in evaluating his or her body- and self-concepts. These researchers concluded that

satisfaction with body image and satisfaction with self-concept are positively related and that subjective importance of body aspects does have an effect on an individual's rating of body and self.

In a study designed to investigate this further, Mahoney (1974) found that weighted body cathexis (body parts and processes weighted on subjective importance) scores did not significantly affect the correlation between mean body-cathexis and self-esteem. Mahoney concluded that, in terms of how satisfaction with one's body aspects is related to self-esteem, the subject's report of the importance of body aspects is clearly irrelevant. However, Mahoney did not deny the positive relationship between mean body-cathexis and self-esteem.

Eating Disorders Inventory--Body Dissatisfaction Scale

The Eating Disorders Inventory (EDI) is a 64-item paper and pencil test that was designed to measure some of the behavioral and psychological traits common in anorexia nervosa and bulimia. The EDI is based on extensive research and clinical experience with anorexic and bulimic patients. Items for the subscales were intuitively derived by qualified clinicians and then administered to criterion groups of female restricter anorexics, bulimic anorexics, and to control groups of female college students (Eberly & Eberly, 1985; Garner & Olmstead, 1984). In non-clinical

populations the EDI has been used as a screening tool to identify individuals who are weight-preoccupied.

The EDI is composed of eight scales: Drive for Thinness; Bulimia; Body Dissatisfaction; Ineffectiveness; Perfectionism; Interpersonal Distrust; Interoceptive Awareness; and Maturity Fears. For the purpose of this study, the Body Dissatisfaction subscale is further examined.

The EDI manual offers the following description of the intended item content of the Body Dissatisfaction subscale and the clinical sources from which they were derived:

Body Dissatisfaction reflects the belief that specific parts of the body associated with shape change or increased "fatness" at puberty are too large (e.g., hips, thighs, buttocks). Body dissatisfaction has been found to be related to other body image disturbances which have been considered a basic deficit in anorexia nervosa (see Garner & Garfinkel, 1981, for a review). Crisp (1977, 1980) has suggested that dieting in anorexia nervosa is a response to dissatisfaction with pubertal "fatness" and the symbolic meaning that it has for the individual. (Garner & Olmstead, 1984, p. 5)

The EDI has very respectable internal consistency in the subscales as well as for the entire measure. Reliability coefficients (Standardized Cronbach's Alphas) were as follows for various samples: Anorexia Nervosa patients (AN)

= .90; Female Comparison group (FC) = .92; Standard errors of measurement AN = 2.5; FC = 2.3. Table 1 summarizes the group means on the EDI of the different subject groups.

Criterion-related validity was established by comparing the self-report EDI patient profiles with the clinical judgments of experienced clinicians familiar with the patient's psychological presentation. One psychiatrist and one psychologist who were either primary therapists or consultants familiar with the patient's background served as raters for a subgroup ($n = 49$) of anorexia nervosa patients who had completed the EDI (Garner & Olmstead, 1984, p. 6). The internal consistency for the BD subscale is .90 for anorexics, and .91 for controls.

Table 1

Group Mean Values For Eating Disorder Inventory

Groups	Group Mean	SD
Anorexic Restrictor	13.4	7.3
Anorexic Bulimic	16.7	8.0
Total Anorexics	15.5	7.8
Recovered Anorexics	6.3	6.2
Female College Students	9.7	8.1

Multidimensional Body Self-Relation Questionnaire (MBSRQ)

The MBSRQ is a self-report questionnaire developed by Cash, Winstead, and Janda (1986) which uses a five point Likert-type format. It is based on the concept that the body possesses three "somatic domains." The survey assesses attitudinal dimensions toward each domain. These somatic domains are physical appearance, physical fitness and physical health/illness. The MBSRQ consists of individuals' affective evaluations of and cognitive/behavioral orientations toward each domain. The MBSRQ evaluation scales reflect how positively or negatively one feels about each of the domains. The orientation scales assess how personally important the various aspects of body image are, how much attention is focused on each aspect, and how behaviorally active a person is in maintaining or enhancing his or her bodily appearance, fitness, or health.

The original version contained about 300 items and was termed the Body Self Relation Questionnaire (BSRQ). Subsequent versions iteratively eliminated or replaced items on the basis of rational/conceptual and psychometric criteria. The data from the first large-scale survey were accumulated from a questionnaire published in Psychology Today and in which 30,000 people responded. Analyses were carried out on a stratified, random sample of 2,000 persons selected to represent the United States populations' sex by age distribution.

The revised 69-item scale consists of four groups of subscales: (a) the revised BSRQ subscales- 54 items, (b) the Body Area Satisfaction Scale (BASS)- 9 items, which is similar to earlier inventories, such as Secord and Jourard's Body Cathexis Scale and Franzoi's Body Esteem Scale, (c) the Overweight Preoccupation Scale- 4 items, which assesses fat anxiety, weight vigilance, dieting and eating restraint, and (d) the Self-Classified Weight Scale- 2 items, which assesses self-appraisals of weight from underweight to overweight.

In their factor analytic study of the BSRQ items of the MBSRQ, Brown, Cash, and Mikulka (1990) identified seven factors: Appearance Evaluation, Appearance Orientation, Fitness Evaluation, Fitness Orientation, Health Evaluation, Health Orientation, and Illness Orientation. Factor analyses were conducted separately for males and females to determine if the underlying factor structure of the BSRQ differed between the sexes. Both the male and female samples were randomly divided into two subsamples to evaluate the replicability of the factor structure for each sex further. Thus, for each sex, two separate factor analyses were performed. A principal components extraction with varimax rotation was conducted in each. Eigenvalue and scree test criteria indicated a seven-factor solution. The cross-validated items loading onto each factor were essentially identical for both sexes. The conceptual

distinctions between somatic domains of appearance, fitness, and health/illness were clearly supported by the factor structure. Furthermore, an affective or evaluative dimension emerged for each domain. The cognitive (attention/importance) and behavioral dimensions empirically converged to reflect a dispositional orientation toward each somatic domain. That is, persons who value and attend to events in a given domain also likely engage in maintenance and enhancement activities in relation to that domain (and vice versa) (Brown et al, 1990). Among the 54 items, none failed to reach criterion for loading onto an emergent, internally consistent factor. The factors evidenced satisfactory internal consistencies (coefficient alpha range=.75-.90, for females). One-month test-retest reliability has been found to be between .78 and .94, for females. The Cronbach alpha ranges for females on the BASS, Overweight Preoccupation Scale and Self-Classified Weight Scale are respectively, .73, .76, and .89, and the one-month test-retest reliability values are .74, .89, and .74, respectively (Cash, 1994).

Mirror Focus Procedure

Assessment of subjective components of physical appearance has been attempted through the use of the Mirror Focus Procedure. This technique, developed by Butters & Cash (1987), requires the subjects to examine all of their body features as they gaze into a full length, trifold

mirror for 30 seconds at a distance of three feet. The subjects are asked to rate their comfort-discomfort level on a scale of 100 points with 0 being "absolute calm" and 100 being "extreme discomfort." It was believed that this would measure the affective component of dissatisfaction. This measure is thought to be very sensitive to momentary changes in dissatisfaction.

Rationale and Hypotheses

The purpose of this study was to determine the effects of mirror confrontation on the ratings of body image in females. As stated above in the research by Duval and Wicklund, the increased self-awareness induced by the presence of a mirror has been shown to negatively affect the evaluation of oneself. The individual, according to Duval and Wicklund, perceives the discrepancies between oneself and one's ideas of correctness on any given issue or area. Other studies have investigated self-ratings with the use of mirror and videotape feedback and have reported favorable ratings by the subjects of their own abilities (Biggs et al., 1980; Cappon, 1973; Elfant, 1980). It should be noted that the presence of the mirrors in the Duval and Wicklund research was incidental. The mirrors were not explained to the subjects as being part of the study, and in fact, in many cases, the presence of the mirror was introduced as an unwanted and accidental occurrence. On the other hand, in most of the self-confrontation work involving videotape

feedback, subjects are introduced to the videotape as an active and purposeful procedure that has centrality. They seem to encourage looking at one's own image with the intent of obtaining as much positive information as possible (Fisher, 1986).

This study was designed to look at the use of a mirror as a purposeful tool to assist in the ratings of body image of female subjects. It assessed how individuals with High Satisfaction with their bodies reacted to mirror feedback as compared to individuals with Low Satisfaction.

One of the objectives of the study was to gain information regarding potentially beneficial methods of assessing and treating individuals with body image disturbances. More specifically, it examined the impact of mirror self-observation on body image evaluations and whether said impact was different for individuals high or low in body satisfaction. It was hoped that this study would add useful information to the literature on the treatment of body image disorders in non-eating disordered populations, as well as clarify the role of mirrors in body image therapy.

Hypotheses and Data Analyses

Hypothesis 1

The High Satisfaction group will score more favorably on the MBSRQ than the Low Satisfaction group within each condition.

Hypothesis 2

Subjects in the Low Satisfaction Group in the Mirror condition will score less favorably on the MBSRQ than the Low Satisfaction Group in the No Mirror condition.

Hypothesis 3

This hypothesis tests the null that there will be no interaction between High and Low Body Satisfaction, and Mirror/No Mirror conditions.

A between-subjects design was used. Data were analyzed using a Multivariate analysis of variance (MANOVA). The independent variables were the assignment to either the Mirror or No Mirror condition and the satisfaction status (High or Low). The dependent variables were the subscale scores of the MBSRQ.

There is equivocation in the literature regarding the effects on mirror confrontation on individuals with differing levels of body esteem. Some of the literature (Duval & Wicklund, 1972; 1973; Ickes et al., 1973) indicates that the presence of a mirror has a negative effect on subjects regardless of their body satisfaction. More recent research, however, indicates the effects of mirror confrontation are mediated by the level of body satisfaction and the manner in which the mirror is presented (i.e., as a helpful tool rather than as an incidental object) (Biggs et al., 1980; Blount & Pederson, 1970; Rezler and Anderson, 1971). Therefore, if the null hypothesis (Hypothesis 3) is

rejected and those subjects in the Mirror condition rate themselves higher on the MBSRQ, this would offer support to the more recent investigations that proclaim the potential positive effects of mirror confrontation on persons' self-ratings. If the null hypothesis is rejected and those subjects in the Mirror condition rated themselves more negatively, this would corroborate the findings in the Duval and Wicklund type of research. If, however, the null hypothesis is not rejected, an alternative explanation would need to be considered.

CHAPTER II

METHOD

Subjects

The subjects consisted of 88 female university students from a large Southwestern university, who volunteered to participate in research for extra credit in their undergraduate psychology courses. The study was limited to women due to the overwhelming clinical relevance of body image in females, as suggested by the above-mentioned literature. Only women who had never carried a baby full term were included in this study, as it is unclear as to the effect that pregnancy, labor and delivery might have on a woman's body image. Subjects ranged in age from 19 to 41, with a mean age of 23.35 years. Seventy-nine subjects (89.8 percent) were Caucasian, 6 subjects (6.8 percent) were African American, 2 (2.3 percent) were Hispanic and 1 (1.1 percent) was of Asian descent.

Materials

Each subject was given a brief demographic questionnaire (BDQ) to obtain defining characteristics of each person. The Eating Disorders Inventory-Body Dissatisfaction Scale (BDS) was used as a screening instrument to stratify the subjects into a High Satisfaction

group and a Low Satisfaction group. The Multidimensional Body-Self Relation Questionnaire (MBSRQ) served as the dependent measure in the two different conditions (Mirror and No Mirror). Two 42 inch by 58 inch arched mirrors were used in the Mirror condition, and set up at such an angle to each other that a subject could view her body from all angles. The scale that was used to obtain weight measurements was a Sunbeam model F96B454H with remote display. Wrist measurements were acquired with the use of a vinyl tape measure using inch increments.

Procedure

An announcement of the research project was made in several undergraduate psychology classes. Students were asked to list their names and phone numbers if they were interested in participating in a study on body image in which they could earn two extra-credit points (see Appendix A). The students were then contacted by telephone to set up a time for them to come in to participate in the study. Subjects were asked to refrain from eating, drinking or exercising for a period of two hours prior to their appointment times. Those subjects who indicated that they had eaten, drank, or exercised within two hours of arriving for their appointments were rescheduled to a time when these requirements would be met. The subjects were also asked to wear fitted clothing such as a body suit and shorts (i.e., no baggy or loose fitting clothing). Subjects ($n = 2$) who

arrived at the study inappropriately dressed were rescheduled to return when these requirements were met. All other subjects were in compliance with the dress requirements.

Upon arrival, subjects were given the informed consent form, the BDQ and the BDS, which they filled out in the waiting area. The principle investigator served as the experimenter. The experimenter scored the BDS in a separate room and the subjects were then assigned to either the High Satisfaction group or the Low Satisfaction group based on their scores on this measure. A median-split method was used to stratify the subjects into the two groups. The first several subjects were randomly assigned to condition until a running median could be calculated. The subjects were then randomly assigned to either the Mirror condition or the No Mirror condition. Those in the No Mirror condition were escorted to a room with a desk and chair and asked to fill out the MBSRQ in private after the researcher exited the room. Standardized instructions were given to each subject (see Appendix E). The subjects in the Mirror condition were taken to a room with two 42 X 58 inch mirrors set up in such a way that the subjects could view their bodies from all sides. Those subjects who were wearing baggy clothing over tighter fitting clothing were asked to remove the baggy clothing articles. The subjects were then given standardized instructions and asked to stand in front

of the mirrors so that they were able to view their bodies from all angles (i.e., front, sides, and back), while they privately filled out the MBSRQ on a clipboard (see Appendix F). Subjects were asked to use the mirror as a source of information regarding the appearance of their bodies. Special emphasis was placed on the use of the mirror while filling out items 59-69 of the MBSRQ which asked the subjects to rate their weight and specific body areas. After instructions were given the researcher left the room. All subjects were asked to come out of the room once they had finished filling out the MBSRQ. Upon completion of this questionnaire, each subject was escorted to a another room and their weight measurement was obtained (without shoes) by standard means and a wrist measurement was taken via a tape measure to determine body frame size (see Appendix H). The subjects were given the opportunity to ask questions at the end of the experiment and were given extra-credit point cards. A sign up sheet was also provided for those individuals who were interested in receiving the results of the study.

CHAPTER III

RESULTS

For purposes of analysis, subjects were separated using a median split, into high and low scorers on body satisfaction. Individuals whose scores on the BDS were greater than 13 were designated as Low Satisfaction subjects, and those with scores of 13 or less were designated as High Satisfaction subjects. The mean BDS score for female college students, as reported in the EDI manual, is 9.7 (SD = 8.1) and the mean score of actively eating disordered persons is 15.5 (SD = 7.8). Thus, it appears that the subjects from the current study were somewhat more dissatisfied with their bodies than those from the standardization group, however, the current sample mean is still well within one standard deviation of the standardized mean.

A manipulation check of the independent variable was implemented through t-tests. As expected, these analyses revealed significant overall group differences with respect to the independent variable: the mean BDS score for Low Satisfaction group (18.907; SD = 4.046) significantly differed from the High Satisfaction group's mean BDS score (6.067; SD = 4.180), $t = 16.67$, $p < .001$. Subjects did not

differ significantly with respect to age (Low Satisfaction \bar{M} = 23.721 years, SD = 4.119; High Satisfaction \bar{M} = 23.02 years, SD = 4.13, t = .766, p > .05), or number of hours of exercise per week (Low Satisfaction \bar{M} = 2.930 hours, SD = 3.411; High Satisfaction \bar{M} = 4.622 hours, SD = 4.589, t = 1.955, p > .05). The groups differed significantly with respect to average weight; the Low Satisfaction group, on average (\bar{M} = 144.058; SD = 27.267) weighed more than the High Satisfaction group (\bar{M} = 131.478; SD = 22.383), t = 2.37, p < .05. Table 5 summarizes these values.

The subjects did not differ from the Mirror condition to the No Mirror condition on variables of age, weight, and BDS score, as mean differences between the groups were all nonsignificant (p > .05 on all t -tests). Descriptive statistics of the experimental sample, including means and standard deviations, are displayed in Tables 2 and 3.

A multivariate analysis of variance (MANOVA) and subsequent univariate F tests were calculated to determine the existence of an interaction and main effects for satisfaction level and mirror condition. The dependent variables in these analyses were the subscale scores of the MBSRQ. Comparisons not discussed were nonsignificant, p > .05.

Table 2

Group Descriptive Statistics for All Subjects

	Mean	Std dev	Range
Age	23.35	4.12	19-41
Height	65.32	3.11	52-72
Actual Weight	137.63	25.54	98.5-246.5
BDS Score	12.34	7.64	0-27
Hrs. Exercised/Wk	3.79	4.12	0-28

N = 88

Table 3

Group Descriptive Statistics: Mirror vs. No Mirror

	Mirror		No Mirror	
	Mean	SD	Mean	SD
Age	22.58	2.63	24.16	5.16
Actual Weight	134.32	27.02	141.08	23.71
BDS Score	11.93	8.64	12.77	6.52
Hrs. Exercised/Wk.	3.02	2.62	4.61	5.17
	<u>N</u> = 45		<u>N</u> = 43	

Based on the MANOVA analyses, the main effect for satisfaction (high v. low) was significant, $F(10, 75) = 8.736$, $p < .001$. The main effect for mirror condition was nonsignificant, $F(10, 75) = 1.319$, $p > .05$. The interaction of satisfaction by mirror condition was also nonsignificant, $F(10, 75) = 1.159$, $p > .05$. Tables 4 and 5 summarize the results of the individual subscales for the main effects for satisfaction and mirror conditions. Table 6 summarizes the results of the interaction between mirror condition and satisfaction level.

Table 4

Main Effect For Satisfaction

SUBSCALE	M LOW SATISFACTION	M HIGH SATISFACTION	F VALUE
APPEARANCE EVALUATION	2.64	3.66	68.96***
APPEARANCE ORIENTATION	3.93	3.56	8.19**
FITNESS EVALUATION	3.57	3.87	2.66
FITNESS ORIENTATION	3.11	3.52	6.04*
HEALTH EVALUATION	3.52	3.98	8.07**
HEALTH ORIENTATION	1.48	1.66	6.79*
ILLNESS ORIENTATION	3.23	3.33	.31
BODY-AREAS SATISFACTION	2.75	3.59	49.06***
OVERWEIGHT PREOCCUPATION	3.36	2.36	31.31***
SELF-CLASSIFIED WEIGHT	3.78	3.11	30.83***

$F(1,84)$ for all subscales. * $p < .05$ ** $p < .01$ *** $p < .001$.

Multivariate analysis of covariance (MANCOVA) analyses were executed to determine if present weight and/or number of hours one exercises per week systematically covaried with the subscale scores on the MBSRQ. The MANCOVA was found to be significant; present weight systematically covaried with the Appearance Evaluation ($t = .014$, $p > .05$) and Self-

Table 5

Main Effect For Mirror Condition (nonsignificant effect)

SUBSCALE	<u>M</u> MIRROR CONDITION	<u>M</u> NO MIRROR CONDITION	F VALUE
APPEARANCE EVALUATION	3.16	3.16	.09
APPEARANCE ORIENTATION	3.74	3.75	.03
FITNESS EVALUATION	3.78	3.66	.56
FITNESS ORIENTATION	3.28	3.36	.16
HEALTH EVALUATION	3.65	3.86	1.45
HEALTH ORIENTATION	1.53	1.62	2.15
ILLNESS ORIENTATION	3.14	3.43	3.83
BODY-AREAS SATISFACTION	3.26	3.10	2.45
OVERWEIGHT PREOCCUPATION	2.74	2.95	1.89
SELF-CLASSIFIED WEIGHT	3.38	3.50	1.49

F(1, 84) for all subscales.

Table 6

Interaction Of Mirror Condition And Satisfaction Level

	F VALUE	SIGNIFICANCE OF F
APPEARANCE EVALUATION	2.64	0.11
APPEARANCE ORIENTATION	0.85	0.36
FITNESS EVALUATION	1.04	0.31
FITNESS ORIENTATION	0.17	0.68
HEALTH EVALUATION	1.33	0.25
HEALTH ORIENTATION	2.25	0.14
ILLNESS ORIENTATION	2.13	0.15
BODY-AREAS SATISFACTION	4.60	0.04
OVERWEIGHT PREOCCUPATION	5.51	0.02
SELF-CLASSIFIED	4.24	0.04

Classified Weight ($t = 6.609$, $p > .001$) subscales, and the number of hours subjects exercise per week covaried with the Appearance Orientation ($t = 2.496$, $p > .05$), Fitness Evaluation ($t = 2.961$, $p > .01$), Fitness Orientation ($t = 5.912$, $p > .001$) and Health Orientation ($t = 3.538$, $p > .001$) subscale scores. These results are listed in Table 7.

BDS Scores and Other Body-Image Variables

No significant relationship was found between the number of hours subjects exercised per week and their corresponding BDS scores ($r = -.166$, $p > .05$).

With respect to subjects whose actual weight was greater than their ideal weight ($n = 77$), a significant relationship was found between scores on the BDS and the difference scores between their actual and ideal weights. The larger the discrepancy between subjects' actual and ideal weight, the higher their BDS scores tended to be ($r = .309$; $p < .01$). No significant relationship was found on these variables for the group of subjects ($n = 11$) who weighed less than their ideal weight ($r = -.001$; $p > .05$).

Summary Of Statistical Analyses Of Hypotheses

All analyses within this section were carried out through a planned MANOVA.

Hypothesis 1. The High Satisfaction group was expected to score more favorably on the MBSRQ than the Low Satisfaction group within each condition.

Table 7

Multivariate Analysis Of Covariance Of Satisfaction Level

	<u>t</u>	<u>F</u> VALUE
APPEARANCE EVALUATION		4.28*
Weight	t = -2.51	
Exercise	t = 1.96	
APPEARANCE ORIENTATION		4.26*
Weight	t = -1.98	
Exercise	t = 2.50	
FITNESS EVALUATION		4.52*
Weight	t = -1.10	
Exercise	t = 2.96	
FITNESS ORIENTATION		18.19***
Weight	t = -0.02	
Exercise	t = 5.91	
HEALTH EVALUATION		2.69
Weight	t = -0.88	
Exercise	t = 2.28	
HEALTH ORIENTATION		6.97**
Weight	t = 0.47	
Exercise	t = 3.54	
ILLNESS ORIENTATION		0.15
Weight	t = -0.48	
Exercise	t = -0.16	
BODY-AREAS SATISFACTION		0.16
Weight	t = -0.52	
Exercise	t = 0.31	
OVERWEIGHT PREOCCUPATION		1.21
Weight	t = 0.45	
Exercise	t = 1.37	
SELF-CLASSIFIED WEIGHT		21.97***
Weight	t = 6.61	
Exercise	t = -0.80	

F(1,84) for all subscales. *p<.05 **p<.01 ***p<.001.

Table 8

Group Descriptive Statistics: Low vs. High Satisfaction

	Low		High	
	Satisfaction		Satisfaction	
	Mean	SD	Mean	SD
BDS Score	18.91***	4.05	6.07***	4.18
Age	23.70	4.13	23.02	4.13
Weight	144.06*	27.27	131.48*	22.38
Hrs. Exercised/Wk.	2.93	3.41	4.62	4.59
	N=43		N=45	

*p<.05 ***p<.001.

This hypothesis was supported by the results of this study. A main effect for satisfaction was found to be present. The High Satisfaction group scored significantly more favorably on eight of the subscales of the MBSRQ. The exceptions to this finding were the Fitness Evaluation and Illness Orientation. These are discussed below.

Hypothesis 2. Subjects in the Low Satisfaction Group in the Mirror condition were expected to score less favorably on the MBSRQ than the Low Satisfaction Group in the No Mirror condition.

This hypothesis was not supported by this research as the main effect for condition was found to be nonsignificant.

Hypothesis 3. This hypothesis tested the null that there would be no interaction between High and Low Body Satisfaction and the Mirror/No Mirror conditions.

The null is not rejected as there was no significant interaction of satisfaction and mirror condition as measured by the MBSRQ.

CHAPTER IV

DISCUSSION

Hypothesis 1. The High Satisfaction group was expected to score more favorably on the MBSRQ than the Low Satisfaction group within each condition.

This hypothesis was supported by the results of this study on most of the dependent variables, with the exception of the Illness Orientation and Fitness Evaluation subscales whose means did not differ significantly.

The Illness Orientation subscale measures the extent of reactivity to being or becoming ill, and thus it makes intuitive sense that this variable would not differ given that the groups were separated based on appearance-dependent factors.

The Fitness Evaluation subscale measures feelings of being competent at physical activities. According to these results, the Low Satisfaction group scored similarly to the High Satisfaction group. This could be interpreted as indicating that persons' perceptions of their potential physical competence may not be effected by their current level of satisfaction.

The High Satisfaction group rated themselves significantly more favorably than the Low Satisfaction group

on appearance, level of fitness, health and body-areas satisfaction. That they rated themselves higher on appearance and body-areas satisfaction is expected given the variable by which they were differentiated. Since the High Satisfaction group also rated themselves healthier and more physically active than the Low Satisfaction group, it seems that satisfaction with one's size and shape might somehow be related to individuals' perceptions of their health and level of fitness. In fact, the number of hours subjects exercised per week varied systematically with scores on Appearance Orientation, Fitness Evaluation, Fitness Orientation, Health Evaluation, and Health Orientation subscales. These results are similar to those found in Cash et al.'s (1988) study that suggested that individuals who cared about and did things to improve health and fitness were generally happier with their appearance.

The High Satisfaction group was also less preoccupied with feeling overweight than the Low Satisfaction group, and hence classified themselves as being less overweight than did the Low Satisfaction group. Subjects' weights also varied systematically with scores on Appearance Evaluation and Self-Classified Weight subscales. These subscale scores seem to rely less on satisfaction level than on actual weight, however, as mentioned above, in this society one's evaluation of one's appearance is highly dependent on one's body weight. This coincides with the findings from Cash and

Hicks (1990) which suggested that the way people categorize their weight has strong implications for their body image affect and self-esteem. The subjects in the current study did, however, differ significantly with regard to weight; the Low Satisfaction group weighed significantly more than did the High Satisfaction group. This also supports previous research (Thompson & Thompson, 1986) that found that heavier women are more dissatisfied with their body image.

The Low Satisfaction Group scored significantly higher on the Appearance Orientation subscale than did the High Satisfaction group. This subscale measures the importance individuals put on their appearance, and the extent to which they engage in grooming behaviors to manage their appearance. High scorers place importance on how they look, pay attention to their appearance, and engage in extensive "grooming behaviors" to manage their appearance. It is ironic-though perhaps not surprising-that those individuals who spend the most time trying to make themselves look good are the same ones who are most dissatisfied with their bodies. One possible explanation for this is that it is due to their dissatisfaction with their bodies that they routinely attempt to improve their appearance through grooming and clothing selections. Another possibility is that by society's standards these individuals are in fact less attractive than the more satisfied women. However,

this is not necessarily the case: It is possible that these less satisfied women perceive greater discrepancies between their real and ideal images and they may invest an inordinate amount of time trying to measure up to an unattainable ideal.

Hypothesis 2. Subjects in the Low Satisfaction Group in the Mirror condition were expected to score less favorably on the MBSRQ than the Low Satisfaction Group in the No Mirror condition.

This hypothesis was not supported by this study, as there was no main effect for the mirror condition. The finding that the mirror had no significant effect on the subjects' ratings of their bodies was unexpected, and deserves thoughtful reflection. Most importantly, it contradicts the theory of Duval and Wicklund. According to their research and theory, it is believed that people are more critical of themselves in the presence of a mirror because they become aware of the discrepancy between their real and ideal self. Yet in this study, satisfaction was not affected by condition; the mirror did not serve to raise or lower subjects' levels of satisfaction with their bodies. Biggs et al. (1980) also found that there are individual differences to the way people respond to increased self-awareness. This is considered below.

It was hypothesized in this study that exposure to the mirror would lead individuals to evaluate themselves

differently than those individuals who were not exposed to the mirror. This was not demonstrated, and an alternate interpretation is needed to explain these findings. One interpretation, which in a circuitous way supports the objective self-awareness theory, is that the act of filling out a questionnaire on body image inherently leads one to be objectively self-aware. Therefore, the condition (Mirror or No Mirror) might have been immaterial because of a priming effect. By virtue of filling out the MBSRQ, both groups may have been objectively self-aware.

Another possibility is that the essence of "body image" is highly individual and more complex than contemporary instruments are able to measure. Body image might be better explained as an 'internal mirror' that people possess of themselves. As Gorman (1969) suggested, body image may be a concept of the body rather than a perception, so that it is more the picture of one's body in the "mind's eye" than the picture which is developed by the visual apparatus.

The way we perceive our bodies is dependent on incidents in our everyday lives, as well as preconceived notions that we carry with us. We incorporate the information that we receive from seeing our bodies naked, in different clothing, in our reflections in the mirror, when our bodies are in motion or at rest. We are also confronted with images in the media, as well as verbal and nonverbal responses from others about our bodies. We are constantly

receiving information about our bodies every day. Therefore, exposure to an external mirror may have been a less powerful influence than their internalized mirror, or their everyday body concepts.

These results also support the findings of Garner et al. (1989) who reported that subjects estimating the size of their bodies continued to overestimate their size by ten percent even in the presence of a mirror. Hence, the visual information provided by a mirror does not prompt individuals to change their body-image perceptions. The internalized body-image appears quite tenacious.

With the mirror being so prevalent in this society, perhaps it no longer provides novel information. It is anticipated that if this society did not have such ready access to mirrors, and one's exposure to one's own mirror reflection were a novel experience, there would be a greater discrepancy found between Mirror and No Mirror conditions, as measured by questionnaires investigating body image.

Hypothesis 3. This hypothesis tested the null that there would be no interaction between High and Low Body Satisfaction and the Mirror/No Mirror conditions.

The null hypothesis was not rejected since no interaction between satisfaction and condition was found. As stated in Hypothesis 2 in this section, the mirror had no significant effect on how individuals rated themselves, and this was also true when satisfaction level was a

consideration. Since subjects' ratings of themselves were not affected by the presence of the mirrors, the concept of body image seems thus to be a more stable entity that is not easily altered by an increase in objective self-awareness.

There were several trends that emerged when analyzing the interaction between satisfaction level and mirror condition. Greater variance was observed on subjects' scores on the Body-Areas Satisfaction, Overweight Preoccupation and Self-Classified Weight subscales in the Mirror condition than in the No mirror condition. Hence, the mirror may have had an effect on subjects' responses, however the effect may be masked by extreme scores. This may also have been influenced by an interaction between satisfaction level and mirror condition, as the univariate F tests on these subscale scores were significant as calculated in the MANOVA analysis. However, these findings should be regarded cautiously since they are findings from univariate F tests from a non-significant MANOVA and need to be investigated further through research on these particular scales.

Additional Analyses

The study did not reveal age differences in the Satisfaction groups. However, the subject sample was a homogeneous group and even if a difference exists in the population, it would have been difficult to document with this particular subject sample. The groups differed

significantly with respect to average weight. The Low Satisfaction group weighed significantly more than the High Satisfaction group. The subjects whose actual weight was greater than their ideal weight demonstrated a significant relationship between their BDS scores and the difference scores between their actual and ideal weights. The larger the discrepancy between subjects' actual and ideal weight, the more dissatisfied they were with their bodies. No significant relationship was found on these variables for the group of subjects who weighed less than their ideal weight. This provides additional support to the existing literature reporting that heavier women in this society are more dissatisfied with their bodies than are thinner women. One might also ponder the fact that 77 out of 88 (87.5%) subjects desired to weigh less than their actual weight. Included in this group were people who were within normal weight range or even underweight.

It should also be noted that the mean BDS scores for the High and Low Satisfaction groups (6.067 and 18.907, respectively) suggest that these two groups represent clinically different populations. As outlined in the EDI manual, the Anorexic group (anorexics and bulimics) mean score is 15.5 (SD = 7.8), whereas the Recovered Anorexic group mean is 6.3 (SD = 6.2). Therefore, the High Satisfaction group's level of body dissatisfaction more closely resembled the Recovered Anorexic group, whereas the

Low Satisfaction group's level of body dissatisfaction resembled that of the actively Anorexic group.

No significant relationship was found between the number of hours subjects exercised per week and their corresponding BDS scores. This finding indirectly suggests that people exercise for different reasons. Some might exercise because they are satisfied with their bodies and wish to maintain this, while others might exercise because they are dissatisfied with their bodies. As this was not a major focus of the study, the subjects were not asked about how long they had been engaging in regular exercise. It is expected that those individuals who have incorporated exercise into their daily lifestyle over years would differ from those individuals who had just started an exercise program.

It is often believed that the evaluation of one's body is easily influenced by changes or experiences, such as exercising and eating. These findings come from research that typically employs eating-disordered individuals as subjects. A possible explanation for the current findings is that this study investigated 'normal' subjects rather than clinical subjects. Different findings might be obtained with an eating-disordered subject sample.

Since the results of this study are somewhat unexpected, further speculation is warranted. It was hypothesized that mirror confrontation would have some

effect with regard to the way subjects rated themselves on a body image questionnaire. The fact that this was not found leads one to re-examine the concept of 'body-image' as well as the contemporary measures we use to quantify this concept.

Body image appears to be a steadfast entity; a feeling or perception that is not easily influenced by a single procurement of external information. The internal image we possess of ourselves is developed at least partly by the moments we have seen ourselves in mirrors. We add this to the expectations of ourselves and of others, the way we were taught to feel about and treat our bodies, as well as how we compare to the stereotypical ideal with respect to appearance, competence and health. Body image is thus a conglomerate of all these things and more.

The measurements we have available to us today touch on only some of these areas. With only some features being investigated, what do they truly measure? They may measure small aspects of body image, but it seems that the essence of body image is left uncaptured.

Freedman (1990), wrote about using the mirror as a grounding tool, as a source of reality. Anecdotally, it is interesting to note that within this study, subjects who indicated that they were dissatisfied with their bodies, and who by societal standards might be considered attractive, did not seem to change their belief when exposed to the

mirrors. It can be argued that the study was a one-time contrived event. However, it still documents that the mere exposure to mirrors did not correct or change the subjects' perceptions of themselves. In this society we often take visual information to denote reality: 'seeing is believing'. But, this does not seem to be the case within the realm of body image. This is found all too often in individuals with eating disorders. In an attempt to have an individuals realize their diminutive size, the clinician exposes them to mirrors. It is hoped that the visual information will correct the persons' perceptions, but the eating disordered individuals still cannot "see" what the clinician is trying to illustrate. The internalized representation is not so easily altered. It is therefore important to address the underlying issues that lead one to distort one's body image to such an extreme degree. It may often have less to do with a flaw that is objective or visible than it has to do with an internalized concept of being flawed.

Limitations of the Study and Ideas for Future Research

It is hoped that the acknowledgement of the limitations in this study will generate ideas for future research. An important limitation in this study is the homogeneity of the subject pool. Subjects were all females, similar in age, predominantly Caucasian and had at least some college education. This of course limits the generalizability of the study's findings. Subjects were also recruited for a

"body-image" study and this potentially attracted a certain type of person who differs, with regard to body image, from the general population. Future studies might utilize a subject sample with more variability in age, education level and/or use both males and females. Researchers might also consider not divulging what the study addresses when recruiting subjects.

Another limitation of the study is the choice of measurements. The Body Dissatisfaction Subscale of the EDI is specific to areas of the body most affected by weight gain in women. It does not, however, address other appearance related aspects of one's body, such as facial attributes, skin and hair characteristics and the like. A different measure might be used to separate subjects which is a more comprehensive measure of body-image satisfaction.

Another limitation of the measurements in this study concerns the use of the MBSRQ and the content validity of the Fitness Evaluation subscale. While it is defined as measuring "Feelings of being physically fit or unfit..." (Cash, 1994), the three-item subscale includes: "I easily learn physical skills", "I do poorly in physical sports or games", and "I am very well coordinated." This scale seems to measure competence in physical skills and coordination rather than physical fitness.

Some suggestions for experimental designs are offered below. If subjects were matched on the total BDS score,

this would offer the possibility of comparing the scores of individuals who respond similarly on the measure of body-dissatisfaction. Another option would be to have a within-subjects design in which subjects complete the MBSRQ in both the Mirror and No Mirror conditions to control for any between-subject variability. This would allow for comparisons with the subjects' own scores in the different conditions. Clearer inferences could then be made with regard to the effects of the mirror confrontation. Future studies might consider including in the study only those individuals who score at the extremes on the screening measure. The result would be more divergent groups as defined by Low and High Satisfaction. While this study did demonstrate differences between High and Low Satisfaction groups, this change in design might illuminate differences with respect to the mirror confrontation.

It might also be interesting to determine the effects that an exercise program for the Low Satisfaction group might have on their evaluation of themselves in the presence of the mirrors. If the MBSRQ were filled out before the onset of the exercise program and then at some point during the exercise program, this would give the subjects information regarding the changes in their bodies and their body perceptions.

Future research might additionally explore physiological components in the evaluation of the self in a

mirror. This study was not designed to track a subject's eye gaze while she filled out the MBSRQ in the mirror, but future research might investigate this as it would allow the researcher to determine if the subject is truly attending to the body area about which she is answering questions. A study that investigated other body-related concepts, such as body-related anxiety, with respect to mirror exposure might also generate interesting findings.

APPENDIX A
CALL FOR SUBJECTS ANNOUNCEMENT

CALL FOR SUBJECTS ANNOUNCEMENT

My name is Maria Dell'Era and I am a graduate student in clinical Psychology. I am conducting research on body image. I am recruiting female subjects who have never had children. The study will consist of filling out questionnaires and take about an hour of your time. You can earn 2 extra credit points by participating. I am passing around a sign up sheet for those of you who are interested. Please put your name and phone number down if you would like to be contacted. There is also a phone number on the sheet that you can call to set up an appointment at your convenience. Thank you.

APPENDIX B
CONSENT FORM

CONSENT FORM

An informed consent requires the participant to be aware of the purpose, procedure, and possible risks and benefits associated with the proposed research project. Please read the following information thoroughly and carefully. All questions you may have will be answered.

Purpose: The purpose of this research is to investigate body image among female university students.

Procedures: Subjects are asked to come to the experiment in form fitting clothing and asked to complete several paper and pencil inventories measuring body image. Subjects are required to not exercise or ingest any food or drink for a two hour period prior to their performance on these tasks. Subjects will be given extra credit for their courses upon completion of all assessments.

Risks, Benefits, and Safeguards: There are no known risks or expected discomforts associated with any of the procedures involved in this project. What can be gained from participation in this study is enhanced self-awareness and increased knowledge regarding body image, fitness and health. Feedback will be provided to all subjects upon request once all data have been collected. To insure total confidentiality, subjects' identities and responses will be coded. The key to the code will be locked in a file accessible only to the experimenter. The key will be destroyed once all data have been collected.

Participation in this study is entirely voluntary. Refusal to participate will result in neither penalty nor loss of benefits to which you are otherwise entitled. You retain the right to terminate your participation in the study at any time. Termination will result in neither penalty nor loss of benefits to which you are otherwise entitled.

My name is Maria Dell'Era. You may obtain answers to questions regarding this research by contacting me at (817) 457-3909 or Michael Mahoney, Ph.D. at (817) 565-2671. If you have any questions regarding your rights as a research subject, you may contact the staff of the University of North Texas Human Subjects Committee located in the Office of Research Administration and Academic Grants at (817) 565-3940.

Your signature below indicates that you understand all procedures, risks, and benefits with this project and that you consent to participate.

Signature _____ Date _____

Witness _____ Date _____

APPENDIX C
BRIEF DEMOGRAPHIC QUESTIONNAIRE

BRIEF DEMOGRAPHIC QUESTIONNAIRE

Subject # _____

Class _____

Standing _____ Age _____

Major _____

Please fill in as accurately as possible:

Present Weight _____ Height _____

Have you ever carried a baby full-term? _____

Highest past weight _____

How long ago? _____

How long did you maintain this weight? _____

Lowest weight since the age of 18 _____

How long did you maintain this weight? _____

What do you consider your ideal weight? _____

Are you currently dieting? _____

How many hours per week do you
exercise? _____How often do you use laxatives to lose
weight? _____How often do you induce vomiting to control
weight? _____Have you ever been diagnosed as having an eating
disorder by a health professional: Yes _____ No _____

APPENDIX D
BODY DISSATISFACTION SUBSCALE

MODIFIED BODY DISSATISFACTION SUBSCALE

Read each question and fill in the circle under the column which applies best to you. Please answer each question very carefully.

A=ALWAYS; U=USUALLY; O=OFTEN; S=SOMETIMES; R=RARELY; N=NEVER

	A	U	O	S	R	N
1. I think that my stomach is too big.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I think that my thighs are too large.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I think that my stomach is just the right size.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I feel satisfied with the shape of my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I like the shape of my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I think my hips are too big.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I think that my thighs are just the right size.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I think my buttocks are too large.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I think that my hips are just the right size.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I think my upper torso (breasts, arms) is just the right size.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. How happy are you with your overall physical appearance?

Extremely Happy--Happy--Neutral--Unhappy--Extremely Unhappy

APPENDIX E
STANDARDIZED INSTRUCTIONS FOR COMPLETING MBSRQ

STANDARDIZED INSTRUCTIONS FOR COMPLETING MBSRQ

No Mirror Condition Instructions: Please fill out this questionnaire and be sure to answer all 69 questions. Come out when you have completed it.

Mirror Condition Instructions: For this part I'd like for you to stand in front of the mirrors so you can get a complete view of your body. That is, so you can see your reflection from all angles. Please make sure you especially use the mirror on items 59-69. Before I leave the room I'd like to make sure you find a spot in the mirrors so that you can see yourself from all sides.

APPENDIX F
MULTIDIMENSIONAL BODY-SELF RELATIONS QUESTIONNAIRE
MIRROR CONDITION

THE MULTIDIMENSIONAL BODY-SELF RELATIONS QUESTIONNAIRE
MIRROR CONDITION

Subject #M_____

The following pages contain a series of statements about how people 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.

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

EXAMPLE:

_____ I am usually in a good mood.

In the blank space, enter a 1 if you definitely disagree with the statement; a 2 if you mostly disagree; a 3

if you neither agree nor disagree; 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 anonymous, so please be completely honest. Please give an answer to all of the items. Please stand in front of the mirror so you have a complete view of yourself while filling out this form.

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. I would pass most physical-fitness tests.
- _____ 4. It is important that I have superior physical strength.
- _____ 5. My body is sexually appealing.
- _____ 6. I am not involved in a regular exercise program.
- _____ 7. I am in control of my health.
- _____ 8. I know a lot about things that affect my physical health.
- _____ 9. I have deliberately developed a healthy lifestyle.
- _____ 10. I constantly worry about being or becoming fat.
- _____ 11. I like my looks just the way they are.
- _____ 12. I check my appearance in a mirror whenever I can.
- _____ 13. Before going out, I usually spend a lot of time getting ready.
- _____ 14. My physical endurance is good.

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

- _____ 15. Participating in sports is unimportant to me.
- _____ 16. I do not actively do things to keep physically fit.
- _____ 17. My health is a matter of unexpected ups and downs.
- _____ 18. Good health is one of the most important things in my life.
- _____ 19. I don't do anything that I know might threaten my health.
- _____ 20. I am very conscious of even small changes in my weight.
- _____ 21. Most people would consider me good-looking.
- _____ 22. It is important that I always look good.
- _____ 23. I use very few grooming products.
- _____ 24. I easily learn physical skills.
- _____ 25. Being physically fit is not a strong priority in my life.
- _____ 26. I do things to increase my physical strength.
- _____ 27. I am seldom physically ill.
- _____ 28. I take my health for granted.
- _____ 29. I often read books and magazines that pertain to health.
- _____ 30. I like the way I look without my clothes.
- _____ 31. I am self-conscious if my grooming isn't right.
- _____ 32. I usually wear whatever is handy without caring how it looks.
- _____ 33. I do poorly in physical sports or games.
- _____ 34. I seldom think about my athletic skills.
- _____ 35. I work to improve my physical stamina.
- _____ 36. From day to day I never know how my body will feel.

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

- _____ 37. If I am sick, I don't pay much attention to my symptoms.
- _____ 38. I make no special effort to eat a balanced and nutritious diet.
- _____ 39. I like the way my clothes fit me.
- _____ 40. I don't care what people think about my appearance.
- _____ 41. I take special care with my hair grooming.
- _____ 42. I dislike my physique.
- _____ 43. I don't care to improve my abilities in physical activities.
- _____ 44. I try to be physically active.
- _____ 45. I often feel vulnerable to sickness.
- _____ 46. I pay close attention to my body for any signs of illness.
- _____ 47. If I'm coming down with a cold or flu, I just ignore it and go on as usual.
- _____ 48. I am physically unattractive.
- _____ 49. I never think about my appearance.
- _____ 50. I am always trying to improve my physical appearance.
- _____ 51. I am very well coordinated.
- _____ 52. I know a lot about physical fitness.
- _____ 53. I play a sport regularly throughout the year.
- _____ 54. I am a physically healthy person.
- _____ 55. I am very aware of small changes in my physical health.
- _____ 56. At the first sign of illness, I seek medical advise.
- _____ 57. 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.

_____ 58. I have tried to lose weight by fasting or going on crash diets.

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

_____ 59. I think I am:

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

_____ 60. 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

61-69 While using the your image in the mirror as feedback, use this 1 to 5 scale to indicate how satisfied you are with each of the following areas of your body:

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

- _____ 61. Face (facial features, complexion)
- _____ 62. Hair (color, thickness, texture)
- _____ 63. Lower torso (buttocks, hips, thighs, legs)
- _____ 64. Mid torso (waist, stomach)
- _____ 65. Upper torso (chest or breasts, shoulders, arms)
- _____ 66. Muscle tone
- _____ 67. Weight
- _____ 68. Height
- _____ 69. Overall appearance

APPENDIX G
MULTIDIMENSIONAL BODY-SELF RELATIONS QUESTIONNAIRE
NO MIRROR CONDITION

THE MULTIDIMENSIONAL BODY-SELF RELATIONS QUESTIONNAIRE
NO MIRROR CONDITION

Subject #NM_____

The following pages contain a series of statements about how people 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.

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

EXAMPLE:

_____ I am usually in a good mood.

In the blank space, enter a 1 if you definitely disagree with the statement; a 2 if you mostly disagree; a 3

if you neither agree nor disagree; 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 anonymous, so please be completely honest. Please give an answer to all of the items.

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. I would pass most physical-fitness tests.
- _____ 4. It is important that I have superior physical strength.
- _____ 5. My body is sexually appealing.
- _____ 6. I am not involved in a regular exercise program.
- _____ 7. I am in control of my health.
- _____ 8. I know a lot about things that affect my physical health.
- _____ 9. I have deliberately developed a healthy lifestyle.
- _____ 10. I constantly worry about being or becoming fat.
- _____ 11. I like my looks just the way they are.
- _____ 12. I check my appearance in a mirror whenever I can.
- _____ 13. Before going out, I usually spend a lot of time getting ready.
- _____ 14. My physical endurance is good.
- _____ 15. Participating in sports is unimportant to me.

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

- _____ 16. I do not actively do things to keep physically fit.
- _____ 17. My health is a matter of unexpected ups and downs.
- _____ 18. Good health is one of the most important things in my life.
- _____ 19. I don't do anything that I know might threaten my health.
- _____ 20. I am very conscious of even small changes in my weight.
- _____ 21. Most people would consider me good-looking.
- _____ 22. It is important that I always look good.
- _____ 23. I use very few grooming products.
- _____ 24. I easily learn physical skills.
- _____ 25. Being physically fit is not a strong priority in my life.
- _____ 26. I do things to increase my physical strength.
- _____ 27. I am seldom physically ill.
- _____ 28. I take my health for granted.
- _____ 29. I often read books and magazines that pertain to health.
- _____ 30. I like the way I look without my clothes.
- _____ 31. I am self-conscious if my grooming isn't right.
- _____ 32. I usually wear whatever is handy without caring how it looks.
- _____ 33. I do poorly in physical sports or games.
- _____ 34. I seldom think about my athletic skills.
- _____ 35. I work to improve my physical stamina.
- _____ 36. From day to day I never know how my body will feel.
- _____ 37. If I am sick, I don't pay much attention to my symptoms.

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

- _____ 38. I make no special effort to eat a balanced and nutritious diet.
- _____ 39. I like the way my clothes fit me.
- _____ 40. I don't care what people think about my appearance.
- _____ 41. I take special care with my hair grooming.
- _____ 42. I dislike my physique.
- _____ 43. I don't care to improve my abilities in physical activities.
- _____ 44. I try to be physically active.
- _____ 45. I often feel vulnerable to sickness.
- _____ 46. I pay close attention to my body for any signs of illness.
- _____ 47. If I'm coming down with a cold or flu, I just ignore it and go on as usual.
- _____ 48. I am physically unattractive.
- _____ 49. I never think about my appearance.
- _____ 50. I am always trying to improve my physical appearance.
- _____ 51. I am very well coordinated.
- _____ 52. I know a lot about physical fitness.
- _____ 53. I play a sport regularly throughout the year.
- _____ 54. I am a physically healthy person.
- _____ 55. I am very aware of small changes in my physical health.
- _____ 56. At the first sign of illness, I seek medical advise.
- _____ 57. 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.

_____ 58. I have tried to lose weight by fasting or going on crash diets.

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

_____ 59. I think I am:

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

_____ 60. 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

61-69. Use this 1 to 5 scale to indicate how satisfied you are with each of the following areas of your body:

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

_____ 61. Face (facial features, complexion)

_____ 62. Hair (color, thickness, texture)

- _____ 63. Lower torso (buttocks, hips, thighs, legs)
- _____ 64. Mid torso (waist, stomach)
- _____ 65. Upper torso (chest or breasts, shoulders, arms)
- _____ 66. Muscle tone
- _____ 67. Weight
- _____ 68. Height
- _____ 69. Overall appearance

APPENDIX H
METROPOLITAN LIFE INSURANCE 1983 HEIGHT
AND WEIGHT TABLE FOR WOMEN

METROPOLITAN LIFE INSURANCE (1983)
HEIGHT AND WEIGHT TABLE FOR WOMEN

Height	Small	Medium	Large
<u>Ft In</u>	<u>Frame</u>	<u>Frame</u>	<u>Frame</u>
4 10	102-111	109-118	118-131
4 11	103-113	111-123	120-134
5 0	104-115	113-126	122-137
5 1	106-118	115-129	125-140
5 2	108-121	118-132	128-143
5 3	111-124	121-135	131-147
5 4	114-127	124-138	134-151
5 5	117-130	127-141	137-155
5 6	120-133	130-144	140-159
5 7	123-136	133-147	143-163
5 8	126-139	136-150	146-167
5 9	129-142	139-153	149-170
5 10	132-145	142-156	152-173
5 11	135-148	145-159	155-176
6 0	138-151	148-162	158-179

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