

EXERCISE VIDEOS AND FEMALE BODY IMAGE AND EXERCISE THOUGHTS

THE IMPACT OF PHYSIQUE-SALIENT AND
PHYSIQUE-NONSALIENT
EXERCISE VIDEOS
ON WOMEN'S BODY IMAGE
AND EXERCISE-RELATED COGNITIONS

By

Julie Catherine Fleming

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TITLE: The Impact of Physique-Salient and Physique-Nonsalient Exercise Videos on the Body Image and Exercise-Related Cognitions of Female Exercisers and Nonexercisers

AUTHOR: Julie Fleming, Hons. B. Kin. (McMaster University)

SUPERVISOR: Professor K.A. Martin

Abstract

The number of women who engage in regular exercise today can be attributed, in part, to the media's incessant promotion of exercise as a means of improving the female body, as well to a growing desire among many women to improve the appearance, fitness, and shapeliness of their bodies. The exercise routine of many women consists of working out to an exercise video. Exercise videos are perceived by many as being a convenient and inexpensive means of achieving a fitter and firmer body. Given the interest--and perhaps potential interest--in exercise videos among women, it is surprising that the effects of exercise videos on women's body- and exercise-related feelings has not been examined. Indeed, since the majority of exercise videos feature women whose bodies reflect the fit-looking and attractive ideal espoused by the media today, viewing an exercise video may lead women to feel badly about their own bodies.

The objective of the present study was to investigate the differential impact of two exercise videos (physique-salient and physique-nonsalient) on the body image and self-presentational efficacy of 101 female exercisers and nonexercisers. The physique-salient exercise video featured women whose bodies resemble to be highly fit-looking and attractive cultural ideal, while the physique-nonsalient video featured women whose bodies were considered relatively average-looking. MANCOVAs were conducted on post-test scores for the dependent variables, with pre-test scores entered as covariates. Analyses revealed a significant main effect for video for self-presentational efficacy

(SPE), indicating that exercisers and nonexercisers who viewed the physique-salient video had lower post-test SPE than participants who viewed the nonsalient video ($p < .05$). A significant main effect for exercise status was also revealed for SPE, such that exercisers had lower post-test SPE than non-exercisers ($p < .05$). Significant interactions between video and exercise status were found for body area satisfaction (BAS) and appearance evaluation (AE) were found. For BAS, the interaction revealed that non-exercisers who viewed the physique-salient video had the lowest post-test BAS scores of all the groups, while exercisers who viewed the nonsalient video had the highest post-test BAS scores (all $ps < .05$). The interaction for AE revealed results which were opposite in direction to those for BAS ($p < .05$).

Results are discussed in terms of self-efficacy theory (Bandura, 1986) and the process of social comparison. Findings suggest that women who exercise may be “buffered” from the potentially negative impact that viewing a physique-salient exercise video may otherwise have on their body image and SPE. Findings also have important implications for the exercise video industry in terms of the types of videos that are produced for women today.

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Review of Literature and Statement of Study Purpose

Body Image: Psychological Considerations

Body image defined.

While the body image construct has been a topic of psychological inquiry throughout much of the past century, conceptual and research efforts to understand body image have become particularly profound only during the past decade (Brown, Cash, & Mikula, 1990). Body image was first formulated as an important psychological construct in 'The Image and Appearance of the Human Body' where it was described as "the picture of our own body which we form in our mind" and "the way in which the body appears to ourselves" (Slade, 1994, p. 497). This definition was subsequently expanded to include "the picture we have in our minds of the size, shape, and form of our bodies" (Cash, 1994, p. 1168). More recently, body image has been conceptualized as multidimensional attitudes towards one's body, consisting of self-perceptions, cognitions, affect, and behaviours (Cash & Henry, 1995). Thus, body image is presently thought to encompass both the aesthetics of one's physical size and appearance, as well as perceptions of its competence and physical fitness (Botta, 1999).

Body image has become a topic of particular interest in the domain of health and exercise psychology. Indeed, there is a growing awareness the way women feel about the attractiveness of their bodies is an important determinant of their psychological health. Specifically, while women may report feelings of distress, shame, and guilt if they believe that their own bodies do not resemble the ideal female body, they tend to feel a

sense of accomplishment and happiness if they perceive that their bodies have begun to approximate the ideal (Markula, 1995). Contemporary beliefs about the ideal female body will be discussed in the following section.

The ideal female body: Unrealistic, unrepresentative, and unattainable.

In our image-conscious society, there is an expectation of individuals to pay attention to their bodily appearance (Maguire & Mansfield, 1998). However, while both men and women are judged by their appearance in certain circumstances, the pressure to attain the ideal body is significantly more intense and constant for women than it is for men (Freedman, 1984; Furnham, Titman, & Sleeman, 1994). Furthermore, compared to the male ideal, the ideal female body is considerably more unrealistic and unrepresentative of the average female's body, and is thus also perceived as being significantly less attainable than the ideal. Specific components of the ideal female body--past and present--will be described in detail in the sections that follow.

The ideal female body is viewed as a product of society (Myers & Biocca, 1992). While young girls learn early in adolescence that body shape is considered to be a key determinant of female physical attractiveness, women of all ages are encouraged to strive for the ideal body reflected in prevailing cultural norms (Bane & McAuley, 1998). Aware that it is society who sets the standards of the desirable female body, many women engage in an "all-out pursuit of this perfect body" (Brownell, 1991, p. 2). Indeed, cultivation of a more desirable body shape, and the desire for improved physical attractiveness in general, tend to be major concerns for women throughout their lives (Heinberg & Thompson, 1995).

In addition to society becoming more critical of the female body, women themselves also appear to have become increasingly critical of their bodies (Markula, 1995). Whether scrutinizing their body shape in mirrors or comparing their muscle tone to that of other women, women are constantly examining their bodies (Maguire & Mansfield, 1998). Women today tend to perceive their bodies as dynamic and changeable, and therefore adopt them as “projects to mould, improve, and perhaps perfect” (Markula, 1995, p. 446). Thus, many women attempt to shape their bodies through diet and exercise to conform to the standards perpetuated by society.

The body image literature suggests that women continue to seek the ideal body not because of desirable health benefits, but rather because of what having the ideal body tends to symbolize in our society. Specifically, individuals who have attractive bodies tend to be regarded by others as being physically fit, attractive, successful, smart, and in control of their lives, while overweight individuals are typically viewed as lazy, sloppy, unattractive, and unable to control themselves (Steiner-Adair, 1987). Discrimination against individuals with unattractive bodies or features has even been recognized as a cultural phenomenon and labelled “beautyism” (Cash & Kilcullen, 1985). Moreover, being fat is viewed as “the furthest from the ideal feminine body” (Markula, 1995, p. 442). Body weight problems also tend to be viewed as a personal fault or an indication of personal inadequacy or lack of discipline, while the achievement of a slimmer, fitter body is the sign of self-discipline (Walden, 1985). Thus, possession of the ideal body also symbolizes possession of societal standards for discipline, control, and self-restraint.

In a qualitative body image study (Markula, 1995), one female participant said of the ideal female body: "I think it's really unhealthy, but....the ideal body is the perfect woman... with no fat, a beautifully shaped body... You have to work your butt off for that type of body...and a lot of people can just never look that way because of the way they are. I think a lot of girls have fallen into a trap that they have to look a certain way....I'm falling into that trap" (p. 446). Indeed, as a consequence of their awareness of the unattainable standards of bodily attractiveness, it is understandable why the body image literature indicates that a significant number of women have difficulty developing and maintaining a positive body image (e.g., Cash & Hicks, 1990; Stormer & Thompson, 1996; Heinberg & Thompson, 1995). Moreover, it is understandable why an inability to obtain the ideal body has led to an increased prevalence of body image dissatisfaction among the female population (Davis & Cowles, 1991; Cash, 1994).

Female body image dissatisfaction: A "normative discontent."

The consequences of struggling to attain the ideal body may range from large make-up bills and breast surgery to body image dissatisfaction and serious eating disorders (Anderson & DiDomenico, 1992). However, it is important to note that while the pressure on women to achieve the ideal body has contributed to an increase in the incidence of eating disorders (Cash & Pruzinsky, 1990; Heinberg & Thompson, 1995), body image dissatisfaction is not limited to those clinically diagnosed with eating disorders (Myers & Biocca, 1992). Rather, women's dissatisfaction with their own bodies has become so common that it is now viewed as a cultural norm, recognized in the literature as a "normative discontent" (Rodin, Silberstein, & Striegel-Moore, 1985).

Indeed, most women agree that it is part and parcel of society today that the majority of females would like to lose weight or change some aspect of their bodies (Maguire & Mansfield, 1998).

Given the prevalence of body dissatisfaction among women, it is understandable why various body image measurement instruments have been developed (for a review, see Bane & McAuley, 1998). Studies employing these different measurement instruments have affirmed that high levels of body dissatisfaction tend to exist among female participants (e.g., Fallon, 1990; Cash & Brown, 1989; Salusso-Deonier, Markee, & Pedersen, 1993). Studies have also demonstrated that poor female body image is associated with a variety of negative affective states such as feelings of helplessness and frustration, shame, and depression (e.g., Noles, Cash, & Winstead, 1985; Rodin et al., 1985). In a qualitative study of female body image, one participant described the frustrated and often depressive feelings that may accompany women's relentless pursuit of the ideal body: "I spent a lot of time asking myself if I was exercising enough or eating too much, and then I started thinking, 'Oh my God, now I'm really trapped'" (Markula, 1990, p. 446).

It is also commonly observed that female participants tend to rate the ideal body size as smaller than their actual body shape, and many feel that a very narrow range of female body shapes are considered acceptable. For example, one study found that most undergraduate women perceived the ideal body to be thinner than their own bodies, and admitted that they would prefer to weigh considerably less than they currently did if it were possible (Furnham et al., 1994). Similarly, more than 70% of high school girls

reported that they wanted to change some aspect of their bodies, and most girls tended to rate their own bodies as less desirable than those of their peers (Freedman, 1984).

Women (18+ years) in another study reported significant distress about the size and shape of their stomach, hips, thighs, bottom, and breasts. Findings such as these support the suggestion that women tend to value smallness in body shape, have a particular dislike of fat, and tend to overestimate the size of their bodies (Freedman, 1984), and are thus constantly aiming to reduce the size of their bodies. Indeed, it appears that “women do not want to be associated with anything big.....big muscles, big bones, big bodies are generally feared” (Markula, 1995, p. 440).

A series of comprehensive and representative surveys conducted by Psychology Today magazine (Berscheid, Walster, & Bohrnstedt, 1973) between 1973 and 1986 further revealed the increasing incidence of body image dissatisfaction seen among American women. In measuring the degree of satisfaction with body parts, these door-to-door surveys of women (aged 18-70) revealed that 25% of those surveyed were dissatisfied with their overall appearance. Further, and consistent with more recent body image findings, women tended to be most dissatisfied with their abdomen, hips, thighs, and body weight, as compared to other body parts.

A subsequent Psychology Today survey (Cash, Winstead, & Janda, 1986) found that 38% of women (aged 18-70) were unhappy with their overall appearance or body. Finally, in the most recent survey (Cash & Henry, 1995), it was determined that 48% of women (aged 18-70) negatively evaluated their appearance, representing a significant increase in reported body dissatisfaction relative to the two earlier studies mentioned.

Clearly, these survey results demonstrate that body image discontent is widespread and is in fact increasing among women in our society. While cultural standards of female bodily attractiveness have varied throughout history, unrealistic body shape expectations continue to exist and continue to impact women's feelings about their bodies. Historical trends in female body image will be discussed next.

Historical Considerations in Ideal Female Body Image

The past: From voluptuous to "extreme slimness."

Throughout history, the importance of female bodily attractiveness has received both popular and scholarly attention. Indeed, for decades, popular magazines have sensationalized the most beautiful celebrities and highlighted the most attractive bodies (Cusumano & Thompson, 1997). Body image has also been identified as an important issue in the health psychology literature for many years, as evidenced by the extensive number of studies which have examined the topic (e.g., Cash & Brown, 1989; Fallon, 1990; Bane & McAuley, 1994). While conceptions of the ideal female body have undoubtedly shifted throughout history--from the more voluptuous shape typical of the 1950s, to the extreme thinness of the 1970s, to the fit, tight and trim physique of today--research indicates that, for the most part, women have always been encouraged to strive for a body framed by thinness (Ehrenreich & English, 1978; Garner et al., 1980; Fallon, 1990; Thompson & Tantleff, 1992). Moreover, it seems that thinness will continue to "speak of femininity" (Markula, 1995, p. 445).

One of the only periods in history when women were not constantly persuaded to achieve a thinner body was the 1950s, a time when the ideal being promoted was voluptuous and curvaceous (Heinberg & Thompson, 1995). Women like Marilyn Monroe, who possessed curved features and a more shapely body than most models today, set the standard of body attractiveness at this time. However, only a decade later, the voluptuous body typical of the Victorian era was replaced by an ideal of “extreme slimness,” and the era of the “long, lean woman” was just beginning (Walden, 1985, p. 332). Researchers have noted that from this point on in history, women’s “shoulders had become narrow...their throats more slender, their hips smaller and their arms and legs elongated” (Walden, 1985, p. 333).

As a heightened consciousness of body weight and thinness developed among women, women became significantly more concerned with avoiding a body shape that was discouraged by society. Moreover, women who felt they deviated too much from society’s thin ideal body became unhappy, and thus losing weight became a primarily female activity (Markula, 1995). Interestingly, even women who were already considerably thin became more conscious of fluctuations in their body weight, fearful that inattention might lead to the development of an undesirable body (Walden, 1985).

The standards of female bodily attractiveness shifted again in the mid-1980s when, in addition to thinness, body shape and tone were becoming more important components of the female body than simply body weight (Bordo, 1990; Hesse-Biber, 1996). The thin, fit, shapely, toned, and firm ideal female body has persisted into the year

2001, and it is arguable that women's struggles to achieve the modern ideal body appear to have become even more intense.

The modern ideal female body: "Firm but shapely, fit but sexy, strong but thin."

Physical exercise is now considered an essential component of a healthy lifestyle (Surgeon General's Report, 1996). Both men and women participate in exercise for a variety of reasons, including health promotion, disease prevention, and for the maintenance of appearance. However, for women, it seems the development of a thinner, fitter, tighter, and more shapely body has become one of the most common reasons (Hesse-Biber, 1996). Indeed, perhaps more than any other method, exercise has become the perceived means through which women feel they can manipulate their bodies to achieve a more attractive physique. While the "thinness equals attractiveness" stereotype continues to promote a body weight that is unrealistically low for most women from a biological standpoint, today's ideal body is no longer defined solely by thinness (Furham et al., 1994, p. 336). Instead, in addition to the ever present expectation of thinness, the female body is now expected to be fit, toned, tight, firm, and shapely, as evidenced by the following quote: "She is fit...she's got an incredible body, she is completely tight, she has no fat on her body" (Markula, 1995, p. 424). Nonetheless, it is argued that the construction of these additional body features is still intended to "cast the required healthy glow on the *slender* women" (Markula, 1995, p. 447).

It has been argued that the concept of women exercising--viewed as such a common practice today--really began when Jane Fonda published 'Jane Fonda's Workout Book' in 1981, as this was the first time women were urged to aim for a fit, firm, and

muscular body (Walden, 1985). Indeed, while in the past the idea of muscular women was considered abhorrent, toned muscles and a firm, tight shape have become central features of the modern ideal female body (Hesse-Biber, 1996). Not only are an increasing number of women participating in regular cardiovascular exercise like aerobics, jogging, and cycling to burn calories and fat, they are engaging in strength training for the purpose of body shaping, firming, and toning.

While it might be expected that the shift away from thinness alone would provide a more diverse range of accepted body shapes for women, research suggests otherwise. Rather, some argue that the pressure on women to resemble the modern fit ideal body has become even more intense, as evidenced by the number of women “aspiring to tighten, tone, and reduce the thighs, hips, bottom, stomach, and breasts” (Maguire & Mansfield, 1998, p. 127). Indeed, the modern ideal body--defined by health and accomplished through purposeful physical exercise--seems to mandate even greater and more specific requirements of women. Moreover, from a biological standpoint, the chances of achieving this small, tight body by exercising are out of reach for most women, not to mention the fact that thinness does not necessarily indicate fitness (Botta, 1999).

Women’s perceptions of the new ideal fit body are derived from cultural representations of female physical attractiveness. In particular, the media has become among the most influential promoters of such unrealistic body image standards (Harrison & Cantor, 1997). Thus, understandably, in response to the pressure to re-shape their bodies to resemble the modern ideal, women are increasingly turning to the media for information about new exercise programs, diets, and products that will lead to slimmer

and fitter bodies (Cusumano & Thompson, 1997). The influence of exercise and the media on body image will be discussed in the next few sections.

Body Image: The Influence of Exercise and the Media

The media and the modern fit female body: “So perfect, it is no longer real.”

In our culture today, the modern ideal female body (i.e., fit, thin, toned, firm) seems to be promoted most forcefully by the mass media (Cusumano & Thompson, 1997). Indeed, a steady flow of ideal body images persists in the media, as evidenced by the saturated images of beautiful, thin, and fit female bodies found in popular women’s magazines, television programs, and fitness videos (Harrison & Cantor, 1997). These seemingly perfect images are often accompanied by information on how women can ostensibly achieve similar bodies. Therefore, it is not surprising that much of the body image discontent seen among women has been attributed to the media’s preoccupation with female appearance, its emphasis on bodies, its expectations of what women should look like, and its perpetuation of the myth that any woman can achieve the ideal through diet and exercise (Maguire & Mansfield, 1998). It has even been intimated that the media is engaged in a campaign to make women feel badly about their bodies (Wilcox & Laird, 2000).

The media's constant depiction of the ideal female body has drawn criticism from health professionals, researchers, media critics, and feminists who argue that it is highly unrealistic and unrepresentative of the average female population (Myers & Biocca, 1992). Moreover, they argue that the ideal body is considerably rare in the population and an impossible standard for most women to achieve. While the body aspirations of both men and women are influenced by the media, the media's conception of the ideal female body is considerably further from the physiological norm than is the ideal male physique (Thompson & Tantleff, 1992), one of many indications that the media places far stricter attractiveness demands on women than on men.

While most women disagree with the media's portrayal of the ideal female body, arguing that it is "so perfect, it is no longer real," they tend to agree that only perfect bodies should be displayed in magazines and on television (Markula, p. 445). Women are also more likely to compare their appearance and physique to others to determine whether they measure up. Thus, critics also argue that the media have successfully convinced women that any deviation from the ideal is unacceptable. The media's preoccupation with the female body has significantly influenced the extent to which women participate in body-altering activities like physical exercise.

The impact of the media's portrayal of exercise on female body image.

The media's constant promotion of exercise as a means of improving body appearance has had a significant impact on perceptions of the female body. Indeed, perhaps more than any other method, exercise has become the perceived means through which women can manipulate their bodies for the purpose of striving to achieve the fit,

firm, toned ideal body. "The print and television media offer powerful messages regarding the (un)acceptability of certain physical attributes" (Myers & Biocca, 1992, p. 116). By encouraging women to re-shape, tone, and contour their bodies, media sources influence the effort women put into "working out" their bodily imperfections through exercise (Maguire & Mansfield, 1998, p. 120).

In recent times, it appears that the media--through magazines, television, and exercise videos--have enhanced their efforts to encourage women to exercise to change their body to look like the ideal, toned body (Lloyd, 1996). Further, it has been argued that it is primarily the media which is urging women to exercise to improve their "problem spots....and struggle to fight fat" (Markula, 1995, p. 444). Thus, while women may participate in exercise for a variety of reasons, including health promotion and disease prevention, it seems that the development of a thinner, fitter, and more shapely body--as promoted by the media--is perhaps the most common reason (Bordo, 1990). In a qualitative study examining the body image-exercise relationship, for example, all of the women interviewed admitted that they participate in exercise for the primary purpose of "contouring and shaping their bodies according to ideals of slimness and tone" (Maguire & Mansfield, 1998, p. 123). Thus, it is understandable why some researchers have argued that exercise is simply a tool for legitimizing the slender, toned ideal female body (Markula, 1995).

When physical fitness--and its resulting body features--became an important part of the ideal female body, media sources (i.e., television, magazines) began to devote considerable attention to conveying information about a variety of special exercise

devices (e.g., abdominal tighteners, lower belly flatteners, hip slimmers, and thigh-definers) which would help improve the appearance of their bodies (Markula, 1995). In the next few sections, research examining the effects on body image of three specific media sources will be discussed.

Magazines: Influence on body image.

The relationship between female body image concerns and body image messages found in magazine photographs, advertisements, and articles has been explored in a number of research studies over the past few decades. In one of the most recognized investigations in the body image literature, researchers examined the changing body shape of Playboy centerfolds and Miss America Pageant contestants between 1959-1978 (Garner, Garfinkel, Schwartz, & Thompson, 1980). Playboy magazine and pageant contestants were selected for this study because these women were considered to epitomize the ideal female body shape. The women's bust and hip measurements, as well as their body weights, were collected. An initial examination of the mean weight for the women indicated a weight significantly lower than that of the average female for the same time period. Similarly, analysis revealed a decrease in the bust and hip measurements of the women in the study over the 20 year span. Notably, these smaller measurements occurred as the height of the women increased.

The aforementioned study was replicated by another group of researchers (Wiseman, Gray, Mosimann, & Ahrens, 1992) who examined a more current 10 year time span (1979-1988). Their analysis revealed that bust and hip measurements of Playboy centerfolds continued to decrease throughout the 30-year period (i.e., 1959-

1988), and that the women's body weights were 13-19% lower than the weight assessed as normal based on actuarial tables.

Another study (Anderson & DiDomenico, 1992) examined the frequency of body ideal articles and advertisements in 10 popular women's magazines in the year 1987 (Cosmopolitan, Good Housekeeping, Woman's Day, McCalls, Glamour, Ladies Homes Journal, Redbook, Seventeen, Family Circle, Better Homes and Gardens) compared to 10 popular men's magazines from the same time period (Sports Illustrated, Playboy, Newsweek, National Geographic, Rolling Stone, Penthouse, Life, Field & Stream, Jet, and Gentlemen's Quarterly). The selection of magazines was based on popularity statistics from media and market surveys, and advertisements and articles were categorized as either diet- or body-related items. Analysis revealed that items in both categories appeared significantly more frequently in women's than in men's magazines. Not only does this finding highlight how much more often women are exposed to attractiveness messages than are men, it further supports the argument that the media's attractiveness standards for women are far stricter for women than they are for men.

The media's preoccupation with body image was further explored in a content analysis (Silverstein, Perdue, Petersen, & Kelly, 1986) of magazine article and advertisements that focused specifically on health, fitness, beauty, and weight/body-related topics in women's and men's magazines (e.g., Vogue, Gentleman's Quarterly). It was found that the total number of advertisements for diet foods was 63 for women's magazines and only 1 for men's magazines. The total number of articles focusing on body-related issues in the women's magazines was 96 compared to 10 in the men's

magazines. This finding has been replicated in several more recent magazine content analyses (e.g., Lautman, 1991; Nemeroff, Stein, Diehl, & Smilack, 1994). Taken together, these findings bolster the argument that advertisers explicitly target the body image of women in the marketing of the majority of food, diet, and exercise products (Freedman, 1986; Cusumano & Thompson, 1997).

In addition to examining the prevalence of ideal body *content* found in magazine photos, advertisements, and articles, research has also examined the way women feel about their bodies after actually *reading* women's magazines which are comprised of ideal female bodies. For example, in a study examining the influence of magazine photographs on female body image, 51 women were exposed to various magazine photographs of other women (Cash & Butters, 1983). Photos, which were comprised of faces and bodies, were pre-rated for attractiveness level, and participants were randomly assigned to one of three photo conditions: physically attractive, physically attractive professional models, and not physically attractive. After viewing the photos, participants rated their own physical attractiveness and indicated their level of body satisfaction. Participants who viewed the physically attractive photo stimuli rated their own level of physical attractiveness significantly lower than those who viewed the physically unattractive photos, but there were no significant differences between photo conditions on measures of body satisfaction. However, increased body dissatisfaction *was* reported in a similar study (Stice & Shaw, 1994) in which 157 college women were shown magazine photographs of either ultrathin models, average models, or no models. Specifically, the women exposed to the ultrathin models in this study reported

significantly greater body dissatisfaction, as well as greater depression, compared to the other two photo conditions.

Current female magazines contain a preponderance of diet and fitness articles which encourage females to strive to enhance and improve their bodies to more acceptable standards. Women are persuaded to believe that after they lose weight and get in shape, their lives will suddenly improve (Spitzack, 1990). For example, body image issues are found in a recurring feature in Shape magazine entitled 'Success Stories.' This particular feature profiles women who have successfully lost weight through diet and exercise, and urges readers to take the initiative to change from fat and unhealthy to thin and healthy, and advocates how great they will feel after such a body change. While the effects of magazine messages on women's feelings about their bodies is clear, research indicates that the impact of the television media may be even more profound, given the pervasiveness of television in our culture today.

Television: Influence on body image.

Research suggests that the television media may also have a significant influence on female body image. In a vivid demonstration of the way body image messages have permeated virtually the entire television advertising market, one study examined 4294 television advertisements (Downs & Harrison, 1985). It was found that 1 out of every 3.8 advertisements involved some form of an attractiveness-based message (e.g., ads for beer featuring attractive men and women). Based on this frequency and people's average viewing habits, it was estimated that adolescents and adults are exposed to nearly 5300

attractiveness messages per year (or 14 messages per day), an astounding number which further illustrates how pervasive these messages are today.

In an interesting study examining the influence of the television media on female body image (Irving, 1990), female participants were exposed to video segments of models in four conditions: thin, average weight, oversize, and no-exposure. Findings indicated that participants' concerns about body weight increased linearly across exposure condition, with the highest concern present in the thin condition and the lowest concern in the oversize condition. However, the post-test only design of this study limited the types of conclusions that could be made by the author. Specifically, because baseline assessments of body weight concerns were not made, it could not be concluded that participants' body weight concerns following the video exposure could be attributed solely to the material contained in the video segments.

Two very studies of the effects of TV viewing on women's body image will next be reviewed in detail, as they are particularly relevant to the present thesis.

The first study (Heinberg & Thompson, 1995) examined the acute effects of viewing television advertisements on the body image of 139 female university students. Participants (aged 18-24) were randomly assigned to one of two different video manipulation conditions. In each condition, groups of 2-8 participants viewed a 10 minute video comprised of 20 advertisements. In the appearance video condition, advertisements featured women who researchers felt epitomized societal ideals of female thinness and body attractiveness (e.g., advertisements for beer featuring very slender and attractive women). In contrast, the non-appearance video condition contained

advertisements which researchers felt did not emphasize body attractiveness or physical appearance (e.g., advertisements for pain relievers). While both videos contained advertisements which predominantly featured women, actresses in the non-appearance condition were considered average or above average weight compared to those in the appearance video.

Pre- and post-test measures of body image were assessed using the Bulimia Cognitive Distortions Scale-Physical Appearance Subscale (BCDS-PA;1986), and the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ; Heinberg, Thompson & Stormer, 1995). The BCDS-PA is a self-report scale which measures cognitive distortions related to physical appearance (e.g., “My value as a person is related to my weight”), while the SATAQ is a self-report measure that requires participants to rate statements (agree/disagree) that reflect awareness of societal attitudes of body attractiveness (e.g., “Being physically fit is a top priority in today’s society”), and acceptance of these societal beliefs (e.g., “Photos of thin women make me wish that I were thin”). A number of visual analogue scales (VAS) were also used to measure immediate state changes in participants’ body satisfaction subsequent to viewing the videos (i.e., VAS-Body Dissatisfaction, VAS-Overall Appearance Dissatisfaction). Participants were instructed to indicate how they felt on each dimension by placing a check on a 10 cm line, anchored by “none” to “very much.” A median split was used to create video groups with women high and low on the BCDS-PA and SATAQ.

The findings of this study indicated that television advertisements had a negative effect on female body satisfaction. Specifically, women with high baseline BCDS-PA

(i.e., pre-test) who viewed the appearance video reported significant increases in both body dissatisfaction and depression level at time 2. In contrast, women high in baseline BCDS-PA who viewed the non-appearance video reported significant reductions in both depression and body dissatisfaction level from baseline to time 2. Similarly, women low in baseline BCDS-PA who viewed either video significantly decreased in body dissatisfaction at time 2. In addition, compared to all other groups, women who had high baseline SATAQ reported the most negative emotional distress (i.e., level of depression and anger) following exposure to the appearance video. These results suggest that for certain women, particularly those high in dispositional body image concerns, the media's messages of body attractiveness may be especially salient. Indeed, it appears that women at most risk for a negative response to media messages are those with high preexisting levels of body discontent, and perhaps those who buy into the images presented on television.

In the other experimental study (Myers & Biocca, 1992), researchers examined women's body image fluctuations in response to television content that focused on the presentation of the ideal female body shape. The researchers intended to show that watching even 26 minutes of television can alter a woman's perception of the shape of her body. Specifically, they compared the effects of "body image" versus "neutral image" television programming and advertising on perceptions of body shape of 76 university women (aged 18-24). Body image advertisements and programming were defined as those which "focused on the ideal female body and used the female body as a primary form of the visual message" (p. 119). An example of a body image (BIA) advertisement

included in the study's stimulus video was a Coors beer ad featuring close-ups of females in bathing suits. An example of a body image program (BIP) was a music video featuring scantily clad female models. Neutral image advertising and programming were defined as those which did not focus explicitly on the female body. The bodies of women in the neutral segments better represented the average woman. An example of a neutral image advertisement (NIA) used in the stimulus video is an American Dairy Association advertisement, while a neutral image program (NIP) is "The Cosby Show."

Each 26 minute video contained a different combination of television programming and advertising segments, and the 76 participants were randomly assigned to one of five video conditions (BIA-BIP, BIA-NIP, NIA-BIP, NIA-NIP, or control: no video). To measure mood changes that occurred as a result of video viewing, participants completed the Multiple Affect Adjective Check List (MAACL; Buros, 1972) both prior to (pre-test) and after (post-test) viewing the video. The MAACL requires that participants check off all the adjectives that describe how they feel at that moment. The effects of the videos on dependent measures of mood were analyzed using ANCOVA. Specifically, the dependent variables were measures of anxiety, depression, and hostility--derived from the MAACL--and pre-tests of each variable were entered as covariates to control for between-group differences on these variables at baseline. After completing the MAACL pre-test, participants completed an additional questionnaire which assessed demographics, television viewing habits, and dieting behaviour. Each group of participants then viewed the videos on a regular colour television, with the exception of participants in the control group who only completed the MAACL and questionnaire.

Following exposure to the video, the Body Image Detection Device (BIDD; Ruff & Barrios, 1986) was used to assess participants' body image. The BIDD is a perceptual body image instrument that allows participants to visually estimate their body shape and size. Unfortunately, since the BIDD was initially developed with a sample of young women with bulimia, this measure may not have been the most appropriate body image measure for use with non-bulimic groups, including the women in this study. The effects of the videos on body image perception were analyzed using ANOVA. The two independent variables were program type (body image or neutral image) and advertising type (body image or neutral image).

Results of this study indicated that exposure to all of the video conditions negatively affected women's body image perceptions. Thus, women who viewed videos comprised of both body image- and neutral image programming and advertising segments overestimated their body sizes, based on BIDD scores. However, women in the two groups who viewed videos with body image advertising (i.e., BIA-BIP, BIA-NIP) overestimated the size of their waist and hips to a significantly greater extent than did women in the other video conditions. This result led researchers to suggest that female body image is "elastic," since it appears that it can be changed by watching less than 30 minutes of body image television messages. Indeed, television programs and advertisements which fixated on the representation of the ideal female body immediately induced the female participants to think negatively about their own bodies, which led to the measurable fluctuations and distortions in their body image. In terms of the MAACL,

there were no significant differences between video conditions on measures of anxiety or hostility.

Exercise videos: Influence on body image.

While the impact of television media emphasizing the ideal female body has been examined quite extensively in body image studies, research has not investigated the effects of exercise videos on women's perceptions of their bodies. Since the 1980s, exercise videos have been a popular method of attaining physical fitness benefits for many women (Collage Video's Guide to Exercise Videos, 2001). Exercise videos are perceived as more convenient by women who have busy schedules, and considerably less expensive than fitness club memberships. Indeed, promoters of exercise videos argue that with videos, "women will never miss a workout because of bad weather" (Collage Video, 2001). Also, women who are hesitant to exercise in a fitness club setting--where the evaluative potential is greater--may also prefer to work out to an exercise video in the privacy of their own homes (Spink, 1992).

Exercise videos usually contain a cardiovascular segment--for fat and calorie burning--as well as a strength training segment in which muscle tone, shape, and firmness are promoted as vital features of the ideal female body. For example, Jane Fonda's "Lower Body Solution" was promoted as being designed especially for the "#1 problem areas for women," abs, buns, and thighs (Markula, 1995). More recent exercise videos, in addition to advertising themselves as targeting women's specific problem areas, create enticing video titles such as Karen Voight's "Body Reform: Abs and Back," Kathy Smith's "Secrets of a Great Body," and Cory Everson's "Get Hard Series" (Collage

Video, 2001). Exercise videos are also promoted with slogans such as, “swimsuits are coming...will you be ready?” and “grab a couple of videos....you’ll look great!” (Collage Video, 2001, p. 2). Interestingly, perhaps to capitalize on the sexual element of a fit female body, exercise videos also tend to entice women to participate by using advertising pitches such as “Sculpted and Sexy.”

As well as the aerobic and strength training workouts so common in these recognized exercise videos, hip-hop dancing, tae-boxing, and kickboxing have also become popular workouts among women who follow alongside exercise videos. While certainly different in many ways from the more recognized videos described above, they nonetheless emphasize that a lean, strong, sculpted body will result if women “make the commitment to shape up” (Collage Video, 2001, p. 2).

Most of the instructors featured in exercise videos are famous women (i.e., actress, model, dancer, fitness leader) whose appearances are highly attractive and whose bodies are highly fit. In fact, it could be argued that the bodies of the women leading the video exercises closely resemble--if not completely parallel--the media’s conception of the modern ideal female body (i.e., slim, trim, tight, firm, toned). Ironically, it appears that the majority of women who participate in aerobics prefer normal looking female instructors to more beautiful and fit ones (Bordo, 1990). In one study (Markula, 1995), participants indicated that the females who exercise on TV don’t seem realistic: “It’s like they go out and get models to do it because they are all tall and very skinny, in shape.... their hair is perfectly done....you don’t see them sweating...it’s the same image they project, very thin, lean...” (p. 445). Another woman interviewed suggested that a little

“chunkiness” would make the instructor more human and easier to relate to. Thus, it seems many women would prefer if exercise instructors--in either fitness clubs or exercise videos-- more closely resembled the “average” women who participate in their programs.

The exercise attire worn by female exercisers in exercise videos are often quite revealing. As a result, women who work out alongside an exercise video may feel uncomfortable, and women who may be contemplating beginning an exercise-video program may feel intimidated. Commenting on the exercise attire worn by fitness instructors, a novice exerciser in one study said, “I can’t see myself in any of those leotards. I haven’t got the body for it” (Maguire & Mansfield, 1998, p. 124).

Virtually all of the existing research on exercise and body image is qualitative and anecdotal. As such, the measurable impact of exercise videos on women’s body image and exercise-related thoughts, behaviours, and feelings is not known. Exercise videos may effect a variety of women’s exercise-related cognitions that are relevant to their actual exercise behaviour. The next section addresses some of these cognitions.

Exercise Videos Can Impact Women’s Exercise-Related Cognitions

Self-efficacy for exercise.

Research suggests that women who participate in exercise tend to have a more positive body image, and hence less body dissatisfaction, than women who do not exercise (Tucker & Maxwell, 1991). One study (Snyder & Kivlin, 1975) examined the effects that exercise participation had on the body image of female exercisers and non-

exercisers. Results indicated that exercise participation was regarded by exercisers as psychologically satisfying and rewarding. Moreover, while the female exercisers in the study reported more positive feelings about their bodies than did the non-exercisers, the non-exercisers reported significantly higher levels of body dissatisfaction. More recent studies have concurred that females who exercise regularly typically possess a more positive perception of their own bodies than those who don't exercise (e.g., Tucker & Maxwell, 1991; Tucker & Maxwell, 1993). One of the most popular explanations for these types of differences argues that women who exercise have greater self-efficacy than women who do not exercise.

Self-efficacy is defined as beliefs in one's skills and abilities to organize and execute necessary courses of action that are required to perform a given behaviour (Bandura, 1986; 1997). Self-efficacy theory (Bandura, 1986) proposes that the activities individuals choose to approach, the effort expended on these activities, and the degree of persistence demonstrated in the face of failure or adversity are each influenced by SE (McAuley & Mihalko, 1998). Self-efficacy beliefs have consistently been shown to be important determinants of social, clinical, and health-related behaviours, and have been examined as both determinants and consequences of exercise behaviour in a variety of populations. For example, as a determinant of exercise participation, self-efficacy has been shown to predict exercise adherence in a variety of fitness contexts (Katula, McAuley, Mihalko, & Bane, 1998).

In addition to the important role self-efficacy plays as a predictor of exercise behaviour, self-efficacy theory also proposes that an individual's self-efficacy for

exercise may influence subjective psychological states both during and after exercise participation. Exercise efficacy (EE), or self-efficacy for exercise, refers to beliefs regarding one's ability to successfully engage in incremental bouts of physical exercise (McAuley & Mihalko, 1998). It has been suggested that individuals' level of EE may determine their exercise behaviour by influencing their exercise-related cognitions (Bandura, 1997). Thus, considerable study has also been directed toward understanding the effects that exercise has on EE, and the difference between individuals with higher and lower levels of EE. Specifically, individuals with higher EE are more likely to view their exercise participation in a positive manner, and to feel more competent and proud of their fitness accomplishments than those with low EE.

One study (McAuley, Wraith, & Duncan, 1991), for example, found that more efficacious individuals enjoyed exercise more, put forth greater effort, and felt more competent in exercise settings than their less efficacious peers. In another study (Bozoian, Rejeski, & McAuley, 1994), the self-efficacy beliefs of college-aged women prior to exercise were found to be related to feeling states both during and following an acute bout of exercise. Specifically, women with higher baseline measures of EE manifested higher reports of energy during exercise, and higher levels of revitalization and positive engagement following exercise, than their less efficacious counterparts. Finally, in a similar study (McAuley & Courneya, 1992), individuals with higher baseline EE experienced more positive feeling states during graded exercise testing.

In explaining the finding that some individuals have higher EE than others, it has been suggested that successful completion of exercise bouts--termed "mastery

experiences"--provides individuals with the most potent source of efficacy information. Specifically, as individuals engage in exercise behaviour, they gain more experience in exercise contexts and begin to feel more comfortable in exercise settings, and, in turn, their EE increases. For example, as women continue to exercise alongside an exercise video, their EE for this activity will likely increase.

Another influential source of efficacy is termed "vicarious experiences," whereby individuals may experience a certain behaviour by viewing another individual performing the behaviour. To illustrate, women who follow an exercise video for the first time might vicariously experience this specific activity by watching the female instructors perform the exercises. Depending on the appearance or fitness of the female exercisers in the videos, the vicarious experience may either negatively or positively influence women's EE. Specifically, if exercisers in the videos have highly fit and attractive bodies, women may feel intimidated and inferior (i.e., a negative vicarious experience), and, as a result, they may report lower EE. In contrast, if the bodies of women in the videos appear average-looking, women may feel motivated or inspired (i.e., a positive vicarious experience) and report higher EE.

It has also been shown that the exercise environment may influence individuals' EE. One study (Katula et al., 1998) examined the impact of three different exercise environments on individuals' EE. Male and female participants participated in an acute bout of exercise in either a standard laboratory, a laboratory in front of a full-length mirror, or in an exercise environment of their own choosing. Results indicated that the presence of a full-length mirror during exercise had a significantly negative effect on

female participants' EE, when compared to males' EE. Researchers suggested that the evaluation potential (real or perceived) in the mirror condition was quite high. As a result, females' physical SE--as measured by perceptions of their physical ability and physical self-presentation confidence--was lower than that of participants in the other two exercise environments. Physical activity history (i.e., activity status) was also found to be an important determinant of participants' EE.

Given that most exercise environments (i.e., fitness clubs, aerobic studios) utilize mirrors to allow participants to monitor technique and performance, it is possible that mirrors may inhibit certain women from participating in exercise by virtue of making them more conscious of the perceived shortcomings of their bodies. It is conceivable that exercise videos which emphasize the ideal, fit female body also make women acutely aware that their bodies don't "measure up" to the ideal. Indeed, both mirrors and exercise videos tend to augment self-presentational qualities, and thus both may act to demotivate physical exercise participation by certain individuals (Leary, 1992).

Self-presentational efficacy.

Self-presentational efficacy (SPE) is the subjective probability of conveying desired impressions to others (Leary, 1983). Self-presentational concerns have been shown to influence individuals' exercise behaviour in a variety of ways, including their motivation for exercise and their choice of exercise environment and activity (Leary, 1992). Further, many of the reasons commonly given for participating in exercise clearly reflect self-presentational motives, particularly the desire to improve body attractiveness and to construct the appearance of physical fitness (Eklund & Crawford, 1994).

Since exercise participation often occurs in social contexts, it is understandable why SPE is suggested to be an important determinant of exercise behaviour. Specifically, in an exercise context, individuals who believe they are able to successfully present the image of being regular exercisers and can convey the impression of being fit and physically co-ordinated (high SPE) may worry less that others will evaluate their bodies than women who don't believe they can self-present in this manner. Individuals with higher SPE may consequently exercise more frequently (Gammage, Martin, & Hall, 2001). In contrast, individuals who doubt that others will perceive them as fit, coordinated, regular exercisers (low SPE) may be so concerned about being evaluated negatively that they may exercise less frequently, or avoid exercise entirely.

Given the SPE findings just mentioned, it is understandable why individuals who exercise regularly have been found to have higher SPE than those who do not exercise. One study (Gammage et al., 2001), for example, found that high and low frequency female exercisers can be distinguished on the bases of SPE. Specifically, high frequency exercisers (≥ 3 x/week) had stronger beliefs in their ability to appear physically fit, coordinated, and in shape, and placed greater importance on portraying these images than did low frequency exercisers (1-2x/week). The findings of this study also seem to suggest that having low SPE may lead certain women, particularly novice or non-exercisers, to compare their bodies to others and to perhaps feel intimidated by women who look better or fitter than them. As a result, women may report very negative feelings about their bodies.

However, similar to the way acute and long-term exercise training has been shown to increase EE (McAuley et al., 1991), regular exercise participation may serve to enhance individuals' SPE. Indeed, while positive mastery experiences in an exercise setting are a powerful source of EE, perhaps the experience of positive self-presentations during exercise will lead to corresponding improvements in SPE. For example, women who follow alongside an exercise video which features female instructors whose bodies are average-looking (i.e., they do not resemble the firm, toned, thin ideal) may feel better about the appearance of fitness of their own bodies. These women may consequently report higher SPE than women who view an exercise video which features instructors whose bodies do resemble the ideal. Indeed, since exposure to media images of female body attractiveness has been related to poor female body image (Myers & Biocca, 1992), it is conceivable that exposing women to exercise videos which feature female instructors with perfect bodies could negatively influence their SPE. Low SPE may in turn impact women's intentions to exercise and their attitudes toward exercise.

Exercise attitudes and intentions.

Individuals' exercise behaviour is determined in part by their attitudes toward exercising and their intentions to exercise (Courneya & McAuley, 1993). Research also indicates that individuals generally intend to perform a behaviour when they have a positive attitude toward the behaviour (Ajzen, 1991). In an exercise context, individuals may have positive or negative attitudes toward exercising, and corresponding intentions

to exercise. For some women, exercising may be a source of enjoyment, for not only may it be a personally satisfying way of achieving a better body, it may also provide them with more energy and an opportunity to meet and make friends. On the other hand, some women may find exercise unenjoyable, and even burdensome: "It's {exercise} very important to me, although I hate doing it. It's just something I know I've got to do to keep fit and stay slim" (Maguire & Mansfield, 1998, p. 131). Indeed, for certain women, any pleasure that may accompany exercise participation is undermined by an awareness that the primary purpose of their exercise participation should be to achieve the ideal fit, firm, tight female body.

While a large amount of research has examined the factors contributing to individuals' exercise-related intentions and attitudes, no studies have assessed the impact of viewing exercise videos on women's positive and negative exercise attitudes and intentions. It is conceivable that viewing a video which emphasizes the ideal fit female body may lead women who exercise to become less enthusiastic about participating in exercise and less likely to intend to exercise in the near or distant future. Furthermore, it is feasible that women who do not exercise--but may be contemplating beginning an exercise program--who view a physique exercise video may become discouraged, intimidated, and less inclined to begin exercising. Of course, it is also conceivable that viewing the fit and attractive bodies featured in a video may motivate women to improve their bodies, thereby increasing their intentions. The present thesis addressed some of these unexamined issues.

Summary

Female body image has been a topic of considerable interest for several decades. In recent years, the concept of female body image has garnered increasing interest among researchers in the fields of health and exercise psychology. Of particular interest has been gaining a better understanding of the pressure faced by women to achieve the fit and firm ideal body currently portrayed in the media. The media's emphasis on using exercise to improve physical appearance, and the widespread prevalence of body dissatisfaction which often results, have also become well researched topics.

Given the many established psychological and physical benefits associated with regular exercise participation (Surgeon General's Report, 1996), it may seem reasonable to assume that increased exercise involvement among women would help to encourage a broader range of female body shapes to be promoted by the media, thereby leading to greater cultural acceptance of physiques which deviate from the ideal. Unfortunately, this has not been the case. Instead, women seem to be faced with even more pressure to conform to the ideal body and to more specific bodily demands (i.e., thin, fit, toned, shapely). As the likelihood of achieving this firm, tight body by exercising is small for most women, it is understandable why body image dissatisfaction among women has continued to increase. Moreover, it is understandable why the number of women who exercise--and use exercise videos--as a means of improving their bodies has also increased.

However, despite the noted popularity of exercise videos among women today, research has yet to examine the effects of exercise videos on women's body image and

exercise-related cognitions. Indeed, in contrast to the extensive amount of research which has examined the impact of general television and magazines messages on female body image, the particular influence of exercise videos on women's feelings about their bodies has not been assessed.

As a result of the lack of research on exercise videos, a number of questions remain unanswered. Specifically, given that most exercise videos feature females whose bodies are highly fit, attractive, firm, and shapely, it is conceivable that viewing an exercise video may make women to feel badly about their own bodies. Furthermore, it is possible that an exercise video which features ultra-fit and ultra-attractive women would more negatively effect women's body image and exercise-related cognitions than an exercise video which features women with relatively normal- or average-looking bodies. It is also unknown whether differences would be found between exercisers and non-exercisers as a function of these different exercise videos. While research has shown that women who exercise possess a more positive body image than women who do not exercise (Tucker & Maxwell, 1991), it is unclear whether women exercisers would be less negatively effected than nonexercisers after viewing the physique-salient video.

Statement of Study Purpose and Hypotheses

The purpose of the present study was to evaluate the differential impact of viewing a physique-salient versus a physique-nonsalient exercise video on the body image and exercise-related cognitions (i.e., EE, SPE, intentions and attitudes toward exercise) of female exercisers and non-exercisers. Participants in the physique-salient exercise video

that participants in the physique-salient video condition would have lower post-test body image and SPE scores than those who viewed the physique-nonsalient video. A main effect for participants' exercise status was also hypothesized such that non-exercisers would have lower post-test body image and SPE scores than exercisers. An interaction between video condition and exercise status for both body image and SPE was also hypothesized: nonexercisers who viewed the physique-salient video would have the lowest post-test body image and SPE scores of all the groups. This interaction was hypothesized because it was expected that exercisers would benefit from their mastery experiences as a source of efficacy information when viewing an exercise video, while nonexercisers would have only the vicarious experience of watching others exercise as a source of efficacy beliefs. For exploratory purposes, the effects of exposure to the exercise videos on three additional exercise cognitions were examined. Specifically, it was hypothesized that the post-test exercise efficacy, exercise intentions, and attitudes toward exercise would be lowest in nonexercising participants who viewed the physique-salient video.

Introduction

Both men and women participate in exercise for a variety of reasons, including for health promotion, disease prevention, and the maintenance of appearance. However, for women, the development of a thinner, fitter, tighter, and more shapely body seems to have become one of the most common motives for exercising (Bordo, 1990). Indeed, perhaps more than any other method, exercise has become the preferred means through which women feel they can manipulate their bodies to closer resemble the “ideal” female physique. Not only are an increasing number of women participating in regular cardiovascular exercise like aerobics, jogging, and cycling to burn calories and fat, more women than ever are engaging in strength training for the purpose of body shaping and muscle toning (Hesse-Biber, 1996). While in the past, the idea of strength training for women was considered abhorrent, women with toned muscles are now idolized and desired (Markula, 1995). Research indicates that the body which women are expected to achieve is highly unrealistic, mainly for biological reasons (Brownell, 1991). Thus, the likelihood of attaining this body through exercise is out of reach for most women.

Perhaps because of the common desire to attain a virtually unattainable physique, the prevalence of body dissatisfaction among women continues to increase. Women’s dissatisfaction with their own bodies has actually become so common that it is now viewed as a cultural norm, recognized in the literature as a “normative discontent”

(Rodin, et al., 1985). While societal pressure to meet specific body standards is no doubt a significant factor in the prevalence of female body dissatisfaction, women themselves seem to have become increasingly critical of their own bodies (Markula, 1995). Whether scrutinizing their bodies in the mirror or comparing themselves to other women, women are constantly examining and criticizing their bodies (Maguire & Mansfield, 1998). The combination of societal and self-pressure leads many women to exercise in an attempt to approve the appearance of their bodies.

For many women, their exercise routine consists of working out with an exercise videotape. Exercise videos have been a burgeoning market since the 1980s. For example, in 1993, consumers spent \$285 million on exercise videos (Hesse-Biber, 1996). Today, exercise videos continue to be perceived by women as a convenient, inexpensive method of attaining physical fitness benefits. Indeed, advertisements claim that women “will never miss a workout because of bad weather”(Collage Video’s Guide to Exercise Videos, 2001). Modern exercise videos typically contain an aerobic exercise segment--for fat and calorie burning--as well as a strength training segment in which toning and shaping of specific body areas (i.e., abdominals, buttocks, thighs) are emphasized. Hip-hop dancing, tae-boxing, and kickboxing, which combine aerobic and anaerobic exercises, have also become popular among women who purchase exercise videos (Collage Video, 2001).

The instructors featured in most exercise videos have bodies which reflect the slender, fit, and toned ideal currently endorsed and promoted in North American popular culture. This is somewhat surprising, given that most women who participate in live

aerobics classes prefer an instructor whose appearance is “average” rather than the unrealistically tall and skinny women featured in exercise videos (Markula, 1995). Moreover, the use of very attractive- and fit-looking women in exercise videos may have negative effects on women’s feelings about their own bodies. Studies have highlighted the negative impact that certain body-salient images in magazines and television programs can have on women’s body image. In one study, for example (Stice, Shaw, & Stein, 1994), women who were shown magazine photographs of ultrathin models reported greater body dissatisfaction than women shown photographs of average weight models or no models. Another study (Myers & Biocca, 1992) found that female participants who viewed a video which contained “body image commercials” (e.g., beer ads featuring slender women) overestimated the size of their waist and hips to a significantly greater extent than did women who viewed a video containing “neutral image commercials” (e.g., cleaning items). Social comparison processes may help to explain why women so often report negative feelings about their own bodies and appearance after watching these types of media images.

Specifically, research indicates that most women are at least somewhat inclined to compare aspects of their appearance to those of others, and that most individuals make comparisons between themselves and others without even knowing they are doing it (Alcock, Carment, & Sadava, 1998). Since the female exercisers in most exercise videos are typically ultra-fit and ultra-attractive, and their exercise attire tends to be quite revealing, viewing these “physique-salient” types of exercise videos may lead women to make comparisons between themselves and the women in the videos. As a result of these

comparisons, perhaps the same types of negative body-related thoughts and feelings that emerge when women view photos or television content highlighting thin and beautiful models would be observed after viewing a “physique-salient” type of exercise video. In contrast, perhaps viewing an exercise video which features women whose bodies more closely resemble the “average” woman (i.e., physique-nonsalient video) would not make women feel as badly about their own bodies.

In addition to the potential negative effects that physique-salient exercise videos may have on women's body image, these types of videos may also decrease participants' self-presentational efficacy (SPE), the subjective probability of conveying desired impressions to others (Leary, 1983). A previous study (Angove, Sinden, & Martin, 2001) showed that the SPE of older women who viewed a video of older female exercisers wearing physique-salient attire (i.e., tank tops and shorts) was lower than the SPE of participants exposed to a video of older exercisers wearing nonsalient attire (i.e., t-shirts and pants). Thus, perhaps after viewing a video featuring women whose bodies reflect the highly fit- and attractive-looking cultural ideal, participants' confidence in their ability to self-present as fit and competent exercisers would decrease because they would perceive themselves as less fit, competent, and attractive. In contrast, watching an exercise video which features women whose bodies appear average-looking may not have this negative impact on SPE because participants would perceive themselves to have similar-looking bodies and fitness abilities. These predictions are consistent with self-efficacy theory, which states that viewing an individual whose level of competence is similar to oneself

will more positively affect individuals' self-efficacy than viewing someone whose level of competence is far superior to their own (Bandura, 1986).

Since research has shown that women who exercise tend to have a more positive body image than women who do not exercise (Tucker & Maxwell, 1991), and that exercisers typically have higher SPE than nonexercisers (Gammage et al., 2001), it is possible that being an exerciser or nonexerciser would moderate the effects of watching two different types of exercise videos on women's body image and SPE. Specifically, while exercisers might not be negatively affected by a physique-salient exercise video, non-exercising women--who may already have a poorer body image and lower SPE than their exercising counterparts--may feel even worse about their bodies and their exercise competence after viewing this type of video. This possibility may be explained by self-efficacy theory (Bandura, 1986), which would attribute the greater exercise efficacy typically reported among exercisers primarily to mastery exercise experiences. Thus, the previous exercise experiences of women who exercise may "buffer" them from the negative effects that physique-salient types of exercise videos may otherwise have on their body image and SPE.

The present study evaluated the differential impact of viewing a physique-salient versus a physique-nonsalient exercise video on the body image and SPE of exercising and non-exercising females. A main effect for video condition was hypothesized such that participants in the physique-salient video condition would have lower post-test body image and SPE scores than those who viewed the physique-nonsalient video. A main effect for participants' exercise status was also hypothesized such that non-exercisers

would have lower post-test body image and SPE scores than exercisers. An interaction between video condition and exercise status for both body image and SPE was also hypothesized: nonexercisers who viewed the physique-salient video would have the lowest post-test body image and SPE scores of all the groups. This interaction was hypothesized because it was expected that exercisers would benefit from their mastery experiences as a source of efficacy information when viewing an exercise video, while nonexercisers would have only the vicarious experience of watching others exercise as a source of efficacy beliefs. For exploratory purposes, the effects of exposure to the exercise videos on three additional exercise cognitions were examined. Specifically, it was hypothesized that the post-test exercise efficacy, exercise intentions, and attitudes toward exercise would be lowest in nonexercising participants who viewed the physique-salient video.

Method

Participants

One hundred and one ($N = 101$) female university students between the ages of 18-24 ($M = 20.11$; $SD = 1.14$) from a variety of undergraduate courses volunteered to participate in this study. Of the total sample, 51 women ($n = 51$) were classified as exercisers (exercise for 30 minutes ≥ 3 x/week) and 49 ($n = 49$) were classified as nonexercisers (exercise for 30 minutes 0-2x/week). Women in this age group were targeted for this study because research suggests women in this age range experience considerable body dissatisfaction and declining levels of physical activity (Furnham et al., 1994). Thus, there is a need to understand the effects of stimuli, such as exercise videos, that might influence the body image and exercise-related cognitions of this population. Most participants were recruited through announcements made in various undergraduate classes indicating that both female exercisers and non-exercisers were needed to participate in a study examining “health, fitness and lifestyle behaviours among university-aged women.” A sign-up sheet was passed around the class, on which interested participants were asked to write their name and email address for contact purposes. Interested participants were then sent an email message by the researcher in which details were provided regarding dates, time slots, and location of the study. Participants responded with the dates and times which were most convenient for them. Some participants were also recruited by means of a sign posted across campus. Participants were informed that participation in the study would entail completing a questionnaire at Time 1 and Time 2, and viewing a 4 minute exercise video at Time 2. Participants were told they would receive a ‘goody bag’ comprised of various healthy food products in exchange for their participation. Participant return rate at Time 2 was

98%.

Study Design

The present study employed a 2 x 2 quasi-experimental, randomized factorial design: 2 exercise condition (exercisers, nonexercisers) x 2 video condition (physique-salient, physique-nonsalient). The five dependent measures were body image, exercise efficacy, self-presentational efficacy, exercise intentions, and attitudes toward exercise.

Measures

Participants were assessed twice during this study, at Time 1 and Time 2. Both times, participants completed paper-and-pencil questionnaires which assessed demographic characteristics, current exercise behaviour, and the five aforementioned dependent measures of interest. All questionnaires are described below. Time 1 and Time 2 questionnaires are presented in Appendix B and C, respectively.

Demographic questionnaire. The demographic questionnaire assessed participants' age, weight, height, university major, and the date of their last menstrual period. These characteristics were collected for descriptive purposes, and also so that they could be used as potential covariates in study analyses.

Current exercise behaviour. The frequency of participants' current exercise behaviour was assessed in order to classify them as exercisers or non-exercisers. Participants were provided with the following definition of moderate physical exercise: "Any planned physical activity that raises your heart and breathing rate which you participate in for at least 30 minutes." Using a 0-7 scale, participants were then asked, "In the past 6 months, how many times each week have you engaged in 30 minutes of moderate physical exercise?" The self-reported frequency reported on their Time 1 questionnaire was used to classify participants as either exercisers (≥ 3 x/week) or non-exercisers (0-2x/week). The decision to employ this classification procedure was based in

part on a study by Rodgers and Gauvin (1998), in which participants were classified as high (≥ 3 x/week) and low (1-2x/week) frequency exercisers. These researchers found that when participants were classified in this manner, they differed on a variety of exercise-related cognitions, including self-efficacy.

Body image. The Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 1994) was used to assess participants' body image. The MBSRQ is the most comprehensive and psychometrically studied cognitive assessment of body image (Bane & McAuley, 1998). In its full version, the MBSRQ is a 69-item self-report inventory comprised of 10 subscales for the assessment of cognitive and self-attitudinal aspects of the body image construct. Each subscale is described below. For all items on the MBSRQ, participants were asked to "read each statement carefully, and decide how much it pertains to you right now" using a 5-point scale (1 = definitely disagree; 5 = definitely agree). Scoring of each subscale was conducted according to the MBSRQ Users' Manual (Cash, 1994). A description of each subscale utilized in this study is provided below:

1. Appearance Evaluation (AE): assesses feelings of physical attractiveness or unattractiveness; satisfaction or dissatisfaction with looks (e.g., high scorers feel mostly positive and satisfied with their appearance, while low scorers have a general unhappiness with their physical appearance).
2. Appearance Orientation (AO): assesses the extent of investment in appearance (e.g., high scorers place importance on how they look, pay attention to their appearance, and engage in extensive appearance-management behaviours, while low scorers are apathetic about their physical appearance and do not expend much time or energy to "look good").

3. Fitness Evaluation (FE): assesses feelings of being physically fit or unfit (e.g., high scorers regard themselves as physically fit, in shape, or athletically active and competent, while low scorers feel physically unfit, out of shape, or athletically unskilled).
4. Fitness Orientation (FO): assesses the extent of investment in being physically fit or athletically competent (e.g., high scorers value fitness and are actively involved in activities to enhance or maintain their fitness; low scorers do not value physical fitness and do not regularly incorporate exercise activities into their lifestyle)
5. Body Area Satisfaction (BAS): similar to the AE subscale, except that it assesses satisfaction or dissatisfaction with discrete aspects of one's body (e.g., high scorers are generally content with most areas of their body, while low scorers are unhappy with the size or appearance of several areas of their body).
6. Overweight Preoccupation (OVW): assesses body weight concerns, specifically fat anxiety, weight vigilance, dieting behaviours, and eating restraint.
7. Self-Classified Weight (SWT): assesses individuals' self-perceptions and labelling of their own body weight, from very underweight to very overweight.
8. Health Evaluation (HE): assesses feelings of physical health and/or freedom from illness (e.g., high scorers feel their bodies are in good health, while low scorers feel unhealthy or experience symptoms of illness).
9. Health Orientation (HO): assesses the extent of investment in a physically healthy lifestyle (e.g., high scorers are "health conscious" and try to lead a healthy lifestyle, while low scorers are apathetic about their health).
10. Illness Orientation (IO): assesses the extent of reactivity to being or becoming ill (e.g., high scorers are alert to personal symptoms of physical illness and are apt to seek medical attention, while low scorers are not especially alert to physical symptoms of illness).

Exercise efficacy. Exercise efficacy (i.e., self-efficacy for exercise; EE) was measured using two separate efficacy scales. The first scale evaluated participants' confidence in their ability to perform various cardiovascular exercises, and the second evaluated their confidence in performing various strength training activities. McAuley and Mihalko (1998) indicate that it is very important that the type of efficacy being measured corresponds with the exercise behaviour being measured. Thus, effort was made to ensure that the exercise activity items on the EE scales corresponded appropriately with the activities which were demonstrated in the videos.

The format of the cardiovascular efficacy scale is similar to the format used in a previous investigation of efficacy in an exercise setting (McAuley, Courneya, & Lettunich, 1991). The scale consisted of 9 items, with each item representing an increment of 5 minutes in activity duration starting from 5 and going to 45 minutes. At both Time 1 and Time 2, for each item on the scale, participants were instructed to indicate how confident they were that they could successfully carry out each of the cardiovascular activities listed, for each specified duration, using the provided scale. At Time 2, participants were also instructed to "think about the VIDEO you just watched" as they completed the 9 items. The scale was a 0-100% scale (0% = no confidence at all; 50% = somewhat confident; 100% = completely confident), and the listed activities were "aerobics/jogging/cycling." A total cardiovascular efficacy score was calculated by summing the confidence ratings and dividing by the total number of items in the scale, resulting in a maximum possible score of 100.

The scale used to measure strength training efficacy (EES) was developed specifically for use in this study. The scale consisted of 6 items, and for each item, participants were instructed to indicate how confident they were that they could successfully carry out each of the strength training exercises listed, using the same 0-

100% scale that they used in completing the cardiovascular efficacy scale. The 6 strength training exercises were: 12 bicep curls (10 pound weight), 12 bicep curls (15 pound weight), 10 consecutive leg squats, 20 consecutive leg squats, 10 consecutive leg lunges, and 20 consecutive leg lunges. Pictorial images of each activity were provided beside each question in case participants were unsure of the specific activity being referred to. Similar to the cardiovascular efficacy scale, a total strength training efficacy score was calculated by summing the confidence ratings and dividing by the total number of items in the scale, resulting in a maximum possible score of 100. The instructions provided to participants were the same at both Time 1 and Time 2, except that at Time 2, participants were also instructed to “think about the VIDEO you just watched” as they completed the 6 items.

Self-presentational efficacy. The 5 item self-presentational efficacy expectancy subscale of the Self-Presentational Efficacy Scale (Gammage et al., 2001) was used to assess participants’ self-presentational efficacy (SPE). At Time 1, participants were told to “think about yourself participating in physical exercise activities such as aerobics, jogging, cycling, hip hop dancing, and strength training.” Then, using the same 0-100% confidence scale described previously, they were asked to indicate how confident they were that five specific self-presentational outcomes (i.e., being perceived by others as physically coordinated, having a fit body, having good stamina, being a regular exerciser, and being healthy) would result from participating in such activities. At Time 2, participants were told to “think about yourself participating in physical exercise, such as the aerobics, hip-hop dancing and strength training activities seen in the VIDEO you just watched” as they completed the 5 SPE items. A total SPE score was calculated by summing the confidence ratings and dividing by the total number of items in the scale, resulting in a maximum possible score of 100.

Exercise intentions. Participants' future intentions to exercise were measured using two items employed in previous studies in which the intention construct of the Theory of Planned Behaviour (Ajzen, 1991) was assessed in an exercise context (e.g., Courneya & McAuley, 1993). The first item was "I intend to exercise at least 3 times a week for at least 30 minutes each time in the next 4 weeks." Participants were instructed to respond to this item using a 7-point scale ranging from 0 (extremely unlikely) to 7 (extremely likely). The second item was "I intend to exercise with the following regularity in the next 4 weeks," and participants were instructed to respond to this item using a 7-point scale ranging from 0 (not at all regularly) to 7 (very regularly). At Time 2, but not at Time 1, participants were instructed to "think about what I just watched in the VIDEO" as they responded to the items. Consistent with Courneya & McAuley (1993), a total intention score was calculated by taking the average of the two intention items. Scores could range from 0 to 7.

Attitude toward exercise. Participants' attitudes toward exercising were assessed using a 7-point bipolar adjective scale used in previous studies of exercise behaviour (e.g., Courneya, 1995). This scale contained eight items, four which reflected the evaluative aspect of attitude (useless/useful, wise/foolish, harmful/beneficial, good/bad), and four which reflected the affective aspect of attitude (enjoyable/unenjoyable, boring/interesting, unpleasant/pleasant, good/bad, stressful/relaxing). Participants were provided with "examples of physical exercise: aerobics, cycling, jogging, strength training, hip hop dancing." The statement preceding the aforementioned adjectives on the scale was "My participating in regular physical exercise is/would be...." At Time 2, but not at Time 1, participants were instructed to "think about what you just watched in the video" when responding to each item. Again, consistent with Courneya & McAuley

(1993), a total attitudes score was calculated by summing the scores of the items on the scale and dividing by the total number of items. Scores could range from 0 to 7.

Procedure

Assessment of Time 1 measures. At Time 1, participants were asked to meet the researcher at a predetermined location at a specified date and time. At each experimental session, there were 2-11 participants in the room at one time, spread out around tables. Participants were given a letter of information to read and were advised of their freedom to withdraw from the study at any time. After the completion of informed consent forms, participants were given instructions regarding the questionnaires. Specifically, the researcher informed participants that they would have 30 minutes to complete the questionnaires, and she also asked that the questionnaires be completed individually (i.e., privately, without speaking to one another). Participants were informed that their questionnaires would be kept completely confidential, and would only be read by the researcher, who would be analyzing them. Participants were asked to write their initials and last four digits of their phone number on the front page of the questionnaire for the sole purpose of matching their Time 1 and Time 2 questionnaires. Upon completion of the questionnaire, participants were reminded that the second session of the study (i.e., Time 2) would occur exactly seven days later.

Exercise status classification and stratified random assignment to video condition.

Based on the exercise frequency reported by participants at Time 1, participants were classified by the researcher as being either exercisers or non-exercisers. Stratified random assignment was then employed to assign groups of participants to one of the two video conditions. Twenty-six

($n=26$) exercisers and 26 non-exercisers ($n=26$) were assigned to the physique salient video condition, while 25 exercisers ($n=25$) and 24 non-exercisers ($n=24$) were assigned to the physique nonsalient video condition. Participants were not informed of their exercise status classification, and were not informed of the assignment procedure.

Exercise video stimuli. Two different exercise videos served as stimulus materials. Both videos contained three segments: aerobics, strength training, and hip hop. The order of the segments was the same in each video. Both videos were “instructional” in nature (i.e., leaders instruct participants in steps, beat, time, count). Videos were also identical in terms the gender of the individuals featured in the videos (i.e., both videos featured women in an exercise/action context), and video length (i.e., each video was a total of 4 minutes long). At the beginning of both videos, the same introductory title was displayed: “Physical Exercise: Aerobics, Strength Training, and Hip-Hop Dancing.” At the end of both videos, the same concluding slogan was displayed: “Physical Exercise: Healthy, Fit, and Loving It.” The videos were designed to be similar in every aspect except for the appearance of fitness and body attractiveness of the women featured in the videos so that conclusions could be made about the impact of the videos on participants’ post-test body image and exercise-related cognition scores.

The physique-salient video contained segments which featured females whose bodies reflected the highly attractive, trim, fit, and firm cultural ideal. Clips were edited from Karen Voight’s Powerpacked Aerobics, Cindy Crawford’s Shape That Body Workout, and Madonna Grimes’ Hip-Hop Dance Workout. Video segments deemed by pilot study participants to best reflect the media’s overemphasis of the ideal female body were chosen, and thus women in the video were considerably fit, firm, and toned. The selection criteria used in selecting salient video clips were similar to those employed in a previous study (Myers & Biocca, 1992) in which ‘body image oriented’ video segments

focused on the ideal female body and used the female body as a primary form of the visual message.

The physique-nonsalient video contained segments which featured females whose bodies were considered normal- or average-looking (i.e., not highly fit, firm, trim). Clips were edited from Jenny Craig's Aerobic Workout, Leslie Sansone's Walk & Firm 2 Mile Fat Burner, and Angie Bunch's Hip-Hop. Video segments deemed by pilot study participants to best reflect women's perceptions of "normal" or "average" female bodies were chosen. Physique-nonsalient video clips were selected based on the criteria used to select 'neutral image' video segments in the same previous study (i.e., a person's attractiveness is not a key vehicle in the visual composition of the image). The selection of video clips for the nonsalient condition was considerably difficult, as the majority of exercise videos feature women who have highly fit and attractive bodies.

Pilot test of exercise video stimuli. Prior to the study, eight ($n=8$) female students (M age = 22.13, SD = 1.75) evaluated both videos in a pilot test. Two groups of four women participated in the pilot testing which consisted of both a quantitative questionnaire and a qualitative focus group discussion. Participants were told that they would be viewing two exercise videos, each 4 minutes in length. Participants were instructed to pay close attention to the body attractiveness, fitness, and exercise competence of the women in the videos, as well as the exercises being shown and the visual background and music of each segment. After each video was shown, participants in the focus group discussion were asked to indicate what they recalled in terms about each of the three specific video segments (i.e., aerobics, strength training, hip hop). Participants' responses were recorded on paper by the researcher. A summary of the focus group discussion responses is presented in Appendix D. The quantitative portion of the pilot study required participants to complete an 11-item questionnaire in which

participants rated the women they saw in the video on a 0-9 scale (i.e., 0 = not fit; 9 = fit). Analysis of quantitative pilot study data is presented in the Results section. The questionnaire used in the pilot study is presented in Appendix D.

Video viewing and assessment of Time 2 measures. Seven days after the first experimental session, participants returned to the same location for the Time 2 experimental session. Participants were informed that they would be viewing a 4 minute exercise video and would then complete a questionnaire. Groups of 2-11 participants viewed the video, which is similar to the number of participants (i.e., 2-8) who viewed videos in a previous body image-media study (i.e., Heinberg & Thompson, 1995). Prior to viewing the video, participants were instructed to pay careful attention to the exercise activities being demonstrated and the women in the videos because they would be asked to recall specific aspects of the video after it was shown. Participants were instructed to refrain from talking to other participants as they viewed the video.

Following the video, participants were given a rationale for viewing the video. Specifically, the researcher indicated that watching the video may have affected their interest in the fitness activities shown in the video or other exercise activities, their motivation to exercise, or their feelings toward exercise participation. They were informed that the researcher was interested in assessing these thoughts and feelings. Participants were then administered the body image, efficacy, SPE, intentions, and attitudes questionnaires. Participants were asked to consider the video they just watched as they responded to the items on the questionnaires.

Video manipulation check. In order to ensure that all participants had attended to the videotape, and to ensure that the two videos were perceived differently from each other in terms of the physical appearance of the women in the video, a 14-item manipulation check was administered after completion of the questionnaires.

Manipulation check items consisted of specific questions regarding the visual content of the videos. Specifically, participants were asked to rate the women they saw in the video on 11 physical appearance dimensions (muscular/not muscular, shapely/not shapely, attractive/unattractive, fit/unfit, firm/not firm, toned/not toned, sexually attractive/unattractive, attractive body/unattractive body, physically coordinated/uncoordinated, underweight/overweight, exercises regularly/doesn't exercise regularly) using a 0-9 point semantic differential rating scale (e.g., unfit = 0, fit = 9). Participants were also asked to evaluate the similarity of their own body, age, and perceived physical fitness to the bodies, ages, and physical fitness of the women in the videos using the 0-9 scale (e.g., 0 = not at all similar to my own body, 9 = very similar to my own body). These items were included so that they could be used as covariates to control for the possibility that the perceived similarity of participants to the women in the videos might influence their ratings of the women. Hence, these items could then be used as potential covariates. Descriptive statistics for manipulation check data is presented in Appendix E, and analysis of manipulation check data is presented in the Results section.

Following completion of the manipulation check questionnaire, a brief verbal description of the true purposes of the study were given to participants. Participants were thanked for their participation, and contact information was provided should they have had any further questions for the researcher. Participants were also given a "goody bag" consisting of various healthy food items in exchange for their participation.

Results

Video Pilot Study

Before conducting the study, it was important to ensure that the two videos (i.e., physique salient, physique nonsalient) would be perceived differently from each other in terms of the body attractiveness and fitness of the women being displayed. Thus, a MANOVA was conducted on the ratings derived from the 11-item pilot study questionnaire. The independent variable was video, while the dependent variables were the 11 bipolar physical appearance items described in the Method section. In testing the assumptions underlying the use of MANOVA, a significant Levene's Test ($p < .05$) indicated unequal variances for the items 'muscular' and 'fit.' A subsequent test of variable normality indicated that these data were negatively skewed. In such instances of non-normal distributions, Tabachnick and Fidell (2001) recommend data transformation. Thus, a reflect and log transformation was conducted on the skewed data. Following data transformation, a subsequent Levene's test was nonsignificant ($ps > .05$), indicating that assumptions underlying the use of MANOVA were not violated and that a MANOVA could proceed.

The overall MANOVA was significant, $F(4, 11) = 12.18$, Pillai's Trace = .97, $p = .01$, $\eta^2 = .97$, power = .93, indicating that pilot participants perceived the two videos to be significantly different. Follow-up univariate ANOVAs indicated significant differences on all 11 items (all $ps < .009$), indicating that pilot study participants considered the content of the videos to be significantly different in terms of the women's physique, fitness level, and physical attractiveness. Thus, the two videos were deemed sufficiently different, and could be used in the study. Descriptive statistics for the pilot study items

are presented in Appendix D. Qualitative pilot study data (i.e., focus group data) are also presented in Appendix D.

Scale Reliabilities

The internal consistency for each scale was verified by calculating Cronbach's alpha at both Time 1 and Time 2. Thirteen scales were found to have an acceptable level of internal consistency (i.e., $\alpha > .70$, Nunnally, 1978), as presented in Table 1. In order to increase the level of internal consistency for the Fitness Evaluation scale at Time 2, item 33 (i.e., "I do poorly in physical sports or games") was deleted from the reliability analysis for both Time 1 and Time 2. However, the deletion of this item was not considered a major concern given that this item was concerned with sports skill, while this study was strictly interested in body- and exercise-related concepts. Prior to the deletion of item 33 at Time 2, the reliability of the Fitness Evaluation scale was unacceptable (i.e., $\alpha = .53$). However, following this deletion, the scale reliability was acceptable (i.e., $\alpha = .78$). Three entire MBSRQ subscales were not included in subsequent analyses. The Health Evaluation and Illness Orientation scales were excluded because of unacceptable reliabilities ($\alpha < .70$) at both Time 1 and Time 2. In addition, although the reliability of the Health Orientation scale was satisfactory ($\alpha > .70$), it was nonetheless excluded from further analyses because its emphasis was strictly on health (i.e., emphasis was not on body or appearance). Thus, the exclusion of the three health-related scales from subsequent analyses was not a major concern given that these scales were not considered relevant to this study's hypotheses.

Table 1

Internal Consistency (Alpha)

Scale	Pre	Post
Appearance Evaluation	.88	.78
Appearance Orientation	.86	.73
Fitness Evaluation	.71	.78
Fitness Orientation	.89	.89
Body Areas Satisfaction	.73	.77
Self-Classified Weight	.77	.77
Weight Preoccupation	.73	.79
Cardio Exercise Efficacy	.96	.96
Strength Exercise Efficacy	.83	.84
Self-Presentation Efficacy	.93	.91
Exercise Intentions	.86	.94
Exercise Attitudes	.85	.85
Health Evaluation	.67	.69
Health Orientation	.72	.75
Illness Orientation	.65	.69

Note. Acceptable reliability: $\alpha > .70$
 Health Evaluation, Health Orientation, and Illness Orientation
 scales were excluded from subsequent analyses

Video Manipulation Check

In order to ensure that study participants had paid attention to the video, and that the videos had been perceived differently from each other, a MANCOVA was conducted on the manipulation check items. The independent variable was video, while the dependent variables were the 11 bipolar physical appearance items. In addition, because it was thought that the perceived similarity of one's self to the women in the videos might influence participants' ratings of these women, the three perceived similarity items (i.e., similarity of the instructors' body, age, and fitness to oneself) served as covariates. Descriptive statistics for the manipulation check items are presented in Appendix E, along with the manipulation check questionnaire.

In testing the assumptions underlying the use of MANOVA, significant Levene's and Box's M tests ($p < .05$) indicated that the variances of several items were unequal. A subsequent test of variable normality indicated that the data were negatively skewed. Thus, negatively skewed items were transformed. Specifically, four items were reflected and square rooted, and six items were reflected and logged. Following data transformation, a subsequent Levene's test was not significant ($p > .05$). However, a subsequent Box's M test again indicated significant differences in the covariance matrices of the dependent variables ($p < .05$). Tabachnick and Fidell (2001) indicate that Box's M test is too strict with the large sample sizes necessary for MANOVA, as it is a notoriously sensitive test of homogeneity of variance-covariance matrices. Thus, they argue that as long as sample sizes are relatively equal, robustness of other significance tests can be expected, and the outcome of Box's M test can be disregarded. Hence, because the sample sizes in the present study were considered relatively equal, the MANCOVA proceeded. Pillai's Trace was used as the criterion for testing significant

multivariate effects, as it is considered robust when the assumption of homogeneity of variance-covariance matrices has been violated (Tabachnick & Fidell, 2001).

The overall MANCOVA was significant, $F(11, 86) = 8.94$, Pillai's Trace = .53, $p < .001$, $\eta^2 = .53$, power = 1.0. Follow-up univariate ANCOVAs indicated significant differences on all of the manipulation check items (all $ps < .005$), indicating that participants considered the content of the videos to be significantly different in terms of the women's bodies, fitness level, and physical attractiveness. Thus, the manipulation was deemed successful in terms of portraying two different exercise videos, and the analysis to determine how these videos differentially affected participants' body image and exercise-related cognitions could proceed.

Analyses of the Study Variables as a Function of Video and Participant Exercise Status

Data analysis approach. In consideration of the large number of dependent variables being examined, it was decided that these variables would be grouped such that four separate analyses would be conducted. Specifically, one analysis of covariance (ANCOVA) and three multiple analyses of covariance (MANCOVAs) were conducted. Rationale for analyzing a particular set of dependent variables together was based on theoretical and conceptual relationships between variables. In each analysis, post-test scores for all dependent variables were analyzed for significant differences between groups (video condition and exercise status). Pre-test scores for all dependent variables were entered as covariates to control for any baseline differences between participants. The level of statistical significance was set at $p < .05$. Follow-up univariate ANCOVAs were conducted on significant omnibus F tests. When significant univariate effects or interactions emerged, a Scheffé post hoc comparison (Scheffé, 1953) was computed to identify significant between-group differences.

Descriptive statistics. Table 2 contains the means and standard deviations for all dependent variables of interest, presented as a function of video condition and exercise status. For each dependent variable, pre- and post-test scores are presented.

Table 2

Descriptive Statistics for Study Variables as a Function of Video and Exercise Condition (Unadjusted)

Scale Name	Physique-Salient Video				Physique-Non Salient Video			
	Exercisers		Nonexercisers		Exercisers		Nonexercisers	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
1. Pre Appearance Evaluation	2.87	.38	2.86	.37	2.96	.35	2.88	.25
Post Appearance Evaluation	2.99	.48	3.18	.62	3.18	.47	3.00	.58
2. Pre Appearance Orientation	3.12	.29	3.15	.40	3.13	.34	2.99	.33
Post Appearance Orientation	3.29	.56	3.35	.60	3.25	.46	3.17	.55
3. Pre Fitness Evaluation	3.64	.79	3.60	.78	3.88	.67	3.85	.92
Post Fitness Evaluation	3.71	.86	3.56	.73	3.86	.65	3.92	.84
4. Pre Fitness Orientation	2.89	.24	2.81	.27	2.87	.27	2.78	.25
Post Fitness Orientation	3.07	.33	3.03	.44	3.19	.60	3.04	.47
5. Pre Body Area Satisfaction	3.27	.60	3.00	.54	3.28	.53	3.13	.68
Post Body Area Satisfaction	3.28	.53	3.08	.53	3.41	.53	3.18	.73
6. Pre Self-Classified Weight	3.19	.58	3.25	.60	3.08	.53	3.52	.48
Post Self-Classified Weight	3.25	.53	3.27	.59	3.08	.51	3.52	.56
7. Pre Weight Preoccupation	2.78	.97	3.00	.54	3.28	.53	3.13	.68
Post Weight Preoccupation	2.77	.97	2.68	1.07	2.90	.79	2.47	.86

8. Pre Cardio Exercise Efficacy	91.47	9.44	64.19	21.68	91.47	12.61	66.94	22.98
Post Cardio Exercise Efficacy	92.70	6.72	68.31	18.66	91.69	15.00	71.73	21.53
9. Pre Strength Exercise Efficacy	94.29	5.60	80.73	13.32	89.87	12.74	84.48	12.39
Post Strength Exercis Efficacy	94.04	5.91	82.15	12.40	89.97	13.16	87.26	11.31
10. Pre Self-Presentation Effic	79.54	15.67	67.42	12.86	79.12	16.82	66.83	24.46
Post Self-Presentation Effic	78.53	14.43	64.23	13.54	80.64	16.00	67.88	20.83
11. Pre Exercise Intentions	6.46	.59	4.27	1.56	6.48	.71	4.21	1.63
Post Exercise Intentions	6.54	.87	4.36	1.68	6.56	.74	4.75	1.65
12. Pre Exercise Attitudes	6.21	.59	5.79	.95	6.17	.69	5.48	.85
Post Exercise Attitudes	6.20	.69	6.09	.63	6.22	.68	5.70	.84

Note. Possible score ranges: scales 1 to 7 was 1-5; scales 8-10 was 0-100%; scales 11-12 was 1-7.

Potential covariates. Tabachnick and Fidell (2001) indicate that covariates in MANOVA should be interpreted as predictors of the dependent variable. They suggest that it is appropriate to mention variables which were tested as potential covariates but disregarded when found to be insignificant. An insignificant covariate is one that does not adjust the dependent variable. Several variables in the present study were tested as potential covariates prior to conducting any further analyses.

On the variable age, a *t*-test indicated that there was no significant difference between groups ($p > .05$). A MANOVA with university major as the independent variable and post-test scores on the study dependent measures as the dependent variables indicated that there were no differences between participants as a function of major ($p_s > .05$). Thus, these variables were disregarded in subsequent analyses. A MANOVA with menstruation date as the independent variable and post-test scores for all study variables as the dependent variables indicated that there were no differences between participants who were menstruating at the time of testing ($n=10$) and those who weren't ($n=91$) ($p > .05$). Thus, participant menstruation was also disregarded as an important factor in subsequent analyses.

The three perceived similarity items from the manipulation check questionnaire (i.e., similar body, age, fitness) were also tested as potential covariates because if participants perceived the women in the video as being similar or different to themselves, this might influence how they responded to items on the questionnaire which assess their own body image and exercise-related cognitions. Thus, a MANCOVA was conducted with the three perceived similarity items were entered as covariates, exercise status and video condition as the independent variables, and post-test scores as the dependent variables. The MANCOVA indicated that these covariates did not significantly influence the dependent variables ($p > .05$).

Body Mass Index (BMI) was also tested as a potential covariate. However, although *t*-tests indicated that there were no significant differences between groups on BMI ($p > .05$), it was nonetheless entered as a covariate in each analysis for two reasons. First, previous research has demonstrated significant correlations between BMI and body image (e.g., Reboussin et al., 2000). Thus, in the analyses, we wanted to control for any effects that BMI might have on the body image measures, as well as the other dependent measures of interest. The second reason for entering BMI as a covariate in each analysis concerns the correlations found between BMI and the dependent variables in the present study. Specifically, participants' BMI was moderately correlated with pre-test self-presentational efficacy ($r = -.37$), appearance evaluation ($r = .31$), and self-classified weight ($r = .58$), all $ps < .01$, and appearance orientation ($r = .20$; $p < .05$). In addition, BMI was moderately correlated with post-test self-presentational efficacy ($r = -.34$) and self-classified weight ($r = .55$), both $ps < .01$, and appearance evaluation ($r = .24$; $p < .05$). Thus, given the strength of these correlations, as well those found in other research, it was decided that BMI might be an important influence on participants' body image and exercise-related thoughts, and thus it could not be overlooked. Consequently, it was used as a covariate in each analysis. Dependent variables which were correlated with BMI are presented in table F1 in Appendix F.

Data transformation. In testing the assumptions underlying the use of MANOVA and ANOVA, significant Levene's and Box's *M* tests ($p < .05$) indicated unequal variances for the groups on several variables. As mentioned, in such instances of non-normal distributions, Tabachnick and Fidell (2001) recommend data transformation. Thus, normality tests were performed on all pre-test and post-test scores to check for skewness. For data which were skewed, transformations were conducted. Specifically, either the reflect and square root or reflect and log transformation was performed. The

specific data transformation performed in each analysis is detailed in each section to follow.

Self-presentational efficacy. It was decided that self-presentational efficacy (SPE) would be analyzed independently from the other study variables because it is a relatively new psychological concept that has been examined less extensively than the other dependent variables in the present study. Given that little is known about the statistical or conceptual relationship between SPE and other constructs, it was also thought that the possibility of overlooking significant SPE-related findings would be greater if SPE were analyzed with other variables. Specifically, a significant effect for SPE may have been lost in a non-significant MANCOVA that could not then be followed up. Thus, in order to examine the hypotheses that differences in SPE would be found between exercisers and nonexercisers as a function of video condition, a 2 x 2 univariate analysis of covariance (ANCOVA) was conducted. The independent variables were video (physique salient, nonsalient) and exercise status (exerciser, nonexerciser) and the dependent variable was post-test SPE. Pre-test SPE served as a covariate in order to control for any differences between participants and groups in baseline SPE. In addition, post-test BAS also served as a covariate in this ANCOVA because a previous study demonstrated correlations between SPE and social physique anxiety, an affective measure of body image (Gammage et al., 2000).

A significant Levene's test ($p < .05$) indicated unequal variances between groups, and a subsequent test of normality indicated that the data were negatively skewed. Thus, pre- and post-test SPE scores were transformed (i.e., reflected and square rooted). Following transformation, a subsequent Levene's test was nonsignificant ($p > .05$), indicating that assumptions underlying the use of ANCOVA were no longer violated.

The ANCOVA indicated a significant main effect for participants' exercise status,

$F(1,94) = 4.68, p = .03, \eta^2 = .04, \text{power} = .54$. Specifically, nonexercisers had lower post-test SPE ($M = 66.06$) than exercisers ($M = 79.59$). This finding supports the hypothesis that nonexercisers would have significantly lower post-test SPE scores than exercisers would, regardless of which exercise video they watched.

The ANCOVA also revealed a significant main effect for participants' video condition, $F(1,94) = 5.40, p = .02, \eta^2 = .04, \text{power} = .50$. Specifically, participants who watched the salient video had lower post-test SPE ($M = 71.38$) than those who watched the nonsalient video ($M = 74.26$). This finding supports the hypothesis that, regardless of exercise status, participants who watched the physique salient video would have lower post-test SPE scores than participants who watched the physique nonsalient video. Contrary to hypothesis, the interaction between participants' exercise status and video condition was not significant, $F(1,94) = .10, p = .75$.

Variables examining appearance-evaluation. The MBSRQ subscales of appearance evaluation (AE), fitness evaluation (FE), body areas satisfaction (BAS), and self-classified weight (SWT) were analyzed together because these variables are conceptually similar in terms of the body image concept that they assess (i.e., self-evaluation of one's body).

Thus, in order to examine the hypotheses that differences between exercisers and nonexercisers on these body image variables would be found as a function of video condition, a multivariate analysis of covariance (MANCOVA) was conducted. Video condition and exercise status were the independent variables, and the dependent variables were post-test scores for AE, FE, BAS, and SWT. Pre-test scores for each dependent variable served as covariates to control for any between-group baseline differences.

In testing the assumptions underlying the use of MANOVA, a Levene's test was found to be nonsignificant ($p > .05$), but a significant Box's M test indicated that the

variances of AE and BAS were unequal ($p < .05$). Since a test of normality indicated that these variables were negatively skewed, their pre- and post-test scores were transformed (i.e., reflected and square rooted). Subsequent Box's M and Levene's tests were nonsignificant ($ps > .05$), indicating that the assumptions of MANOVA were no longer violated. Thus, the MANCOVA could proceed.

Contrary to hypothesis, the MANCOVA did not reveal a significant main effect for either video condition, $F(4,89) = .37, p > .05$, or exercise status, $F(4,89) = .99, p > .05$. However, a significant interaction between video and exercise status emerged, $F(4,89) = 3.32$, Pillai's Trace = .13, $p = .01$, $\eta^2 = .02$, power = .18. Follow-up univariate ANCOVAs indicated significant differences for post-test BAS, $F(1,92) = 5.43, p = .022$, and for post-test AE, $F(1,92) = 4.12, p = .045$.

A Scheffé post hoc comparison was conducted to assess between-group differences on the two variables, AE and BAS. The Scheffé test was used because it is the most conservative and most flexible of the popular methods for computing an adjusted critical F value for a comparison of means (Tabachnick & Fidell, 2001). Once critical F is computed with the Scheffé adjustment, the number of comparisons that can be made is unlimited, and type I error should not be inflated. Hence, six post hoc comparisons were made for each of AE and BAS.

For post-test AE, the Scheffé tests did not reveal any significant differences ($p > .05$), even though the univariate F test was significant. There was a trend for nonexercisers to have higher AE than exercisers after watching the salient video, but in the nonsalient condition, the opposite trend emerged (i.e., exercisers had higher AE than nonexercisers). This tendency for exercisers and nonexercisers to respond differently to the two different videos was probably responsible for the significant F test. However,

because no actual differences were found between the means for each condition (i.e., via the Scheffe test), this finding was not considered meaningful.

For post-test BAS, the Scheffé tests revealed three significant between-group differences ($p < .05$). First, significant differences were found between exercisers who watched the two different videos. Specifically, exercisers who watched the physique-salient video had lower post-test BAS scores ($M=3.25$) than exercisers who watched the physique-nonsalient video ($M=3.32$). This finding supports the prediction that *even exercisers* would be somewhat negatively impacted by the physique-salient video. Second, significant differences were found between nonexercisers and exercisers, such that nonexercisers who viewed the physique-salient video also had lower post-test BAS scores ($M=3.08$) than exercisers who viewed the nonsalient video ($M=3.32$). This finding supports the hypothesis that nonexercisers who viewed the salient video would have the lowest post-test BAS of all groups. The third significant finding was that nonexercisers who viewed the nonsalient video had lower post-test BAS scores ($M=3.20$) than exercisers who viewed the nonsalient video ($M=3.32$). There were no significant differences between exercisers and nonexercisers after watching the salient video, which suggests that both exercise groups may have been affected by the video to relatively the same extent. Adjusted means for AE and BAS are presented in Table 3 (p. 61).

Variables examining exercise cognitions. Cardiovascular exercise efficacy (EEC), strength training exercise efficacy (EES), exercise intentions (INT), and attitudes toward exercise (ATT) were analyzed together for three reasons. First, previous research has consistently demonstrated correlations between these exercise efficacy, intentions, and attitudes. Second, these variables are conceptually similar in terms of what they measure (i.e., exercise-related cognitions). Third, these variables have been theoretically linked in previous studies using the theory of planned behaviour (Ajzen, 1991). In order

to test the hypothesis that differences would be found between exercisers and nonexercisers on these variables as a function of video condition, a MANCOVA was conducted in the same manner as the previous MANCOVA.

Also similar to previous analyses, significant Levene's and Box's M tests indicated unequal variances for EEC, EES, and INT (all p s < .05). Since the data were found to be negatively skewed in a normality test, data transformation was conducted on pre- and post-test scores for these variables. Tabachnick and Fidell recommend trying several transformations in order to find the most helpful one, all scores were first reflected and square rooted. With the exception of INT, this transformation proved successful. A subsequent transformation of INT (i.e., reflection and log) proved successful. Following these data transformations, a subsequent Levene's test was nonsignificant, but a Box's M test was still significant (p > .05). However, because the sample sizes in the present study were considered relatively equal (Tabachnick & Fidell, 2001), the outcome of Box's M test was disregarded, and the MANCOVA proceeded. Contrary to hypotheses, no significant main effects were revealed for video, $F(4,89) = .022$, or exercise status, $F(4,89) = 1.70$, p s > .05, and the interaction was also not significant, $F(4,89) = 1.08$, (p > .05). Thus, support for the hypothesis that main effects for video and exercise status would emerge was not found, and support was also not found for the hypothesis of a significant video-exercise status interaction.

Variables examining appearance- and weight-related thoughts. The MBSRQ subscales of appearance orientation (AO), fitness orientation (FO), and overweight preoccupation (OVW) were analyzed together because these variables are conceptually similar in terms of the constructs they were measuring (i.e., amount of time/effort spent thinking about one's appearance and body weight). Similar to the previous two analyses, a MANCOVA was conducted in which post-test scores for AO, FO, and OVW were the

dependent variables and pre-test scores were covariates. Data transformation was not necessary in this analysis, as assumptions underlying the use of MANCOVA were met (i.e., nonsignificant Box's and Levene's tests: $p_s < .05$). Contrary to hypotheses, no significant main effects were revealed for video condition, $F(3,91) = .34$, or exercise status, $F(3,91) = .65$, $p_s > .05$, and the interaction was also not significant, $F(3,91) = .62$, $p > .05$. Thus, the hypotheses that significant main effects for video condition and exercise status would emerge were not supported. In addition, the hypothesis that the interaction between video and exercise condition was also not supported.

Table 3

Adjusted Post-Test Scores for Study Variables as a Function of Video and Exercise Condition (M, SE)

Post-Test Scale	Physique Salient Video				Physique-Nonsalient Video			
	Exercisers		Nonexercisers		Exercisers		Nonexercisers	
	<u>M</u>	<u>SE</u>	<u>M</u>	<u>SE</u>	<u>M</u>	<u>SE</u>	<u>M</u>	<u>SE</u>
1. Appearance Evaluation	2.97	.09	3.24	.09	3.11	.09	3.03	.09
2. Appearance Orientation	3.27	.08	3.29	.09	3.19	.09	3.31	.09
3. Fitness Evaluation	3.78	.09	3.67	.09	3.74	.09	3.85	.09
4. Fitness Orientation	3.06	.09	3.02	.10	3.19	.10	3.05	.10
5. Body Area Satisfaction	3.25 _a	.06	3.08 _a	.06	3.32 _b	.06	3.20 _a	.06
6. Self-Classified Weight	3.32	.07	3.28	.07	3.21	.07	3.30	.07
7. Overweight Preoccupation	2.65	.09	2.80	.10	2.70	.10	2.68	.10
8. Cardio Exercise Efficacy	82.64	1.93	79.73	1.97	81.93	1.98	80.43	2.03
9. Strength Exercise Efficacy	88.06	1.20	88.05	1.23	87.62	1.23	89.79	1.26
10. Self-Pres Efficacy	73.83	1.53	68.84	1.55	75.31	1.56	73.53	1.60
11. Exercise Intentions	6.21	.26	4.68	.27	6.2	.27	5.14	.28
12. Exercise Attitudes	5.94	.10	6.26	.11	5.96	.11	6.06	.11

Note. Possible score ranges: scales 1-7 was 1-5; scales 8-10 was 0-100%; scales 11-12 was 1-7.

Adjusted pre-test BAS = 3.26.

Means in the same row that do not share a common subscript differ at $p < .05$ on the Scheffé post hoc comparison.

Discussion

This study evaluated the impact of two different exercise videos on the body image and exercise-related cognitions of female exercisers and non-exercisers.

Participants in the physique-salient exercise video condition were exposed to a video which featured women whose bodies reflected the cultural ideal female body (i.e., exceptionally fit- and attractive-looking). Participants in the physique-nonsalient video condition were exposed to a video which featured women whose appearance and physique were considered relatively average-looking (i.e., not exceptionally fit- or attractive-looking). Examination of the effect of the exercise videos on the study variables revealed significant findings for self-presentational efficacy (SPE) and for body area satisfaction (BAS). Specifically, for SPE, a main effect for exercise status indicated that post-test SPE scores were lower in nonexercisers than in exercisers, regardless of which video they watched. A main effect for video condition was also found for SPE, such that post-test SPE scores were lower in participants who viewed the physique-salient video than in those who viewed the nonsalient video. For BAS, analyses revealed an interaction between video and exercise status, indicating that nonexercisers who viewed the physique-salient video had the lowest post-test BAS scores of all groups. In contrast, exercisers who viewed the nonsalient video had the highest post-test BAS scores.

Taken together, these findings suggest that women--particularly nonexercising women--may feel worse about their bodies and about their own ability to appear physically fit and competent after watching exercise videos. These findings have

important implications for the exercise video industry in terms of the types of exercise videos that are produced. Study findings and implications will be discussed in the context of self-efficacy theory (Bandura, 1986) and the process of social comparison.

The first significant finding revealed that nonexercisers had lower SPE scores than exercisers after watching either of the exercise videos (i.e., main effect for exercise status). Examination of the adjusted post-test SPE means indicated that watching an exercise video actually had a negative effect on nonexercisers' confidence that they would be perceived as fit-looking, in shape, and competent exercisers. In contrast, watching an exercise video had a positive effect on exercisers' SPE, evidenced by their higher post-test scores. This finding supports study hypotheses, and may be explained by self-efficacy theory.

According to self-efficacy theory (Bandura, 1986), mastery experiences and vicarious experiences are two sources of self-efficacy information. In an exercise context, mastery experiences are accumulated as individuals successfully complete incremental bouts of physical exercise, while vicarious experiences occur as individuals watch others perform a certain behaviour or activity (Bandura, 1997). Of these two sources, mastery experiences are proposed to provide individuals with the most potent source of self-efficacy beliefs (Bandura, 1997). Indeed, as individuals continue to exercise, they gain more experience with exercise activities, and, in turn, feel more confident being in an exercise setting. Hence, individuals who have more exercise experience (i.e., those who exercise regularly) usually have higher exercise efficacy than those who do not exercise (McAuley et al., 1994), since nonexercisers have limited or no exercise experience.

When asked to complete the SPE items at Time 2, exercisers likely drew on mastery experiences as a source of efficacy information. In contrast, because they had little or no exercise experience, and, thus, few exercise mastery accomplishments from which to draw on, nonexercisers likely relied on the vicarious experience of watching the exercise videos when indicating their SPE estimates. Consequently, being an exerciser--and being able to draw on mastery accomplishments as a source of efficacy beliefs--may have “buffered” exercisers from the potentially negative effects that viewing an exercise video may have otherwise had on their SPE. That is, their mastery experience may have essentially “overridden” the potentially negative experience of watching exercise videos.

In contrast, since nonexercisers had little or no mastery exercise experiences from which to draw on, the vicarious experience of viewing other women exercising in the video may have been the only source of efficacy information available to them. The observation that their SPE tended to decrease after watching an exercise video suggests that the vicarious experience of watching a video was a negative one. A negative vicarious experience may have occurred if nonexercisers perceived the bodies and appearance of the women in the videos as so dissimilar to themselves--or perhaps so unattainable--that instead of feeling motivated or inspired by what they were watching, they felt badly about their own bodies and fitness abilities, and badly about the exercise experience.

Thus, one important implication of this finding is that being an exerciser appears to buffer the negative effects that certain types of images--including exercise videos--may have on women’s SPE. Hence, there are substantial grounds for encouraging women who

do not already exercise to begin doing so. Moreover, since simply watching an exercise video will not improve their SPE, nonexercisers need to actually participate in physical exercise in order to gain positive efficacy-enhancing experiences. As they begin to exercise regularly, they should come to accumulate mastery experiences, which, in turn, should help enhance their SPE. Indeed, by having mastery experiences as an available source of efficacy information, they should soon benefit from the buffering effect that exercise seems to have on SPE, and perhaps other exercise-related cognitions, when viewing certain types of images.

The study's second significant result found that participants who viewed the physique-salient video had lower post-test SPE than participants who viewed the physique-nonsalient video (i.e., main effect for video). This finding supports study hypotheses, as it shows that the salient video negatively affected all women, regardless of their exercise status. The lower SPE of participants who viewed the salient video implies that they were less confident that they would be able to self-present as in shape, fit-looking, competent exercisers. The process of social comparison may be helpful in understanding this finding.

Specifically, individuals are said to gain important information about themselves through social comparison, the process of comparing one's self to others (Festinger, 1954). Comparisons are made either upward (i.e., compare one's appearance to others who are more attractive), or downward (i.e., compare self to individuals who are less attractive). Studies suggest that when individuals make upward comparisons, they

typically feel much worse about themselves than after making downward comparisons (Alcock, Carment, & Sadava, 1998).

In the present study, participants who viewed the salient video were bombarded with images of women exercisers whose bodies were highly fit-looking and attractive, and who presented the image of being competent exercisers. Since participants were instructed to consider what they saw in the video as they completed the questionnaires, their attention was likely focused explicitly on these images. Thus, any comparisons that participants made between their own bodies and those of the women in the salient video were likely upward. Understandably, comparing themselves to these fitter women may have made participants feel considerably worse after doing so.

In contrast, the higher post-test SPE scores of participants who watched the nonsalient video suggests that if participants in this condition were making comparisons, they didn't feel as badly after doing so. Perhaps since the bodies of the female exercisers in the nonsalient video were considered relatively average- or normal-looking, participants who watched this video did not feel badly about themselves after making comparisons. This finding has important implications for the exercise video industry in terms of the types of videos that are designed for women.

Specifically, producers of exercise videos should consider the negative impact that continuing to feature only very fit-looking women may have on the women who use these videos. Very few exercise videos feature women with a relatively average-looking bodies and appearance. Rather, the majority of videos feature female bodies which reflect the ideal encouraged by the media (i.e., highly fit-looking and attractive), and which are

thus unrepresentative of the average woman. Since most women do not have bodies similar to those of the women featured in most videos, it would make more sense to feature women whose bodies more closely resembled the average woman. Indeed, since achieving such a super-fit, firm, and tight body is likely an unrealistic goal for most women, exercise videos should feature women whom other women could relate to on an appearance- and fitness-related level. By doing so, women might focus more on the exercises being demonstrated and the positive way they feel as they exercise than on evaluating how their bodies compare to the exercisers in the video. Feeling good about themselves after using an exercise video may lead women to continue their exercise video program, which, in turn, will benefit both the exercise video industry and the health of women. In contrast, if exercise videos continue to feature only exceptionally fit-looking and attractive females, women who feel badly about themselves after using this type of video may discontinue using videos as a means of exercising, or perhaps avoid exercise altogether.

Contrary to hypothesis, the interaction between video condition and exercise status for SPE was not significant. Given that the direction of the group means was as expected, the nonsignificant interaction may have been due to the fact that the difference in post-test SPE between exercisers and nonexercisers after watching the salient exercise video was simply not large enough to be detected given the level of statistical power.

Social comparison may also help to explain the study's third finding, which revealed a significant interaction between video condition and exercise status for body area satisfaction (BAS). This finding supports the hypothesis that the lowest post-test

BAS scores would be found in nonexercisers who viewed the salient video, while exercisers in the nonsalient video condition would have the highest post-test BAS scores. The BAS subscale asks participants to indicate their present satisfaction with 9 specific areas or aspects of their bodies (e.g., weight, thighs, muscle tone). Hence, the lowest post-test BAS of nonexercisers in the salient video condition implies that these women were the least satisfied with some or all of these areas of their bodies after watching this video.

Indeed, while both exercisers and nonexercisers in the salient video condition were negatively affected by this video (i.e., main effect for video), nonexercisers were affected to a far greater extent, as evidenced by the significant interaction between video condition and exercise status. Thus, it is possible that being an exerciser again “buffered” exercisers in such a way that the salient video had a less negative impact on them than it did on nonexercisers. Research indicates that certain individuals may be less likely than others to feel badly after comparing themselves to others. For example, individuals who perceive the “perfect” images often presented in the media as highly unrealistic may disregard these images as meaningless or unimportant (Faber, McLeod, & Brown, 1979). Given this knowledge, perhaps exercisers who viewed the salient video were more aware that and accepting of the wide range of female body shapes which exists today. In turn, their awareness may have helped them to realize that the bodies of the women in the video were in fact atypical and unrealistic (Furnham et al., 1994). As a result, they may have discounted as meaningless any self-comparisons they made. On the other hand, nonexercisers may have perceived the female bodies in the salient video as realistic--

perhaps because of a limited awareness and acceptance of the range of female body shapes--and thus took the meaning of their self-comparisons to heart.

Thus, an important implication of this finding is that being a regular exerciser may teach women to consider the reality of certain images when they are evaluating the meaning of certain self-comparisons. Doing so may help them to discount certain comparisons as unrealistic. Being a regular exerciser may also be involved in creating a greater tolerance for female body shapes that deviate from the cultural ideal (Furnham et al., 1994). Indeed, given that women often attribute their body dissatisfaction to having a physique that does not comply with the current ideal, exercise appears to have a valuable role to play in exposing women to a broader range of female bodies. In fact, being an exerciser may help women become more accepting of their own bodies, even when they self-compare to women who are more fit and attractive than they are.

While a significant univariate ANCOVA indicated differences for post-test appearance evaluation (AE), follow-up post hoc tests revealed only a trend towards a significant interaction between video and exercise status for AE. Specifically, exercisers who viewed the salient video had the lowest post-test AE scores of all groups, while nonexercisers who viewed this video had the highest scores. Any differences between exercise groups on post-test SPE may have been too small to be detected given the level of statistical power. Thus, as no actual differences were found between the means of each condition, this finding was not considered meaningful.

Null Findings

Given the large number of variables examined in this study, it is appropriate to propose several possible explanations for the nonsignificant results.

Body image. The finding that the exercise videos did not significantly affect other measures of participants' body image may have been due to the irrelevance of some of the items and scales on the body image portion of the questionnaire. For example, the Appearance Orientation subscale inquired about participants' grooming behaviours (e.g., hair, make-up), their choice of clothes, and how much time they spend getting themselves ready to go out. Given that the exercise videos emphasized fitness and physique, it is understandable that participants may not have felt compelled to compare themselves to the women on the videos on items such as grooming and clothing. The irrelevance of these Appearance Orientation items is further highlighted if they are compared to the Body Area Satisfaction (BAS) subscale, which *was* affected by the video. BAS asked participants questions about specific areas of the body, all of which were displayed in the videos, and, consequently, participants were probably more likely to make comparisons between areas of their own bodies and those of the women in the videos.

Exercise efficacy. While it was expected that the exercise videos would significantly affect participants' exercise efficacy, this was not the case. The failure of the videos to differentially impact the efficacy of participants may be attributed to the fact that participants were so focused on the physique of the women in the videos that they didn't pay attention to the exercise activities being presented, or to the exercise abilities of the women exercisers. Consequently, when asked about their own confidence in performing the activities shown in the video, perhaps participants did not feel inclined to

compare their perceived exercise abilities with those of the women in the videos. In hindsight, since the videos were designed to be comparable in terms of the exercise performance of the women in the videos, perhaps it is not surprising that a significant effect for efficacy was not found. Indeed, maybe it is encouraging that even though participants' SPE and BAS were affected, there was no parallel effect on their exercise efficacy.

Exercise intentions and attitudes. It was expected that participants' future intentions to exercise and their attitudes toward exercising would be significantly affected by viewing exercise videos. However, in hindsight, perhaps these exercise-related cognitions are best measured in a longer-term study with repeated exposure. Indeed, perhaps it was incorrect to predict that single, acute exposure to the videos would have such a profound impact on participants so as to significantly alter their intentions and attitudes. From a social comparison perspective, another possibility is that since participants were unaware of the intentions and attitudes of the women exercisers in the videos, comparisons on these exercise cognitions were not made.

Study Limitations

As the first known study to examine the impact of exercise videos on the body image and exercise-related cognitions of female exercisers and nonexercisers, an important contribution has been made to both the body image literature and to the area of applied exercise psychology. However, consideration of potential study limitations place the findings into perspective.

One obvious limitation is that participants' current exercise behaviour was assessed using a self-report measure. Consequently, it is unknown whether all participants were completely honest or accurate about how frequently they had exercised each week over the past 6 months. Given that this study was interested in examining differences among exercisers and nonexercisers, the reliance on self-report may have been problematic in terms of creating two distinct groups.

Another obvious limitation is that it was not possible to control for external sources which may have influenced participants' body image and exercise-related cognitions during the seven day lapse between Time 1 and Time 2. Thus, it is unknown whether sources other than the exercise videos (e.g., exposure to a large number of advertisements emphasizing the ideal female body) influenced participants' post-test scores.

A third limitation concerns the video stimuli used in this study. Specifically, the length of the videos employed in the study (i.e., 4 minutes) was considerably shorter than actual exercise videos, which typically range from 30 minutes to 1 hour in length in their full version. Thus, perhaps different results would have been found had participants been exposed to exercise videos of full length. Indeed, perhaps 4 minutes is not long enough to correctly gauge participants' body- and exercise-related thoughts and feelings. Moreover, if significant effects were observed after 4 minutes of exposure, perhaps even larger effects would be found after 30 minutes of exposure.

A final limitation concerns the three specific exercise activities featured in the study's exercise videos (i.e., aerobics, strength training, hip hop dancing). Since these

activities are only a few of the wide range of existing exercise activities, it is possible that participants' responses to efficacy and attitude items, for example, may have been different had other activities been included in the videos (e.g., cycling, swimming). Specifically, it is possible that participants' unfamiliarity with or dislike of these particular activities may have influenced their responses. However, these three activities were chosen because they were considered to clearly represent three main exercise domains (i.e., cardiovascular, strength training, and alternative).

Future Directions

The results of this study may lead the way to a number of interesting future research endeavours. One suggestion for future research would be to conduct the same experimental study, except over a longer period of time. Specifically, it would be interesting to examine the nature of participants' responses to viewing the same exercise videos, but on multiple occasions over several weeks, and perhaps as they exercised alongside the videos. Viewing the videos in this way might impact longer-term exercise-related cognitions such as intention to exercise or attitudes toward exercise. It is also possible that repeated exposure to the same video would familiarize participants with the specific activities being demonstrated, and, as a result, their exercise efficacy scores could change over time.

Future research may also wish to conduct the same experimental study with a group of older female exercisers and nonexercisers. Previous research has shown that self-presentational efficacy was lower in older women with body image concerns who viewed a video of older women exercisers dressed in physique-salient attire (i.e., tank

tops and shorts) than it was in women who viewed a video of older women exercisers dressed in non-physique-salient attire (i.e., t-shirts and pants) (Sinden, Angove, & Martin, 2001). Thus, it would be interesting to compare the effect of a physique-salient exercise video for older women (i.e., features older female exercisers whose bodies are more fit-looking and attractive than the “average” older woman) and a physique-nonsalient exercise video (i.e., features older female exercisers with average-looking appearance and bodies) on the body image and exercise-related cognitions of older women.

Conclusion

This study has made a significant contribution to the body image and applied exercise psychology literature, as it suggests that brief exposure to certain types of exercise videos can negatively affect women's body image and SPE, particularly among nonexercisers. This study has demonstrated that exercise may essentially "buffer" women from the potentially negative effect that viewing exercise videos--and other physique-salient images--may otherwise have on their body- and exercise-related thoughts and feelings. Indeed, exercisers can benefit from their mastery exercise experiences as a source of efficacy information when viewing these images, while nonexercisers have only the vicarious experience of watching others exercising as a source of efficacy beliefs. Moreover, nonexercisers may be even more negatively affected if they make upward comparisons. Thus, results of this study suggest that the promotion of exercise among women who do not exercise would be an important endeavour for preventing the negative effects of the media on body image, SPE, and other body- or exercise-related cognitions. Findings from this study also have important implications for the exercise video industry in terms of the types of videos that are produced for women today.

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Appendix A

Participant Letter of Information

Informed Consent Letter

LETTER OF INFORMATION

Health, Fitness, and Lifestyle Behaviour Study

You are asked to participate in a research study interested in health, fitness, and lifestyle behaviours among university-aged women.

Purpose

The study is designed to examine university women's health, fitness, and lifestyle behaviours.

Procedure

If you volunteer to participate in this study, the following procedure will take place: The study will occur on two different days, Thursday March 8 and Thursday March 15. Involvement in the study requires that you participate on both days. Both sessions will last approximately 30 minutes.

At the first session, you will be asked to come to the Ivor Wynne Centre (room AB132) at a specified time and complete a survey that asks questions about your health, fitness and lifestyle. It will take approximately 30 minutes to complete the survey.

At the second session, you will return to the same location at a specified time and watch a 4-minute video segment about fitness and health. You will also be asked to complete a survey following the video. It will take approximately 30 minutes to complete the survey.

Upon completion of the experiment, you will be provided with the researcher's phone number if you wish to inquire about the study's results.

Potential Risks and Discomforts

There are no risks associated with this study. However, some of the questions on the survey are personal in nature and may cause some participants to feel uncomfortable responding. Participants may refuse to answer any questions for which they feel uncomfortable.

Potential Benefits to Society

Scientists and health professionals will benefit from this research by incurring knowledge about thoughts and feelings related to women's health, fitness, and lifestyle behaviours.

Credit for Participation

In return for your participation in this experiment, you will receive a small "goody bag."

Confidentiality

The surveys are completely private and will be kept in a locked filing cabinet in the researcher's laboratory. The only people who will read the surveys are the two

researchers listed below. For anonymity purposes, do not write your name on any of the surveys. You will be asked to write your initials and last 4 digits of your telephone number on the top of your survey on both days, and this is only so that the researcher will be able to match your day 1 survey with your day 2 survey.

Participation and Withdrawal

Involvement in this study is your choice. If you volunteer to be in this study, you may withdraw at any time and your survey will be destroyed. You may also refuse to answer any questions on the survey. If you have any questions or concerns about this study, please feel free to contact us at the numbers below.

Rights of Research Participants

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this study. If you have any questions regarding your rights as a research participant, contact:

MREB Secretariat,
McMaster University
(905) 525-9140 ext. 24765
email: grntoff@mcmaster.ca

If you have any questions or concerns about the research, please feel free to contact:

Ms. Julie Fleming
Student Researcher
Department of Kinesiology
McMaster University
Inquiries: (905) 525-9140
Ext. 27937

Dr. Kathleen Martin
Assistant Professor
Department of Kinesiology
McMaster University
Inquiries: (905) 525-9140
Ext. 23574

McMASTER UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH**Signature of Research Participant**

I understand the information provided for the study “Health, fitness, and lifestyle behaviours among university-aged women” as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Participant’s Name _____
(please print)

Participant’s Signature _____ Date _____

Signature of Investigator

In my judgement, the participant is voluntarily and knowingly giving informed consent and possesses the legal capacity to participate in this research study.

Signature of investigator

Date

Additional Inquiries: McMaster University Research Ethics Board
(905) 525-9140 Ext. 24765

Appendix B

Questionnaire: Time 1

Participant Information

Identification: first initial ____ last initial ____ last 4 digits of telephone number ____

Age:

Weight:

Height:

University Major:

Date of last menstrual period:

Moderate physical exercise: participation in at least **30 minutes** of physical activity
which raises your heart and breathing rate

In the past 6 months, how many times **each week** have you engaged in **30 minutes** of
moderate physical exercise?

Please circle your answer

0 1 2 3 4 5 6 7

of times each week

Moderate physical exercise: any planned physical exertion that **raises your heart and breathing rate** which you participate in for at least **30 minutes each time**.

Examples of physical exercise: aerobics, cycling, aquafit, strength training, hip hop dancing

Please **CIRCLE YOUR ANSWER**.

My participation in regular physical exercise is/would be:

Useless	1	2	3	4	5	6	7	Useful
Wise	1	2	3	4	5	6	7	Foolish
Harmful	1	2	3	4	5	6	7	Beneficial
Unpleasant	1	2	3	4	5	6	7	Pleasant
Good	1	2	3	4	5	6	7	Bad
Enjoyable	1	2	3	4	5	6	7	Unenjoyable
Boring	1	2	3	4	5	6	7	Interesting
Stressful	1	2	3	4	5	6	7	Relaxing

I intend to exercise at least 3 times a week for at least 30 minutes each time in the next 4 weeks

extremely unlikely 1 2 3 4 5 6 7 extremely likely

I intend to exercise with following regularity in the next 4 weeks

not regularly 1 2 3 4 5 6 7 very regularly

Health Survey

Using a scale like the one below, indicate your answer by entering the appropriate number in the blank space located to the left of each statement.

1	2	3	4	5

Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

In the blank space, enter 1 if you definitely disagree with the statement; 2 if you mostly disagree; 3 if you neither agree nor disagree; 4 if you mostly agree; or 5 if you definitely agree with the statement.

Please read each statement carefully and decide how much it pertains to you right now.

Answer:

- _____ 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 life-style.

- _____ 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.
- _____ 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 on.
- _____ 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.
- _____ 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 advice.
- _____ 57. I am on a weight-loss diet.

For the next 3 questions, please circle your answer.

- 58. I have tried to lose weight by fasting or going on crash diets.
 - a) never
 - b) rarely
 - c) sometimes
 - d) often
 - e) very often

- 59. I think I am:
 - a) very underweight
 - b) somewhat underweight
 - c) normal weight
 - d) somewhat overweight
 - e) very overweight

- 60) From looking at me, most other people would think I am:
 - a) very underweight
 - b) somewhat underweight
 - c) normal weight
 - d) somewhat overweight
 - e) very overweight

Use the scale below to indicate how satisfied you are with each of the following areas or aspects of your body. Enter your answer in the blank space located to the left of each question.

1 2 3 4 5

Definitely
Disagree

Mostly
Disagree

Neither
Agree Nor
Disagree

Mostly
Agree

Definitely
Agree

Answer:

- _____ 61. Face (facial features, complexion)
- _____ 62. Hair (colour, 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

Please indicate below how confident you are that you can successfully carry out each of the activities below using the following scale.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not confident			somewhat confident					completely		
at all								confident		

I believe that I can participate in aerobics/jogging/cycling:

- a) for **5** minutes at a moderate pace without stopping _____ %
- b) for **10** minutes at a moderate pace without stopping _____ %
- c) for **15** minutes at a moderate pace without stopping _____ %
- d) for **20** minutes at a moderate pace without stopping _____ %
- e) for **25** minutes at a moderate pace without stopping _____ %
- f) for **30** minutes at a moderate pace without stopping _____ %
- g) for **35** minutes at a moderate pace without stopping _____ %
- h) for **40** minutes at a moderate pace without stopping _____ %
- i) for **45** minutes at a moderate pace without stopping _____ %

I believe that I can participate in the following strength/muscle training exercises:

- a) lift a **10 pound** weight 12 consecutive times (**bicep curl**) _____ %
- b) lift a **15 pound** weight 12 consecutive times (**bicep curl**) _____ %
- c) complete **10** consecutive **leg squats** _____ %
- d) complete **20** consecutive **leg squats** _____ %
- e) complete **10** consecutive **leg lunges** _____ %
- f) complete **20** consecutive **leg lunges** _____ %

Think about yourself participating in physical exercise activities, such as aerobics, jogging, cycling, hip-hop dancing, and strength training.

Using the scale below, please indicate how confident you are for each of the following:

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not confident			somewhat confident				completely			
at all							confident			

I am confident that...

- a) other people will think that I am physically coordinated _____ %
- b) other people will think that I have a fit body _____ %
- c) other people will think that I have good stamina _____ %
- d) other people will think that I am a regular exerciser _____ %
- e) other people will think that I am healthy _____ %

Appendix C

Questionnaire: Time 2

Participant Information

Identification: first initial ____ last initial ____ last 4 digits of telephone number ____

Age:

Weight:

Height:

University Major:

Date of last menstrual period:

Moderate physical exercise: participation in at least **30 minutes** of physical activity
which raises your heart and breathing rate

In the past 6 months, how many times **each week** have you engaged in **30 minutes** of
moderate physical exercise?

Please circle your answer

0 1 2 3 4 5 6 7

of times each week

Moderate physical exercise: any planned physical exertion that raises your heart and breathing rate which you participate in for at least **30 minutes each time**.

Examples of physical exercise: aerobics, cycling, aquafit, strength training, hip hop dancing

Please **CIRCLE YOUR ANSWER**.

Having just watched the VIDEO:

I believe my participation in regular physical exercise is/would be:

Useless	1	2	3	4	5	6	7	Useful
Wise	1	2	3	4	5	6	7	Foolish
Harmful	1	2	3	4	5	6	7	Beneficial
Unpleasant	1	2	3	4	5	6	7	Pleasant
Good	1	2	3	4	5	6	7	Bad
Enjoyable	1	2	3	4	5	6	7	Unenjoyable
Boring	1	2	3	4	5	6	7	Interesting
Stressful	1	2	3	4	5	6	7	Relaxing

Having just watched the VIDEO:

I intend to exercise at least 3 times a week for at least 30 minutes each time in the next 4 weeks

extremely unlikely 1 2 3 4 5 6 7 extremely likely

Having just watched the VIDEO:

I intend to exercise with following regularity in the next 4 weeks

not regularly 1 2 3 4 5 6 7 very regularly

Health Survey

Using a scale like the one below, indicate your answer by entering the appropriate number in the blank space located to the left of each statement.

1	2	3	4	5

Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

In the blank space, enter **1** if you definitely disagree with the statement; **2** if you mostly disagree; **3** if you neither agree nor disagree; **4** if you mostly agree; or **5** if you definitely agree with the statement.

Think about the VIDEO you just watched.

Please read each statement carefully and decide how much it pertains to you right now.

Answer:

- _____ 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 life-style.
- _____ 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.
- _____ 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 on.
- _____ 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.
- _____ 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 advice.
- _____ 57. I am on a weight-loss diet.

For the next 3 questions, please circle your answer.

58. I have tried to lose weight by fasting or going on crash diets.
- a) never
 - b) rarely
 - c) sometimes
 - d) often
 - e) very often
59. I think I am:
- a) very underweight
 - b) somewhat underweight
 - c) normal weight
 - d) somewhat overweight
 - e) very overweight
- 60) From looking at me, most other people would think I am:
- a) very underweight
 - b) somewhat underweight
 - c) normal weight
 - d) somewhat overweight
 - e) very overweight

Use the scale below to indicate how satisfied you are with each of the following areas or aspects of your body. Enter your answer in the blank space located to the left of each question.

1 2 3 4 5

Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree
------------------------	--------------------	----------------------------------	-----------------	---------------------

Answer:

- _____ 61. Face (facial features, complexion)
- _____ 62. Hair (colour, 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

Please indicate below how confident you are that you can successfully carry out each of the activities below using the following scale.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not confident					somewhat confident					completely
at all										confident

Having just watched the VIDEO:

I believe that I can participate in aerobics/jogging/cycling:

- a) for 5 minutes at a moderate pace without stopping _____ %
- b) for 10 minutes at a moderate pace without stopping _____ %
- c) for 15 minutes at a moderate pace without stopping _____ %
- d) for 20 minutes at a moderate pace without stopping _____ %
- e) for 25 minutes at a moderate pace without stopping _____ %
- f) for 30 minutes at a moderate pace without stopping _____ %
- g) for 35 minutes at a moderate pace without stopping _____ %
- h) for 40 minutes at a moderate pace without stopping _____ %
- i) for 45 minutes at a moderate pace without stopping _____ %

Having just watched the video:

I believe that I can participate in the following strength/muscle exercises:

- a) lift a 10 pound weight 12 consecutive times (bicep curl) _____ %
- b) lift a 15 pound weight 12 consecutive times (bicep curl) _____ %
- c) complete 10 consecutive leg squats _____ %
- d) complete 20 consecutive leg squats _____ %
- e) complete 10 consecutive leg lunges _____ %
- f) complete 20 consecutive leg lunges _____ %

Think about yourself participating in physical exercise activities, such as aerobics, jogging, cycling, hip-hop dancing, and strength training.

Using the scale below, please indicate how confident you are for each of the following:

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Not confident **somewhat confident** **completely**
at all **confident**

When I think about what I just watched in the VIDEO, I am confident that...

a) other people will think that I am physically coordinated _____ %

b) other people will think that I have a fit body _____ %

c) other people will think that I have good stamina _____ %

d) other people will think that I am a regular exerciser _____ %

e) other people will think that I am healthy _____ %

Appendix D

Pilot Study Questionnaire

Table D: Descriptive Statistics for Pilot Study

Pilot Study Focus Group Discussion

Table D

Descriptive Statistics for Video Pilot Study

Adjective	Video	<u>M</u>	<u>SD</u>	<u>N</u>	<u>p</u>
Muscular	1	7.75	.87	8	.001**
	2	5.25	1.49	8	
Shapely	1	7.13	1.35	8	.009*
	2	5.38	.92	8	
Attractive	1	7.63	.92	8	.001**
	2	5.38	1.19	8	
Fit	1	8.00	.53	8	.000**
	2	5.50	1.19	8	
Firm	1	8.38	.74	8	.000**
	2	4.63	1.06	8	
Toned	1	8.25	.71	8	.000**
	2	4.38	1.06	8	
Sexattractive	1	7.88	.64	8	.000**
	2	5.38	1.41	8	
Bodyattractive	1	7.88	.84	8	.000**
	2	5.38	1.06	8	
Coordinated	1	8.00	.76	8	.006*
	2	6.88	.64	8	
Weight	1	7.38	.92	8	.000**
	2	4.75	.46	8	
Regexerciser	1	8.00	.76	8	.006*
	2	6.88	.64	8	

Note. All adjectives were scored on a 0-9 point scale.

Video 1 = physique-salient; Video 2 = physique-nonsalient

* $p < .01$. ** $p < .001$

Pilot Study Focus Group Discussion

Two groups of four pilot study participants (mean age = 22.13, $SD = 1.75$) were instructed to pay close attention to the body attractiveness, fitness, coordination, competence, and age of the women in the two videos, as well as the exercises being demonstrated and the video's visual background and music.

Physique-Salient Video

After the physique-salient video was shown, participants were asked to indicate verbally what they recalled about each of the three specific exercise segments. A list of their responses is presented below.

1. aerobics (Karen Voight)

-lead instructor:

- well-defined, toned, muscular arms, cut abs, thin legs
- thinner than normal women
- hyper, enthusiastic, loud
- tight, scantily clad leotard
- short hair
- probably 27-30 years old
- gave good instructions

-other women in video:

- all thin, in shape, muscular
- leotards and spandex reveal their bodies
- coordinated, synchronized with lead instructor
- happy, enthusiastic, smiling

-moderate to high intensity

-music somewhat noticeable

2. strength training (Cindy Crawford)

-perfect body, thin but not anorexic-looking

-no flaws, perfect skin

-long hair not tied back

-sexual: breasts noticeable, perfect butt, cleavage

-black tight leotards

-28-30 years old

-low to moderate intensity

-different camera angles, different settings

-music noticeable, captivating, familiar song

-“Is she hurting her back?”

-“At least she switches legs”

3. hip hop (Madonna Grimes)

-lead instructor:

-very thin legs, wicked abs, sculpted biceps, toned, much thinner than most women

-belly button showing, scantily clad dress

-26-30 years old

-good at providing specific instructions and counting

-other women in video:

-all in great shape, thin, toned

-hip hop culture: black boots, tank tops (some revealing clothing, some less revealing)

-happy, enthusiastic, cool, “jiving”

-mid-20s to early 30s

-cultural diversity: 1 white woman

-coordinated routing, but room for interpretation

-music not too noticeable

Physique-Nonsalient Video

After the physique-nonsalient video was shown, participants were asked to indicate verbally what they recalled about each of the three specific exercise segments. A list of their responses is presented below.

1. aerobics

-lead instructor:

-normal looking, not extremely thin or fit-looking

-colourful/bright leotard

-gave helpful instructions

-smiling

-early 30s

-other women in video:

-normal looking, average bodies, realistic; 1 woman a bit heavier-looking

-range of body shapes, not totally athletic or fit

-most had short hair

-slouch socks, bright colours

-age 30s, except one woman (40s)

-happy, enthusiastic, relaxed

-coordinated steps

-moderate intensity

-music not very noticeable

2. strength training (Leslie Sansone)

-normal/average body and face; “nothing special”

-hair not tied back

-ugly shoes, black leotard, t-shirt

- early 30s
- instructional: explains lunges and squats slowly
- low to moderate intensity
- quiet music in background

3. hip hop

- very normal body, not overly fit
- “butchy looking,” “weird”
- bleached short hair
- early 30s
- cultural clothing: baggier, casual, black shoes (not running shoes)
- moderate intensity
- music noticeable
- precise movements, but free-flowing
- instructor gave good instructions and counts

Appendix E

Video Manipulation Check Questionnaire

Table C: Descriptive Statistics for Manipulation Check

	0	1	2	3	4	5	6	7	8	9	
Not physically coordinated											Physically coordinated

	0	1	2	3	4	5	6	7	8	9	
Overweight											Underweight

	0	1	2	3	4	5	6	7	8	9	
Doesn't exercise regularly											Exercises regularly

Please read these final 3 statements and decide how much they pertain to **you right now**.

Compared to **my own body**, the bodies of the women in the video are:

	0	1	2	3	4	5	6	7	8	9	
Not at all similar to my body											Very similar to my body

Compared to **my present age**, the ages of the women in the video are:

	0	1	2	3	4	5	6	7	8	9	
Much younger than me											Much older than me

Compared to my own **physical fitness**, the women in the video are:

	0	1	2	3	4	5	6	7	8	9	
Much less fit than me											Much more fit than me

Table E

Descriptive Statistics for Video Manipulation Check

Adjective	Video	<u>M</u>	<u>SD</u>	<u>n</u>	<u>p</u>
Muscular	1	7.87	0.86	52	.000**
	2	5.45	1.54	49	
Shapely	1	7.56	1.21	52	.002**
	2	5.82	2.01	49	
Attractive	1	7.52	1.58	52	.000**
	2	5.33	1.46	49	
Fit	1	8.29	0.64	52	.000**
	2	6.02	1.73	49	
Firm	1	8.02	1.09	52	.000**
	2	5.14	1.99	49	
Toned	1	8.06	1.29	52	.000**
	2	4.78	1.53	49	
Sexattractive	1	6.98	2.59	52	.001**
	2	4.92	1.43	49	
Bodyattractive	1	7.44	1.78	52	.000**
	2	4.74	1.45	49	
Coordinated	1	8.29	1.14	52	.014*
	2	7.51	1.14	49	
Weight	1	5.77	1.17	52	.000**
	2	4.12	1.05	49	
Regexerciser	1	8.31	0.76	52	.000**
	2	6.43	1.71	49	

Note. N = 101

All dependent variables were scored on a 0-9 point scale.

Video 1 = physique-salient; video 2 = physique-nonsalient

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

Appendix F

Table F1: Correlations Between Dependent Variables (Pre/Pre)

Table F2: Correlations Between Dependent Variables (Post/Post)

Table F3: Correlations Between Dependent Variables (Pre/Post)

Table F1

Pre-Test Correlations Between Dependent Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. BMI	--	-.30**	.20*	-.03	.00	-.17	.58**	.15	.00	-.17	-.37**	.01	-.11
2. Pre AE		--	-.01	.11	.17	.60**	-.59**	-.30**	.16	-.01	.34**	.09	.13
3. Pre AO			--	.08	.13	.04	.10	.37**	.22*	.13	.11	.12	.11
4. Pre FE				--	.12	.24*	-.04	.05	.09	.00	.39**	.10	.06
5. Pre FO					--	.19	-.20	.22*	.21*	.21*	.26**	.21*	.19
6. Pre BAS						--	-.52**	-.30**	.31**	.22*	.51**	.21*	.19
7. Pre SWT							--	.29**	-.22*	-.24*	-.50**	-.19	-.24*
8. Pre OVW								--	.20*	.17	.01	.24*	.07
9. Pre EEC									--	.64**	.56**	.68**	.48**
10. Pre EES										--	.46**	.46**	.37**
11. Pre SPE											--	.43**	.45**
12. Pre INT												--	.49**
13. Pre ATT													--

Note. AE = appearance evaluation; AO = appearance orientation; FE = fitness evaluation; FO = fitness orientation; BAS = body area satisfaction; SWT = self-classified weight; OVW = overweight preoccupation; EEC = cardiovascular exercise efficacy; EES = strength training exercise efficacy; SPE = self-presentational efficacy; INT = exercise intention; ATT = exercise attitudes.

* $p < .05$, ** $p < .01$.

Table F2

Post-Test Correlations Between Dependent Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. BMI	--	-.24*	.06	-.09	.03	-.12	.55**	.16	.02	-.11	-.34**	-.09	-.18
2. Post AE		--	-.04	.21*	.37*	.50**	-.53**	-.30**	.15	-.08	.44**	.13	.18
3. Post AO			--	.01	.18	-.14	.07	.38**	.05	-.01	.04	-.01	-.04
4. Post FE				--	.06	.31**	-.10	-.06	.09	.11	.48**	.22*	.17
5. Post FO					--	.29**	-.16	-.04	.34**	.06	.41**	.24*	.24*
6. Post BAS						--	-.44**	-.44**	.28*	.14	.53**	.30**	.24*
7. Post SWT							--	.36**	-.25*	-.14	-.45**	-.15	-.24*
8. Post OVW								--	.06	.03	-.14	.14	.00
9. Post EEC									--	.60**	.61**	.62**	.35*
10. Post EES										--	.39**	.32**	.22*
11. Post SPE											--	.57**	.43*
12. Post INT												--	.35*
13. Post ATT													--

Note. AE = appearance evaluation; AO = appearance orientation; FE = fitness evaluation; FO = fitness orientation; BAS = body area satisfaction; SWT = self-classified weight; OVW = overweight preoccupation; EEC = cardiovascular exercise efficacy; EES = strength training exercise efficacy; SPE = self-presentational efficacy; INT = exercise intention; ATT = exercise attitudes.

* $p < .05$, ** $p < .01$.

Table F3

Pre-Post Correlations Between Dependent Variables

Variable	Post AE	Post AO	Post FE	Post FO	Post BAS	Post SWT	Post OVW	Post EEC	Post EES	Post SPE	Post INT	Post ATT
Pre AE	.53**	-.02	.08	.14	.53**	-.43**	-.32**	.16	.00	.32**	.15	.08
Pre AO	.02	.62**	.06	.11	.04	.09	.32**	.10	.03	.05	.04	.16
Pre FE	.13	-.04	.81**	-.03	.22*	.02	-.02	.07	-.03	.39**	.21*	.11
Pre FO	.02	-.01	.03	.09	.22*	-.09	.14	.20*	.17	.21*	.20*	.03
Pre BAS	.52**	-.08	.27**	.25*	.87**	-.48**	-.43**	.27**	.19	.57**	.27**	.27**
Pre SWT	-.39**	.09	-.04	-.17	-.42**	.80**	.36**	-.27**	-.24**	-.49**	-.15	-.20*
Post OVW	-.26**	.33**	-.01	.02	-.32**	.30**	.86**	.15	.10	.00	.20*	.01
Pre EEC	.12	.04	.11	.29**	.31**	-.22*	.08	.89**	.58**	.56**	.59**	.45**
Pre EES	.01	.05	.21*	.17	.21*	-.25*	.08	.61**	.88**	.49**	.39**	.32**
Pre SPE	.43**	.03	.40**	.37**	.43**	-.40**	-.14	.57**	.37**	.88**	.49**	.46**
Pre INT	-.04	-.03	.02	.25*	.21*	-.15	.14	.64**	.38**	.44**	.75**	.35**
Pre ATT	.04	-.12	.00	.22*	.22*	-.15	.01	.39**	.29**	.38**	.36**	.74**

Note. AE = appearance evaluation; AO = appearance orientation; FE = fitness evaluation; FO = fitness orientation; BAS = body area satisfaction; SWT = self-classified weight; OVW = overweight preoccupation; EEC = cardiovascular exercise efficacy; EES = strength training exercise efficacy; SPE = self-presentational efficacy; INT = exercise intention; ATT = exercise attitudes.

* $p < .05$, ** $p < .01$