The nature and valence of appearance-related exercise imagery.

Amy L. Kossert
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The Nature and Valence of Appearance-Related Exercise Imagery

by

Amy L. Kossert

A Thesis
Submitted to the Faculty of Graduate Studies
through the Faculty of Human Kinetics
in Partial Fulfillment of the Requirements for
the Degree of Master of Human Kinetics at the
University of Windsor

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Exercise imagery may be a promising tool to enhance exercise behaviour (e.g., Munroe-Chandler & Gammage, 2005). The nature and valence of appearance imagery related to exercise participation were explored using qualitative methods. Two focus groups were conducted with exercisers ($n = 8$) and two with non-exercisers ($n = 11$). A linear pattern of themes emerged. Influential factors impacted appearance imagery formation, which led to experiential consequences that manifested in positive and negative cognitive and behavioural outcomes. Each outcome resulted in the facilitation and debilitation of exercise intention or behaviour. Negative appearance images motivated exercisers to ‘correct’ their bodies accordingly, while non-exercisers felt hopeless and engaged in avoidance behaviours. Further research is encouraged to develop a greater understanding of the relationship between appearance images and exercise behaviour and to delineate the factors with which exercise adherence could be promoted among exercise intenders.
DEDICATION

I would like to dedicate this work to Emily Deckert, my guardian angel, whose memory is a constant reminder and inspiration to cherish all that life has to offer and make our parents proud.
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RESEARCH ARTICLE

Introduction

There is no disputing the benefits of physical activity, in terms of its positive health and psychological outcomes (Haskell et al., 2007). Compelling prospective research evidence suggests that regular physical activity serves as a protective factor against disease outcomes, including certain cancers, cardiovascular disease, and Type 2 diabetes mellitus (Haskell et al.). Experimental investigations have further indicated that the accumulation of intermittent bouts of physical activity will positively impact health concerns such as blood pressure and weight management, and diminish adverse clinical and mental health outcomes (Haskell et al.). Furthermore, social and emotional benefits have been well documented. For example, Martin, Sinden, and Fleming (2000) found that people perceive exercisers more favourably in terms of both physical appearance and personality characteristics, in comparison to their sedentary counterparts.

Despite these noted benefits, the majority of women in North America are considered insufficiently active, according to recent guidelines from the American College of Sports Medicine and the American Heart Association (Haskell et al., 2007; Kowal & Fortier, 2007). Current recommendations include the execution of moderate activity for a minimum of 30 minutes, five days per week (Haskell et al.). Alternatively, individuals can accrue the health benefits of physical activity through a minimum of 20 minutes of vigorous activity on three days of the week (Haskell et al.).

In fact, recent estimates indicate that approximately 15% of women in North America adhere to the current physical activity recommendations, in comparison to men, of whom approximately 25% are considered physically active (Canadian Fitness and
Lifestyle Research Institute, 2004; U. S. Department of Health and Human Services, 1996). Consequently, the majority of North American men and women are at heightened risk for chronic disease, in addition to physical and mental health concerns (Haskell et al.).

There is substantial empirical evidence to support a positive relationship between exercise imagery use and exercise behaviour (e.g., Gammage, Hall, & Rodgers, 2000; Hausenblas, Hall, Rodgers, & Munroe, 1999). Specifically, individuals who exercise at greater frequency (operationalised in days per week) tend to report more frequent use of exercise imagery in comparison to their less active counterparts, regardless of gender or activity type (e.g., Gammage et al.). Imagery is a mental strategy that all individuals are capable of executing, with established links to motor skill and performance (e.g., Lang, 1979). Thus, it can be posited that imagery may make a beneficial contribution to exercise participation among sedentary individuals. The critical distinction between physical activity and exercise is that, although both involve bodily movements that accrue energy expenditure, only exercise involves a purposeful and planned routine (U. S. Department of Health and Human Services, 1996).

Central to research into imagery and its effects on motor performance is the analytic framework for imagery effects posited by Paivio (1985). This conceptual framework postulates four mechanisms by which imagery impacts motor performance: (a) cognitive specific (CS) imagery, consisting of images related to skills; (b) cognitive general (CG) imagery, which comprises images depicting strategies; (c) motivational specific (MS) imagery, including goal-oriented images; and (d) motivational general (MG) imagery, which consists of images related to emotions surrounding goal-attainment
or failure. This conceptual framework has since been amended, with the MG function of imagery divided into two lower-order functions: (a) motivational general-arousal (MG-A) imagery, which comprises images surrounding affect regulation; and (b) motivational general-mastery (MG-M) imagery, consisting of images related to mastery and mental toughness (Hall, Mack, Paivio, & Hausenblas, 1998).

The focus of the extant exercise imagery research has surrounded three primary functions of imagery. First, appearance imagery is described as those images specifically related to weight management and acquisition of muscle tone. Second, energy imagery is typically employed for regulation of arousal and affect. Finally, technique imagery is employed to perfect form and the execution of exercise routines. A recent review of exercise imagery research revealed that ten of thirteen studies examining exercise imagery have focussed on these three functions (Kossert & Munroe-Chandler, 2007). In their innovative applied model of exercise imagery, Munroe-Chandler and Gammage (2005) aligned these functions with those from Paivio’s (1985) taxonomy. Specifically, the appearance function was aligned with MS imagery, the energy function with MG-A imagery, and technique with CS imagery (Hall et al., 1998; Paivio, 1985).

These functions have traditionally been assessed with the Exercise Imagery Questionnaire (EIQ; Hausenblas et al., 1999). The EIQ has been subjected to a fair amount of criticism, however, and does not assess all functions of exercise imagery according to the conceptualisation in Paivio’s framework. Thus, much of the exercise imagery research to date should be interpreted with trepidation, as Paivio’s framework has received substantive empirical support in the sport domain. It is intuitive that sport
imagery research informs exercise imagery research, as both involve physical activities that have the potential for evaluation by others (Munroe-Chandler & Gammage).

Munroe-Chandler and Gammage (2005) proposed an applied model for imagery use in exercise that appears to offer a promising direction for future research (see Figure 1). The conceptual framework includes antecedents to exercise imagery resultant in cognitive and behavioural outcomes, which are mediated by imagery functions (as outlined by Paivio, 1985 and Hall et al., 1998) and efficacy beliefs, and moderated by individual factors. The applied model is an appropriate tool for researchers, as it contains testable relationships and is both theoretically and empirically derived. Moreover, the model incorporates the five functions of imagery (Hall et al.; Paivio), and proffers hypothesised antecedents and outcomes. This model is of particular relevance to the current study as body image and appearance concerns related to exercise imagery are incorporated into its conceptual framework.

Correlational evidence has suggested that appearance imagery is the most frequently cited function of imagery used by exercisers (e.g., Gammage et al., 2000; Rodgers, Munroe & Hall, 2001-2002). Furthermore, appearance imagery significantly predicted exercise intention in a sample of primarily female aerobic exercise participants (Rodgers et al.). Moreover, appearance imagery predicted obligatory exercise in women, but not in their male counterparts (Hausenblas & Symons-Downs, 2002). Indeed, the appearance function of exercise imagery warrants further investigation, as not only is it the most commonly employed, but also appears to be associated with negative outcomes.

The thin and toned physique has become an ideal standard, which has been perpetuated throughout society (Muehlenkamp & Saris-Baglama, 2002). Regrettably,
Western culture has placed a high value on physical beauty, and as a result, body image concerns are prevalent amongst women (Harper & Tiggemann, 2008). Body image is a multidimensional construct that encompasses the unique perception that individuals form of their bodies and the affiliated affective, cognitive, and behavioural consequences (Cash & Pruzinsky, 1990). Body image disturbance is widespread in Western culture (Thompson & Stice, 2001). In fact, this pervasiveness of weight and body dissatisfaction has been referred to as a “normative discontent,” referring to the prevalence of appearance-related dysphoria amongst women (Streigel-Moore, Silberstein, & Rodin, 1986). Furthermore, body image disturbances may impact psychological and physical functioning (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999).

There are two prominent theories that purportedly account for the aetiology of body image disturbance: sociocultural models (e.g., Thompson et al., 1999), and social comparison theory (Festinger, 1954; Wood, 1989). The sociocultural perspective offers the most comprehensive and theoretically-derived framework, which posits that societal ideals for appearance (i.e., the thin ideal) are influenced by a number of social factors, including family, peers, and the media (Thompson & Stice, 2001). To date, the media has been identified as the most influential mode of socialisation (Harper & Tiggemann, 2008). Groesz, Levine, and Murnen (2002) conducted a meta-analytic review of experimental investigations into the impact of the media portrayal of the thin ideal on female body image. Results indicated that media exposure to the thin ideal negatively impacted female body image, with effect sizes ranging from $d = -1.12$ to $d = 0.30$ (Groesz et al.).
Social comparison theory postulates that individual self-evaluations are instinctive, and enabled only by comparisons with other persons (Festinger, 1954). Social comparison theory originally proposed that individuals engaged in processes of social comparison when objective standards for evaluation were unavailable (Festinger, 1954). Substantial research has been conducted into social comparison theory and subsequent revisions have been incorporated into the theoretical framework (e.g., Wood, 1989). For example, Wood proposed that individuals have the tendency to seek comparison targets, regardless of the availability of objective means of measurement. Furthermore, contrary to Festinger's (1954) proposition that individuals tend to compare themselves with similar others, Wood suggested that individuals may attempt to influence the social comparison process by selecting a specific target that will emanate their desired affective response. Bandura's social cognitive theory (1986) informs the developed social comparison framework, with its particular emphasis on the reciprocal relationship between individuals and their social environment.

Within the applied model for imagery use in exercise, it is posited that individual body image concerns may result from negative appearance imagery specific to weight loss and body dissatisfaction (Munroe-Chandler & Gammage, 2005). Thus, the need to explore negative appearance imagery and its meaning to women is a critical step in determining the underpinnings of the relationship between appearance imagery and exercise behaviour.

In light of considerable societal demands pertaining to physical appearance standards, which, in turn, inform appearance images, substantive evidence supports a body objectification framework as a mechanism by which to investigate the negative
outcomes associated with such ideals (Prichard & Tiggemann, 2005). Objectification theory (Fredrickson & Roberts, 1997) postulates that the media portrays the female body and its parts as a commodity that is representative of her person. Furthermore, the female body is often displayed in the media in pieces or parts, which Fredrickson and Roberts suggests socialises women to see themselves as objects for the purpose of evaluation. As a result, women are consistently engaged in self-monitoring of their physical appearance as a product of a cumulative societal focus towards the physical self.

When engaged in appearance-related mental imagery, a young woman may envision the physique she desires to attain; however, should she be larger than her image of the svelte female ideal, the image may then be construed as unattainable. Conversely, a young woman may imagine her physical appearance as a fairly accurate perception of her physical self (Munroe-Chandler & Gammage, 2005). Although Hall (2001) discouraged further examination into negative imagery due to its detrimental impact on motor performance, negative appearance-related images may not necessarily be debilitative within the exercise domain. Indeed, it is possible that some women may embrace negative images of their appearance as motivational in nature, and consequently interpret these images as facilitative to their exercise intention and behaviour.

Research conducted thus far into negative imagery has not been without its shortcomings. There has been substantial confusion regarding the very conceptualisation of positive and negative imagery. Typically, researchers have designated all negative images as debilitative to performance (e.g., Powell, 1973; Woolfolk, Parrish, & Murphy, 1985). It is possible, however, that images serve distinct functions across individuals. In fact, regardless of the designation of an image as negative in valence, it is entirely
possible that the image does not operate as debilitative to performance. Short et al. (2002) suggested that images interpreted as debilitative to one individual may, in fact, be perceived as motivational to another. Furthermore, Short et al. (2002) attempted to redefine research efforts with regard to imagery direction through the modification of its operationalisation from positive and negative imagery to facilitative and debilitative imagery, respectively. Subsequent research has employed the facilitative and debilitative approach to investigations of imagery direction (e.g., Nordin & Cumming, 2005). Consistently problematic, however, is the inconsistency between the meanings of the negative image to the participant in comparison to that of the researcher.

Research conducted into debilitative imagery in an exercise context is lacking. One qualitative investigation into exercise imagery used by both active and sedentary individuals revealed a substantial number of debilitative images; primarily endorsed by the sedentary participants (Short, Hall, Engel, & Nigg, 2004). In their discussion, the authors suggested that sedentary participants might imagine negative outcomes with greater frequency in comparison to their active counterparts; however, increased exposure to exercise and its corresponding environment might lead to a decrease in debilitative imagery among sedentary individuals (Short et al., 2004). According to a recent review of exercise imagery research, sedentary populations are integral to future investigations of imagery use in an exercise domain (Kossert & Munroe-Chandler, 2007). Thus, the purpose of the present study is to explore the nature (the meaning of the image; i.e., the interpretation as either facilitative or debilitative to exercise participation), and the valence (imagery direction; i.e., positive or negative images) of appearance-related imagery reported by female exercisers and non-exercisers. It is critical that we first focus
on appearance imagery in a young female sample, as body image concerns are salient to this group (Tiggemann, 2003). Furthermore, exercise imagery research to date indicates that women use appearance imagery at a greater frequency than any other type of imagery (e.g., Gammage et al., 2000). The sedentary lifestyle is common among young women and the resultant individual and public health implications are abundant. Therefore, it is important to develop a better understanding of its precipitating and maintaining factors.

Design and Methodology

Design

In order to procure interactive data, a focus group methodology was employed. Focus groups are considered ideal for the exploration of meanings that drive behaviour (Renzetti & Lee, 1993), such as, the influence of appearance-related imagery on exercise behaviour. Moreover, Stewart and Shamdasani (1990) suggested several advantages of focus groups over individual interviews for both the researcher and the participants. For example, in a well-structured focus group, respondents tend to feel more secure in knowing that their opinions do not differ greatly from their peers, where in an individual interview, the interviewee might feel that she needs to defend her views to the interviewer. Furthermore, an interviewee might fear revealing his or her real opinion, if unconventional, and consequently will be more likely to offer what is perceived as the socially desirable response (Stewart & Shamdasani). In addition, unlike an individual interview, a focus group allows the moderator to revisit issues that initially did not provoke sufficient discussion. Indeed, there are disadvantages inherent to the focus group design, including greater logistical challenges and economical costs, in terms of time and
financial expense (Crabtree, Yanoshik, Miller, & O’Connor, 1993). Moreover, the pressure to conform to the opinions of others is highlighted in a focus group setting, and responses can be greatly influenced by the backgrounds of the participants (Frey & Fontana, 1993). In light of the advantages and disadvantages of focus groups, this methodology appears most appropriate to investigate the current research question.

In total, four focus groups were conducted with two consisting of female exercisers, and two consisting of female non-exercisers. In order to generate a broad representation of appearance images, and specifically the relationship between appearance imagery and exercise intention or behaviour, it was important to examine the meaning of images salient to both active and inactive young women.

Exercise status was designated as the break characteristic in this study: a defining characteristic that differentiated participants across groups (Knodel, 1993). This enabled the examination of the potentially differential influence of appearance-related images on exercise intention and behaviour as a function of exercise status. Two control characteristics (age and gender), which are considered uniform or common across groups, were included in the design (Knodel).

First, age was designated a common composition control characteristic, as only female volunteers within the age range of 18 to 25 years were recruited to participate in the focus groups. It was of interest that only one age group be represented, as it is established that body image concerns change throughout the lifespan (e.g., Tiggemann, 2003). Given that this study highlights appearance images and their subsequent impact on exercise participation, it was important that the focus of the investigation be on a sample consistent in age-related body appearance concerns. Nonetheless, in order to allow for
differences in opinion during discussion, adequate variation of participants’ age was considered in the allocation of participants into their respective focus groups. By contrast, all groups shared the uniform control characteristic of gender, as only female participants were recruited for this study. The composition of the specified sample suggests that the focus groups in this study were fairly homogenous in nature, an advantage in itself, as the sharing of common beliefs may be perceived as reassuring to the participants (Krueger & Casey, 2000). Furthermore, only female participants were recruited for the proposed study, as objectification theory (Fredrickson & Roberts, 1997), one of the theoretical frameworks contributing to the questioning, focuses on the female internalisation of sociocultural ideals.

Although the typical number of participants in a focus group includes six to eight people (Wilkinson, 1998), it has been argued that with fewer participants, the dynamics of the group encourage the generation of more interactive data (Krueger & Casey, 2000). In particular, when the researcher hopes to uncover information regarding the personal experiences of the participants at greater depth, smaller focus groups are ideal (Krueger & Casey). Therefore, for the current study, focus groups comprised four to six participants.

Participants

Participants were recruited through posted notices, and selected on a volunteer basis following completion of an on-line screening questionnaire (refer to Appendixes A and B, to review the poster and screening tool, respectively). Focus groups consisted of female university students (N = 19), aged 18 to 23 years. The two focus groups of exercisers (n = 8) ranged in age from 18 to 23 years, with a mean age of 20.88 years (SD
= 1.55), while the age range for the non-exercisers ($n = 11$) was 19 to 23 years ($M = 20.09$, $SD = 1.30$). A metabolic equivalent (MET) score was calculated for each participant based on her self-reported leisure-time exercise behaviour derived from the completed on-line screening tool. The MET scores ranged from 34 to 92 for the exercisers, and from 3 to 33 for the non-exercisers. The mean MET score was 60.62 ($SD = 21.43$) for the exercisers and 14.23 ($SD = 12.33$) for the non-exercisers. All exercisers were classified in the maintenance stage based on the Stages of Change model, (Prochaska & DiClemente, 1992). Non-exercisers were classified in the precontemplation stage ($n = 3$); the contemplation ($n = 3$); and the action ($n = 5$) stages based on Prochaska and DiClemente’s model. Therefore, all of the exercisers had been exercising on a regular basis for longer than six months, while eight of the eleven non-exercisers were intending to commence an exercise program, and three had no such intention.

**Materials**

A focus group interview guide was constructed (see Appendix C), with themes derived from the applied model of imagery use in exercise (Munroe-Chandler & Gammage, 2005) and objectification theory (Fredrickson & Roberts, 1997). The questioning route was focussed upon perceptions of body appearance and exercise participation. Imagery employment surrounding appearance-related themes and their subsequent impact on exercise participation by exercisers and non-exercisers alike were explored. A digital recorder was used to record the focus group interviews, and the assistant moderator documented notable quotes using a pen and notepad.
Measures

Screening questionnaire. In order to ensure that the volunteers were in the proper age range, and could be appropriately classified as exercisers or non-exercisers, a modified version of the Godin Leisure-Time Exercise Questionnaire (LTEQ; Godin & Shephard, 1985) was used as a screening tool prior to participants' allocation to their respective focus groups. The LTEQ is a two-item measurement tool purported to assess the typical leisure-time exercise habits of the respondent over a seven-day period. The first item measures the number of times in a typical week that the respondent engages in strenuous, moderate, and mild leisure time physical activity for longer than 15 minutes. The second item on the LTEQ asks participants to report the frequency ("often", "sometimes", or "rarely/never") that they engage in leisure time exercise at an intensity great enough to incur perspiration and accelerate the heartbeat. A formula was used to calculate a metabolic equivalent score for each participant, based on the participant's self-reported weekly leisure activity: (3 x mild) + (5 x moderate) + (9 x strenuous). Prior research has indicated that the LTEQ is both a reliable and valid measure of typical exercise behaviour among adults (e.g., Godin, Jobin, & Bouillon, 1986; Jacobs, Ainsworth, Hartman, & Leon, 1993). The LTEQ was slightly modified, with one item appended requesting the participants to state their age. Furthermore, the LTEQ was completed on-line for the convenience of the volunteers.

Procedure

This study observed Tri-council ethical guidelines, and the recruitment process commenced upon clearance from the Research Ethics Board of the University of Windsor. Participants were recruited through notices, which were posted on information
boards throughout the university campus. All interested individuals were directed to the on-line screening questionnaire (LTEQ). Only those volunteers that reported being either physically active or inactive on a regular basis were selected to participate in the study. Activity status was operationalised based on the respondents’ LTEQ scores and current recommendations for physical activity.

In order to reduce social desirability, and to facilitate social interaction among the group, a female student moderated the sessions to highlight the homogeneity within the group (Stewart & Shamdasami, 1990). It is important to note, however, that only age and gender were controlled for within focus groups, and, as such, individual differences including ethnicity and body composition varied within each group. All focus group sessions were conducted in a small conference room at the university.

The moderator was a female graduate student who had undergone extensive training in the conduction of focus groups. The same moderator and assistant moderator conducted all sessions to ensure consistency. Name tags (containing first names only) were provided to the participants upon arrival to encourage group identity and cohesiveness (Stewart & Shamdasami, 1990). The assistant moderator was also seated within the circle, and was responsible for taking field notes such that all quotable comments were duly recorded.

As the focus group commenced, the moderator introduced the recording device to the participants, and explained that the purpose of the recorder was to ensure that all comments would be captured. At this time, measures of confidentiality were outlined. Following informed consent by participants to both the focus group proceedings and the
audio taping of the discussion (refer to Appendices D through F), all participants were welcomed and thanked for their participation.

Following introductions, a brief overview of the topic was provided. First, imagery was defined aloud to all participants as follows, “Imagery may be defined as using all the senses to re-create or create an experience in the mind” (Vealey & Greenleaf, 2001, p. 248). Moreover, “We can be aware of ‘seeing’ an image, feeling movements as an image, or experiencing an image of smell, taste or sounds without experiencing the real thing” (White & Hardy, 1998, p. 389). Then, a semi-structured interview process was employed, wherein participants were given the opportunity to discuss their exercise habits within the context of their appearance-related images.

The focus group interview guide comprised four elements of questioning: opening, introductory, transition, and key questions, followed by a brief summary. Opening questions were intended to encourage general discussion, and to reassure participants (Krueger & Casey, 2000). An introductory question was then posed, with the intent of introducing and promoting conversation among the group members regarding appearance imagery. Transition questions promoted greater depth of discussion in comparison to the introductory questions, and eased progression into the subsequent key questions (Krueger & Casey). Questions differed slightly as a function of the break characteristic. For example, exercisers were invited to recall and describe particularly motivational images related to their initial adoption or maintenance of their regular exercise participation, while non-exercisers were asked to describe the motivational images they may have experienced related to self-change.
Key questions were derived from the applied model of imagery use in exercise (Munroe-Chandler & Gammage, 2005) and objectification theory (Fredrickson & Roberts, 1997), in addition to prior exercise imagery research. These questions focussed in greater depth on participants’ appearance images, both positive and negative in valence, in relation to their exercise intentions, and/or behaviour. Throughout the focus group session, probes were used when necessary, as a technique to elicit further discussion from the group (Krueger & Casey, 2000). To conclude the focus group, the assistant moderator summarized the discussion aloud to the group members, and participants were asked if they were in agreement with the summary provided.

Upon the completion of the focus group, which lasted approximately 90 minutes per session, participants were thanked for their participation and provided with their promised incentive: an envelope containing ten dollars, or two bonus percentage points allocated to a general elective offered through the Faculty of Arts and Social Sciences. Participants then signed a waiver indicating receipt of payment (see Appendixes G and H).

Pilot Study

Prior to participant recruitment, a focus group was conducted as a pilot test in order to ensure that the questions in the interview guide were easily comprehended. In addition, the pilot study was ecologically valid in that this preliminary session was conducted with a group of regular exercisers with whom the moderator was unfamiliar. The pilot test endured the anticipated time duration (90 minutes) and interaction was readily exchanged between the group members. Finally, the interview guide was slightly modified based on feedback from the participants and the perceived ease with which the
moderator posed the questions. Specifically, modifications consisted of minor revisions to the wording of three sentences within the questions, such that the conversation emulated a natural dialogue.

Data Analysis

The approach to data analysis consisted of content analysis, which is a method of qualitative data reduction into intuitive patterns and themes (Patton, 2002). Data preparation and analysis followed recommendations put forth by Patton and by Richards (2005). First, all verbal communications, including any contributions from the moderator, were transcribed verbatim into a text document. Following transcription, the verbatim transcripts were imported into a qualitative analysis computer program, NVivo8 (QSR International, 2008), and segmented into meaning units. Meaning units are distinct concepts within the raw data, which have the potential for individual interpretation (Patton). The meaning units were clustered according to common themes in order to achieve convergence (Patton). Content analysis commenced with the identification, coding, categorisation, classification, and labelling of the fundamental patterns within the data.

Upon completion of the process of convergence, the analytical strategy of divergence was employed (Patton, 2002), which involves the broadening of existing information, bridging connections between existing items, and the surfacing and verification of new information that is purported to correspond with the existing themes. In addition, divergence includes the meticulous examination of deviant cases that do not tend to correspond with the identified themes and patterns. Upon exhaustion of all sources of information and theoretical saturation of categories, the content analysis was
considered complete, resulting in the development of two hierarchical trees of knowledge, one representing non-exercisers (see Figure 2) and the other for exercisers (see Figure 3). The hierarchical trees of knowledge illustrate the meaning and manifestation of the general dimension of appearance imagery to exercise intention and behaviour in non-exercisers and exercisers, respectively.

Trustworthiness procedures. Analytic triangulation was employed to increase reliability, whereby the primary investigator and an expert in the area of exercise imagery independently coded 20% of the raw data (Patton, 2002). In qualitative research, triangulation can be employed to understand any inconsistencies that may emerge, and, unlike quantitative research, these discrepancies may offer greater insight into the research question (Patton). Triangulation was employed by means of the source of the data, methods of obtaining the data, and the researchers, following methods outlined by Miles and Huberman (1994). Specifically, the internal validity and trustworthiness of the data were established through the provision of comprehensive descriptions of the findings that emerged from the data, regular debriefing sessions between the investigators, and the authentication of all transcripts. Furthermore, external validity evidence was established through detailed descriptions of the participants, as well as data collection and analyses, in order to enable comparisons. Objectivity of the researchers was verified through detailed journaling of all data collection, analyses, and debriefing sessions. Trustworthiness was further established through the pilot study conducted prior to the focus group sessions. In addition, all participants were granted the opportunity to offer their feedback based upon an overview of each focus group provided by the assistant moderator, as well as a summary of the results, which they received following the study.
Inter-rater reliability was calculated between the investigators for their classification of the raw data categories, with an agreement rate of 96%. Inconsistencies in the categorisation of the meaning units were discussed until the investigators arrived at a consensus.

Results and Discussion

Data from the exercisers and non-exercisers were analysed separately in order to identify similarities and differences between the two groups with regards to their interpretations of appearance imagery and its impact on their exercise participation. Thus, within each theme, the common categories between the exercisers and non-exercisers will be presented. As unique categories or themes emerge, those data will be presented separately, as a function of exerciser status. Figure 2 illustrates the themes and categories that emerged from the general dimension “appearance imagery” for the non-exercisers, while Figure 3 displays the themes and categories derived from the exerciser data. The content of the emergent themes included the emotions harvested by these young women in response to their appearance imagery, how those images were discrepant from their ideal, and how their cognitions were manifested in terms of diet, as well as avoidance, intention, or participation in exercise behaviour. Regardless of their respective valence, each of the cognitive and behavioural outcomes was consequently interpreted as both facilitative and debilitative to exercise participation.

Frequency counts and percentages are displayed in Table 1 for the non-exercisers and Table 2 for the exercisers. Although indicative of the frequency with which each meaning unit was classified within the categories and themes, these values are not necessarily indicative of the importance to the formation and manifestation of the
participants' appearance imagery (e.g. Gammage, Hardy, & Hall, 2001; Munroe, Giacobbi, Hall, & Weinberg, 2000). It should be noted that the quotes presented in support of each theme or category are a representation of all focus group members, and are not consistently illustrative of any dominant participants. Overall, there were a total of 715 meaning units for the exercisers, and 406 for the non-exercisers.

Influential Factors

The theme “influential factors” comprises four categories: context, private, public, and media. The meaning units within these categories reflected the factors identified by participants as influential to the formation of their appearance images (see Figures 2 and 3).

Context

Social cognitive theory (Bandura, 1986) emphasises the reciprocal influence of environmental factors on behaviours and cognitions. Central to behavioural models is the paramount influence of situational factors, such as the context of appearance imagery and its situational impact on body image beliefs (Thompson et al., 1999). Within the theme of context emerged four categories for non-exercisers and four for exercisers. It was apparent that for these young women, appearance imagery was a dynamic experience and critically impacted by contextual factors. Consistent with the hypothesis put forth by Munroe-Chandler and Gammage (2005), exercisers discussed the images related to strategy (CG images) that they employed while at the fitness facility. These images were discussed in terms of their relevance to the attainment of their overall outcome goals of a lean and toned physique. Contrary to what was hypothesised by Munroe-Chandler and
Gammage however, these exercisers imagined their appearance-related outcome goals (MS imagery) both in and outside of the fitness facility.

Themes in common included references to mirrors and clothing as contextual influences on appearance imagery formation. Mirrors and clothing were described as prompts to body evaluation, resultant in either body image satisfaction or dissatisfaction.

*Mirrors.* In general, the exercisers and non-exercisers articulated discomfort with respect to mirrors. One non-exerciser described feeling hopeless with respect to her appearance image, "...I look in the mirror and I look big, then I just think it's hopeless and I don’t want to do anything about it." For some exercisers, the negative appearance image prompted by mirrors facilitated their exercise behaviour. As one exerciser stated, "I can see all my rolls, my arms, and I can touch them and I get all discouraged...I’ll do a hundred sit-ups, because I can see it in the mirror”.

*Clothing.* Similarly, clothing was a source of distress, specifically in terms of body weight and its impact on clothing size. The appearance images prompted by clothing provided an explicit reminder of the ideal appearance internalised by these young women. When describing the appearance images that exuded the greatest impact on her exercise intention, one non-exerciser declared that she “still hang(s) on to those size zeros and size one clothes just in case.” In general, an ideal discrepancy was evoked, which resulted in negative affective responses. One exerciser expressed dissatisfaction with her appearance image prompted by clothing, and its impact on her exercise goals, “…if I don’t like the clothes I wear during the day, like if I don’t like the way my arms might fill in a sleeve, then I work on those muscles.”
Shopping. Specific to the non-exercisers were appearance concerns provoked by imagery employed within the shopping context, with antecedents including the social comparison processes that resulted from the public context, and the activation of the ideal discrepancy. One non-exerciser declared her frustration with the negative appearance images she experienced while shopping, and expressed that shopping was “the hardest thing in the world because they cater to...tall and really skinny people.”

Fitness facility and shower. Within the theme of context, two categories were specific to exercisers: fitness facility and the shower. Consistent with empirical research (e.g., Hausenblas et al., 1999), the category of fitness facility encompassed prompts of appearance imagery and self-evaluation specific to the exercise environment. For these exercisers, a complex relationship seemed apparent between their appearance images and their self-esteem. One exerciser expressed satisfaction with her appearance image following an exercise session in that she was “more proud of the way (she) looked when (she) was sweaty and stuff like that.” By contrast, other exercisers expressed dissatisfaction with their appearance images within the exercise context, “I do not feel attractive...I don’t want to be seen by anyone...in the gym when I work out.” Empirical evidence suggests that fitness facilities promote higher levels of body objectification among exercisers, related to negative cognitive (e.g., body dissatisfaction) and behavioural (e.g., disordered eating) outcomes (Prichard & Tiggemann, 2005). Sentiments of dissatisfaction with appearance images were closely tied to social comparison processes activated at the fitness facility. The shower also prompted exercisers to evaluate their bodies and form appearance images.
Private

Being alone prompted private cognitive, perceptual and affective appraisals of the self in these young women. The significance of the private setting to appearance imagery was clearly articulated by one exerciser, “The only time I think about my own body is when I’m alone.” Common to exercisers and non-exercisers were the categories of self-appraisal, possible self, and goals.

Self-appraisals. Self-appraisals are defined as individual assessments of physical appearance from an internal perspective (Quinlivan & Leary, 2005). Generally, these young women expressed the significance of self-appraisals to their appearance images. As one non-exerciser described, “It is very internal. I don’t see myself as others see me.” Similarly, an exerciser stated, “It’s all my perception of how I feel. I don’t care how others feel.” Quinlivan and Leary further proposed that those self-appraisals related to self-esteem evoke emotional responses. The impact of self-appraisals on the relationship between appearance imagery and self-esteem is illustrated in the following statement by an exerciser, “I know I could look better and feel better and think of myself a little higher if I had the lean body.”

Possible self: The category of possible self includes appearance images that comprise images of a future self (MS imagery), which are derived from prior self-representations and/or salient experiences (Markus, 1977). In each of the focus groups, participants commonly expressed appearance imagery content comprising an ideal physique that was discrepant from their current physique. For some, this ideal was based upon personal appearance imagery experiences. A non-exerciser remarked, “I want to be my size but just fitter.” Overall, the exercisers tended to have clear and descriptive
images of their possible selves. In reference to her outcome-related appearance images (MS imagery), one exerciser indicated, “I know what I want to be...what I visualise myself to be.” Prospective evidence suggests promising implications of experimental manipulations involving imagery of possible selves on health behaviours (Ouellette, Hessling, Gibbons, Reis-Bergan, & Gerrard, 2005). Specifically, images of possible selves significantly impacted behavioural change, as participants who imaged their possible self increased their exercise behaviour over time (Ouellette et al.).

**Goals.** The category of goals reflected the participants’ personal goals related to weight loss or management, appearance improvement, and changes to the physique by means of muscular tone and definition. Consistent with the applied model of imagery use in exercise, (Munroe-Chandler & Gammage, 2005), exercisers employed appearance imagery aligned with their desired outcome of a lean and toned physique. Non-exercisers also imagined their desired appearance outcomes (MS imagery), although they portrayed their outcome goals in an abstract fashion. The meaning units indicated that the imagery of the exercisers demonstrated process goals, while the appearance images of the non-exercisers represented only outcome goals. For example, the non-exercisers generally spoke about weight-related goals and images of a thinner physique, however did not tend to specify any means by which to attain the weight loss. With reference to the attainment of her ideal appearance, one non-exerciser described her goals as follows, “there’s always improvements or something to be worked on all the time.” By contrast, the exercisers tended to engage in goal-setting techniques in order to attain specific goals that matched their appearance images.
**Self-objectification.** Unique to non-exercisers was the category of self-objectification, which is defined as the female self-perspective that her body is isolated from her person, and is perceived as an object (Fredrickson & Roberts, 1997). The non-exercisers spoke about the societal equation of beauty with thinness, and how this impacted their appearance imagery. While describing the motivations underlying her intention to exercise, one non-exerciser described the impact of the media and society on her self-percept, “if you want to be really beautiful, then they portray that you have to be really skinny.” In accordance with Fredrickson and Roberts’ objectification theory, these young women adapted their appearance images such that they were compatible with perceived societal ideals. As indicated by these non-exercisers, the media can evoke a response of self-objectification. Empirical evidence suggests that exposure to the media thin ideal can provoke self-objectification in young women without an explicit focus on their own bodies (Harper & Tiggemann, 2008). Such profound experimental findings highlight the significance of self-objectification as an influential factor on individual appearance imagery.

**Experience.** Specific to the exercisers within this theme was the category of experience. Munroe-Chandler and Gammage (2005) hypothesised that the extent of individual exercise experience impacts appearance-related exercise imagery. Exercisers primarily discussed the discrepancy between their current appearance images and their past images, which they perceived as more athletic in physique. Consistent with their hypothesised relationship between experience and motivation (Munroe-Chandler & Gammage), the prior exercise and athletic experience of the exercisers in the focus groups appeared to play a meaningful role in their exercise motivation and maintenance.
Some exercisers were motivated to exercise based on their extensive athletic backgrounds, however; for others, athletic experience contributed to a lack of motivation to exercise for appearance reasons. For example, one exerciser described the discrepancy in her exercise motivation as a function of her experience, “When I was younger, I played sports and exercised for the fun and the feeling of being happy…but now it’s for the look and basically to fit that stereotypical image like the flat stomach and firm thighs.” Experience appeared to influence the imagery function employed by the exercisers. Although this exerciser was employing goal-oriented appearance images (MS imagery), she seemed to experience a greater sense of fulfilment when engaging in motivational images related to arousal and affect (MG-A imagery).

Public

This theme includes the sociocultural influences that contribute to the valence and nature of appearance imagery. As a demonstration of the powerful impact of public influences on the formation of appearance images, one exerciser expressed, “…the only time I really worry about how I look is when I’m out in public.” Within the theme of public, the focus groups revealed three categories common to exercisers and non-exercisers: others, feedback, and reflected appraisals.

Others. Others included the role of socialisation from influential others, such as family, peers, romantic partners, and relevant strangers. This sociocultural influence is considered integral to the formation of appearance images and beliefs (Levine & Smolak, 1996). An example of the impact of influential others on appearance imagery is demonstrated in this quote from a non-exerciser with regards to her perceptions of the beliefs of her romantic partner, “It’s probably my boyfriend who makes me want to be
more thinner.” Indeed, exercise imagery research would be enlightened by examination of the influence of other persons on the formation and activation of appearance imagery, as interactions with others represent a dynamic yet recurring mode of socialisation. For example, the use of an in vivo experimental design in which a thin ideal confederate induces appearance imagery could delineate the effects on exercise behaviour, representative of that in a natural environment. It is generally suggested within the literature that thin and attractive peers emanate negative affective responses in women (Krones, Stice, Batres, & Orjada, 2005).

**Feedback.** Positive (e.g., reassurance) and negative (e.g., teasing) verbal and non-verbal appearance-related feedback also serves an important role in the formation of appearance imagery and beliefs (Levine & Smolak, 1996). Furthermore, theories related to the self have consistently suggested that the individual sense of self is largely derived through feedback from relevant others (Patrick, Neighbors, & Knee, 2004). With respect to feedback, the non-exercisers discussed influential others as a source of appearance-related criticism. Participants generally expressed that any positive feedback was devalued and subsequently ignored, suggesting that they perceived their appearance images as stable. Future research into the stability of appearance imagery is warranted, as self-concepts are generally viewed as dynamic in nature, and reliant on the contingencies from which the self-worth is based (e.g., appearance; Patrick et al.). One non-exerciser demonstrated a reliance on appearance-related feedback from her romantic partner as a source of global self-esteem, “I noticed a big drop in my self-esteem when I broke up with my boyfriend because...when I was dating him he was always reassuring me and telling me how beautiful I was.”
The exercisers discussed the impact of their family members, friends, and strangers (primarily at the fitness facility) on the formation of their appearance images. One exerciser attributed her negative appearance image to criticism from her mother, “So (my mother says) ‘you should be in the gym. Haven’t you gone today? Should you be eating that?’ So she puts it in my head.” By contrast, another exerciser expressed the comfort of reassuring feedback from her romantic partner when experiencing negative affective responses to her appearance images, “Talking to my boyfriend really helps because he (says) ‘oh, you look beautiful, so who really cares?’ ”

Reflected appraisals. Reflected appraisals are defined as individual assessments of appearance from an external perspective (Quinlivan & Leary, 2005). References to appearance imagery from an external perspective were devalued by the non-exercisers, “…if I compare how I see myself to seeing what my friends would say about my body, it’s always a lot different and I always just stick with what I think.” Quinlivan and Leary propose that the discrepancy between women’s internal and external perspectives of their appearance imagery may consequently impact their bodily perceptions. Exercisers tended to express concern with reflected appraisals, specifically in the fitness facility. One exerciser reported a strong emotional response, “I personally always think of other people looking at me, so I know if you don’t like it don’t look…they actually have to look at me, so I sort of feel sorry for them…” The shame expressed by this exerciser is consistent with the consequences of body objectification (Fredrickson & Roberts, 1997).

Media

Perhaps the most influential sociocultural factor in the determination and maintenance of appearance-related images and beliefs is the mode of socialisation
provided by the mass media (Heinberg, 1996). Not only did participants express the role of the media in shaping their appearance images, but there also emerged a pressure to conform to the ideals that are portrayed by the media. Participants also spoke about a sense of despair, in that the media ideals may not be attainable. Three categories common to exercisers and non-exercisers emerged from this theme: thin ideal, athletic ideal, and body-ism.

**Thin ideal.** The thin ideal is defined as the societal ideal portrayed by the media of a thin physique, which promotes an ideal that is unattainable for many (Heinberg, 1996) and is integrated into the appearance imagery of women who wish to attain this ideal. The exercisers and non-exercisers expressed discouragement and frustration with the media’s widespread portrayal of the thin ideal. Imagery reflecting the thin ideal appeared to create cognitive dissonance (Festinger, 1957) among exercisers and non-exercisers, which was reflected in their appearance imagery. For example, a non-exerciser employed dissonant reduction by attempting to discount the thin ideal, “…they have trainers and nutritionists, and I know that, but at the same time…‘I want to look like that!’ ”

**Athletic ideal.** The athletic ideal is defined as the portrayal of an athletic ideal body type; typically represented in sports media, with the focus on a toned and athletic physique (Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004). Non-exercisers described appearance images related to the acquisition of muscle tone and definition. One non-exerciser stated, “I’ve been cutting out pictures of fitness models and post(ing) them on my walls to help motivate me.” The exercisers also endorsed the athletic ideal and integrated this ideal into their appearance-related outcome goals (MS imagery), “I would rather be a person that is built well, muscular, toned with no fat.”
Body-ism. Body-ism is defined as the media portrayal of the female body and its parts as representative of her person (Fredrickson & Roberts, 1997). The interpretation of body-ism varies throughout the literature, however consistently highlights the female being as a constitution of the body and its parts. As such, appearance images that emphasised particular body parts were assigned to this category. Within each focus group, a discussion ensued regarding images of particular body areas with which the participants were dissatisfied. The non-exercisers described images of “flattening” and removing “flab,” while the exercisers imaged muscle tone and definition. An exerciser discussed her personal body-ism within the context of her appearance imagery:

If there is a particular area of my body that I’m not satisfied with or am self-conscious about I’ll focus on that a lot so I could always picture…what that might look like presently, and how I would like to see it, to see that changed.

Experiential Consequences

Within the level of experiential consequences of appearance imagery, four themes emerged from the focus group data: four for exercisers and four for non-exercisers (see Figures 2 and 3). Experiential consequences included internalisation, ideal discrepancy, social comparison, and efficacy beliefs for non-exercisers. While exercisers also experienced ideal discrepancy and social comparison, they additionally indicated social support and expectancy beliefs as meaningful consequences of their appearance images.

Social Comparison

Social comparison is defined as the direct or indirect employment of a target other as a means of self-evaluation (Festinger, 1954; Wood, 1989). Comparison processes emerged as a contribution to the experiential manifestation of the participants’
appearance images, evaluations, and their overall self-worth. Non-exercisers discussed comparisons between their personal appearance images and the images of fashion models or celebrities displayed in the media. Exercisers endorsed comparison processes as a competitive mechanism typically employed in the fitness facility between their appearance images and images of their possible selves, or complete strangers. An example of appearance imagery manifested as social comparison is demonstrated in the following quote by an exerciser, "When I am at the gym and I see other girls, I do compare myself...my arms could be a little more toned and I try to see...what speed she is running at." This comparison process appears to be an upward comparison, which theoretically results in negative affective states (Wood). In this particular instance, however, the exerciser declared a motivational outcome from the comparison process, which consequently facilitated her exercise behaviour through the use of MG-M imagery, which is employed to sustain focus and confidence.

Ideal Discrepancy

Ideal discrepancy is defined as the self-evaluative perception that one’s current appearance image is discrepant from the sought ideal image, which is typically reflective of situational factors, possible selves, comparison with others, and/or pressures from the mass media (Thompson et al., 1999). The non-exercisers discussed their ideal discrepancies in terms of perceived pressures from the media and processes of social comparison, while the exercisers expressed their discontent over the discrepancy between their current appearance image and an ideal image that emerged from their athletic backgrounds. While running on the treadmill at the fitness facility, one exerciser employed MG-M imagery to sustain the mental toughness required to continue her
workout and ultimately diminish her ideal discrepancy, “Okay, you are here, but you want to be here! Well, who’s going to do that for you? Only you can, so keep running. Suck it up princess!”

Internalisation

Unique to non-exercisers was the theme of internalisation of sociocultural ideals. Internalisation is defined as the extent to which an individual cognitively endorses societal appearance ideals and subsequently engages in imagery and behaviour modification to attain such standards (Thompson & Stice, 2001). Moreover, internalisation of the thin ideal has been identified as a predictor of negative affect, body image disturbance and eating pathology over time (Killen et al., 1996). The Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ-3; Thompson et al., 2004) is a reliable and valid measure of the internalisation of both thin and athletic ideals. Future research into appearance-related exercise imagery would benefit from the examination of experiential factors resulting from internalisation of societal ideals and their subsequent impact on exercise participation. An overall sense of hopelessness emerged when the non-exercisers discussed their internalisation of the media ideals when compared to their current appearance images. One non-exerciser lamented over her goal-oriented appearance images (MS imagery):

I have intentions of doing everything I need to get there, but at the same time, it’s really unrealistic of me to think that way, but I still sometimes hang my size one pants on the back of my door like that yogurt commercial
**Efficacy Beliefs**

The theme of efficacy beliefs comprised two categories: physical inefficacy and self-regulatory inefficacy. This theme was unique to non-exercisers, and it is noteworthy that unlike the other experiential consequences, perceptions of individual self-inefficacy only resulted in negative cognitive and behavioural outcomes. The applied model of imagery use in exercise proposes that efficacy beliefs mediate the relationship between imagery functions and their resultant cognitive and behavioural consequences (Munroe-Chandler & Gammage, 2005). The lack of positive outcomes resulting from perceived inefficacy in this sample offers support for this contention, and indeed suggests that further research into the mediating effects of efficacy beliefs is warranted.

**Physical inefficacy.** Physical inefficacy is defined as individual perceptions of inadequate physical functioning (Bandura, 1997). Perceptions of physical inefficacy can be a psychological and physiological impediment to exercise adoption (Bandura, 1997). Indeed, physical health status appeared to moderate the outcomes of appearance imagery as hypothesised by Munroe-Chandler and Gammage (2005). Contrary to their hypothesis, however, the lack of exercise experience and fitness did not contribute to imagery of short-term exercise goals, but rather to outcome goals of weight loss. The non-exercisers expressed feelings of hopelessness and frustration with regard to their appearance images. Moreover, this sense of dysphoria was related to perceptions of physical inefficacy in attaining the imaged appearance goals, as demonstrated in the following quote from a non-exerciser, “I don’t even know where to start with the exercising.”

**Self-regulatory inefficacy.** The most paramount determinant of exercise initiation and adherence is the personal belief in one’s ability to persevere regardless of situational,
personal, and social barriers (i.e., self-regulatory efficacy; Bandura, 1997). Individuals who perceive themselves inefficacious at self-regulation are less likely to adopt and maintain a regular exercise programme, as they are vulnerable to perceived barriers such as scheduling conflicts (Bandura, 1997). The non-exercisers discussed multiple factors that prevented them from initiating an exercise regime. Regular exercise was perceived as a necessary means by which they imagined attaining their appearance-oriented goals (MS imagery). Participants indicated barriers such as scheduling and financial burdens. Self-regulatory inefficacy is well-demonstrated in the following quote from a participant in the action stage, as she describes the images she employs related to exercise routines (CG imagery), “I always plan: ‘I’m going to the gym tomorrow, it’ll be good, I’ll start on a routine’, so it’s actually just carrying it through that becomes difficult.” A non-exerciser described her difficulties with scheduling exercise and a healthy lifestyle to regulate her appearance images, “I want to schedule exercise here, and eating healthy…but especially when mid-terms and finals come around my schedule gets all thrown out of whack.” It is interesting to note the use of images regarding routines (CG imagery) by this non-exerciser, as no exercise imagery measurement tool to date assesses CG images.

Social Support

The focus groups of exercisers revealed that social interactions encouraged the maintenance of their exercise behaviour as a means of appearance management. Social support was defined as a supportive influence from others with regards to the positive cognitive and behavioural outcomes of appearance images. One exerciser described the supportive influence of her mother on the maintenance of her motivational appearance images, “…we go to the gym together so we kind of keep each other motivated.” The
impact of social support on appearance imagery and exercise could be highlighted from a group dynamics perspective in future research. For example, collective efficacy beliefs fostered within group exercise classes may be a means by which appearance imagery outcomes facilitate regular exercise behaviour. In one study of aerobic exercise class participants, individuals with higher reported levels of appearance imagery, as measured by the EIQ, were externally motivated to participate in the exercise classes (Wilson, Rodgers, Hall, & Gammage, 2003). Specifically, those participants who had a propensity to employ appearance imagery exercised out of shame or guilt (Wilson et al.), which is consistent with objectification theory (Fredrickson & Roberts, 1997).

**Expectancy Beliefs**

Also unique to exercisers was the theme of expectancy beliefs, which comprised two categories: outcome expectancy and outcome value.

*Outcome expectancy.* Outcome expectancy was defined as the anticipated outcome of exercise behaviour, and included appearance outcomes such as images of improved muscle tone and weight loss (MS imagery). Outcome expectations varied in strength among this sample of exercisers. Some exercisers declared a high level of outcome expectancy, whereby they equated their respective exercise behaviour with their desired outcome, while others, however, declared low outcome expectations, which appeared to be derived from the lack of observable outcomes. One exerciser described her personal struggle with the attainment of her desired appearance image, "I have no idea how I can get it...and I'm exercising hard." Outcome expectancy significantly predicted social physique anxiety in an investigation into exercise imagery and self-
presentation (Gammage, Hall, & Martin Ginis, 2004). This body-related anxiety emerged as a negative outcome of appearance imagery among exercisers in the present study.

*Outcome value.* Outcome value was defined as the declared importance of appearance outcomes, and also varied in strength across the exercisers. One exerciser described her negative appearance images as a motivational experience, and subsequently placed a high value on the image of her desired outcome (MS imagery), “I’m going to get rid of this whatever I do.” For some exercisers, the value of appearance outcomes paled in comparison to the value endorsed to the outcomes they had strived for in their previous athletic experience. For example, one exerciser exemplified this distinction when she stated, “When I was training... I had a reason to go to the gym, but now... ‘I’m going to the gym, but I feel selfish about it because it’s to try and make myself look better.’” This emotional struggle was echoed by other exercisers, whereby their motivational imagery employed to regulate affect and arousal (MG-A imagery) resulted in negative affective responses, regardless of the value placed on their appearance.

*Cognitive and Behavioural Outcomes*

The experiential consequences of appearance imagery were manifested into positive and negative affective, perceptual, and behavioural consequences. Four themes emerged from the focus groups for both exercisers and non-exercisers: positive cognitions, positive behaviours, negative cognitions, and negative behaviours (See Figures 2 and 3). Within each theme was a slight variation in the categories that emerged between the exercisers and non-exercisers. The content of the emergent themes depicted the appearance images experienced by the exercisers and non-exercisers and their subsequent cognitive, affective, and behavioural responses related primarily to exercise.
and eating habits. It should be noted that each positive and negative outcome resulted in both facilitative and debilitative effects on exercise participation among exercisers and non-exercisers alike.

Positive and Negative Cognitions

Positive cognitions were defined as those positive affective, perceptual, and cognitive outcomes of the experiential manifestation of appearance imagery. Negative cognitions comprised cognitive outcomes that were construed as negative in consequence. In their applied model of imagery use in exercise, Munroe-Chandler and Gammage (2005) suggested that imagery influences cognitive outcomes related to exercise, such as affect, social physique anxiety, exercise intention, motivation, and body image beliefs. Within the theme of positive cognitions, common to exercisers and non-exercisers were the categories of: positive affect, self-esteem, motivation, body image satisfaction, and body size estimation accuracy. Within the theme of negative cognitions, categories common to exercisers and non-exercisers included negative affect, self-devaluation, body image dissatisfaction, and body size estimation inaccuracy.

Affect. Positive affect included emotional responses following the cognitive processing of appearance images and included emotions expressed as contentment with individual physical appearance assessments. One exerciser described her positive feelings with regards to her personal appearance images, “I think I look healthy and I’m happy about that.” By contrast, negative affective responses to appearance images included such emotions as anger, anxiety, dysphoria, frustration, guilt, hopelessness, and shame. Non-exercisers discussed the negative feelings resultant from the perceived inaccessibility of their image of the thin ideal, while exercisers expressed frustration with appearance
imagery reflecting bodily changes. The guilt and anxiety experienced by one exerciser, which resulted from weight-related appearance imagery, were debilitating to her exercise behaviour:

It actually discourages me because I just sit there and think about how guilty and how anxious I am about eating that cookie that I don’t actually get to the gym because I wasted an hour and a half just thinking about it.

Self-esteem and self-devaluation. The category of self-esteem included references of appearance imagery as a source of global self-worth. Non-exercisers discussed self-esteem in terms of its derivation from influential others, while exercisers described exercise as a source of self-esteem enhancement. In reference to the appearance images she experienced while exercising, one exerciser stated, “I always found that I felt better, not necessarily looked better...I was more proud of the way I looked when I was sweaty...” Appearance images also had a negative impact on self-esteem, whereby participants reported self-devaluation; that is, a lowered sense of self-worth. With respect to self-devaluation, the negative appearance images of non-exercisers translated into a devalued global self-worth. For example, one non-exerciser stated, “I have always had a negative self-image no matter how thin I get...” Exercisers also tended to equate their negative appearance images with self-devaluation, however; their experiences were directly related to their cognizant appearance management through healthful diet and regular exercise. One exerciser reflected on her appearance image as a direct reflection of her global self-image:
Sometimes I sit back and I am not overly satisfied with what I have been doing with my life or what I have done with my body, appearance-wise. So my self-image tends to be negative in the long run.

**Motivation.** Throughout the focus groups, appearance imagery consistently translated into motivation for exercisers and non-exercisers alike. The non-exercisers expressed their motivation to exercise and lead a healthy lifestyle as a consequence of negative appearance images. One non-exerciser described the motivational impact of her negative appearance imagery, “I think that because of the self-image that I have that that motivates me to get out and do more.” This sentiment was reinforced by another non-exerciser, who suggested that her negative images are responsible for her motivation to lead a healthy lifestyle, “…if I was completely satisfied, then I probably wouldn’t have any motivation to go and do things.” Exercisers discussed their motivation to exercise not only based on negative appearance images, but also in relation to positive appearance-related feedback in terms of exercise outcomes (MG-A imagery). One exerciser exemplified this response, “The biggest thing for me is if I see even a slight change from where I started to where I’m trying to get – that’s the most motivating thing for me.”

**Body image evaluation.** Body image satisfaction is defined as the positive attitudinal result of the evaluation of the body, and the associated beliefs related to such an evaluation (Cash & Pruzinsky, 1990). The category of body image satisfaction includes all references to a positive self-image when participants were being questioned specifically about their appearance images. Some exercisers and non-exercisers declared themselves satisfied with their body images. For example, one exerciser indicated, “I have no desire to be super-skinny, super-straight. I kind of enjoy being a little curvy.”
is generally established within social comparison theory that body image satisfaction emanates from downward social comparison processes (Festinger, 1954). Such processes can be activated in an exercise setting to examine the impact of downward comparisons on exercise behaviour. It would be interesting to examine appearance imagery as a mediator between downward social comparisons and exercise participation. To date, there have been no experimental investigations conducted within the construct of exercise imagery.

Alternatively, body image dissatisfaction included the negative consequence of body image evaluation (Cash & Pruzinsky, 1990). Non-exercisers expressed dissatisfaction with their appearance images, and their subsequent desire to lose weight. Exercisers discussed their images related to muscle tone and definition. One exerciser declared her negative appearance images specific to her musculature as facilitative to her exercise behaviour, “[I] think they should be bigger, and that’s myself when I’m alone, and then I’ll sit there and go, ‘okay, I look like crap. I better get to the gym’.” Given the intricate relationship between appearance imagery and body image dissatisfaction, future research is needed to better delineate this association. Body image dissatisfaction is correlated with health-risk behaviours, such as disordered eating and excessive exercise (Engeln-Maddox, 2005). As such, it is an important direction for future research to determine facilitative outcomes of appearance imagery.

*Body size estimation.* Another component of body image is perceptual in nature, and comprises the category of body size estimation, whereby individuals make judgments regarding their body size (Thompson et al., 1999). Body size estimations may result in either accuracies or inaccuracies (Thompson et al., 1999). Some participants employed
accurate judgments, while other exercisers and non-exercisers struggled with body size estimation inaccuracies. Although non-exercisers were able to recognize the possibility that they were inaccurate when imaging their body size, there was a perceived lack of control over the distorted cognitions. For example, one non-exerciser struggled with her appearance imagery related to her body size, “I can get down on myself, but I can admit that I am probably exaggerating my feelings about it, but at the same time, no, I can’t recognize it. I’ll go right back to my regular thinking patterns.”

Exercisers appeared to be cognizant of their body size estimation inaccuracies, as one exerciser questioned her appearance imagery, “I could see myself in the mirror and I don’t know if what I’m seeing in the mirror is actually there.” Munroe-Chandler and Gammage (2005) suggested that appearance imagery that reflects an accurate body image, as opposed to a goal-oriented image (MS imagery) of a desired body, may positively impact body size estimation. Furthermore, such appearance images could manifest themselves in a greater satisfaction with the body as women learn to accept their appearance in its current state (Munroe-Chandler & Gammage). Further research is encouraged to test this hypothesis, as perceptual aspects of body image are reflected in body image disturbance, which has been identified as a significant predictor of eating disorders (Thompson et al., 1999).

**Intention.** Within the theme of positive cognitions, specific to non-exercisers was the category of intention, which was defined as the intention to participate in regular exercise. This category emerged as a means of attaining their desired appearance images. One non-exerciser succinctly captured this sentiment, “I’ve got to work out and flatten that belly again.” Appearance imagery emerged as a significant predictor of exercise
intention, but not behaviour, in a sample of predominantly female exercise participants (Rodgers et al., 2001-2002). Thus, further investigation is warranted to determine the contribution of appearance images to this distinction between exercise intention and behaviour.

Specific to the theme of negative cognitions, non-exercisers uniquely experienced the categories of body image investment, and normative discontent.

*Body image investment.* Body image investment is the cognitive-behavioural component of body image disturbance in which individuals assign importance to body appearance as a reflection of the self (Thompson et al., 1999). Individuals who declare high levels of body image investment may manifest such importance in maladaptive behaviours such as avoidance, habitual body monitoring (body awareness), and body correction procedures (Thompson et al., 1999). One non-exerciser asserted the value of her appearance images to her self-worth, “I am very concerned about my appearance.” Indeed, body image investment likely moderates the impact of appearance imagery on exercise participation. Future research is necessary to determine the influence of investment; it is possible that those individuals who place a high value on their appearance as a reflection of the self would be more impacted by their appearance imagery than would those with lower levels of body image investment. Given the negative consequences of appearance imagery, understanding the moderating influences would indeed be informative.

*Normative discontent.* Normative discontent is defined as a pervasive dissatisfaction with weight and body shape (Streigel-Moore et al., 1986). The non-exercisers spoke about the likelihood that they would still declare themselves dissatisfied
upon reaching their ideal physique. For some, images of this ideal discrepancy were necessary as a motivational mechanism to eat well and be active. One non-exerciser described her appearance imagery as insidious body image dissatisfaction, “If I work so hard to get back to my ideal weight, is it even worth it, because I’m not going to be satisfied anyways.”

Social physique anxiety. Within the theme of negative cognitions, the category of social physique anxiety was specific to exercisers. Social physique anxiety (SPA; Hart, Leary, & Rejeski, 1989) is described as anxiety specific to appearance-related images and concerns regarding the potential for the physique to be evaluated by others. Exercisers discussed the manifestation of SPA in relation to contextual factors, in and outside of the fitness facility, and especially related to clothing. To illustrate the intensity of social physique anxiety experiences, one exerciser stated, “I don’t want to be seen by anyone in public or by other people in the gym when I work out.” In a sample of female undergraduate low- and high-frequency exercisers, appearance imagery significantly predicted SPA (Gammage et al., 2004), which is also consistent with the postulates of objectification theory (Fredrickson & Roberts, 1997). Gammage et al. (2004) suggested that variations in exercise behaviour as a result of SPA may be mediated by efficacy beliefs.

Positive and Negative Behaviours

The experiential consequences of appearance imagery were also manifested in positive and negative behavioural outcomes. Munroe-Chandler and Gammage (2005) postulated that imagery could potentially encourage exercise initiation in non-exercisers and the maintenance of regular exercise behaviour among exercisers.
Positive behaviours. Within the theme of positive behaviours, the focus groups revealed two categories for non-exercisers and three for exercisers. Common to the exercisers and non-exercisers was the category of appearance management. Appearance management was defined as the regulation of appearance imagery through the adoption of healthful eating habits, and participation in some form of physical activity. Non-exercisers discussed appearance management in terms of healthful eating habits and leading an active lifestyle. One non-exerciser described the summer weather as facilitative to her appearance images, “Because I’m getting out, I’m eating less.”

Exercisers spoke about strategies by which they regulated their eating habits and regular exercise routines. In reference to her negative appearance images, one exerciser described imaging specific strategies that she employed as a means of appearance management (CG imagery), “My number one is to live a healthy lifestyle – do the right things for your body, like keep it active, eat right.”

Controllability. Specific to the non-exercisers in this theme was the category of controllability. Controllability was defined as the ability to exercise control (Bandura, 1997) in relation to appearance management. Within this sample, controllability was employed primarily over their dietary habits as a means to attain their appearance images. One non-exerciser identified her success in exercising control over dietary temptations as she described her use of appearance imagery as a mechanism of controllability, “When I go grocery shopping I don’t let myself buy ice cream or chips...even though I’d love to.”

Bandura (1997) identifies the value of efficacy beliefs in combination with controllability as essential strategies in terms of the promotion of a healthy lifestyle, including exercise initiation.
Specific to the exercisers within the theme of positive behaviours were the categories of self-regulation and exercise exertion.

*Self-regulation.* Self-regulation was defined as the ability to exercise behavioural control with regard to regular exercise and healthful eating habits for the purposes of appearance management. Self-regulation was successfully employed by the exercisers in this sample in that they imaged and subsequently executed adaptive scheduling and coping mechanisms to maintain their healthful exercise and eating behaviours. As one exerciser endorsed her negative appearance images, she subsequently declared, “I don’t have time, but I’m going to hit the gym tonight.” With regards to the regulation of eating habits, another exerciser described her strategy to ascribe to her appearance images, “I stick to it very well because it is kind of an implementation plan that I have. There are certain foods I will buy, and certain foods that I will never buy.” The extent of self-regulation demonstrated by these exercisers is indicative of their efficacy beliefs in terms of coping and scheduling. In a study conducted by Rodgers et al. (2001-2002), appearance imagery only predicted exercise intention, while coping and scheduling efficacy emerged as significant predictors of exercise behaviour. Future research into efficacy beliefs and appearance-related exercise imagery should focus on self-regulation, as Bandura (1997) argues that self-regulatory efficacy is the most valuable influence on exercise behaviour.

*Exercise exertion.* The category of exercise exertion comprised the motivational outcome in which exercisers reported “working harder” while at the fitness facility as a means by which they exerted mental toughness in order to achieve their goal-oriented appearance images (MG-M and MS imagery). One exerciser described the facilitative
impact of her negative appearance images on her exercise performance, “When my mind
is circling about what I want to look like, that level button just keeps going up, so it really
helps my exercise routine. It’s the negative thoughts in my head that really make me push
faster.” Appearance imagery significantly predicted excessive exercise behaviour only in
female participants (Hausenblas & Symons-Downs, 2002). Other research has been
conducted into the relationship between exercise imagery and exercise dependence (e.g.,
Rodgers, Hall, Blanchard, & Munroe, 2001), however the findings were inconsistent. As
such, further research is warranted.

Negative behaviours. Within the theme of negative behaviours, five categories
emerged for non-exercisers and six for exercisers. Negative behaviours revealed common
categories between exercisers and non-exercisers: avoidance, compensatory actions, lack
of control, body awareness, and body correction.

Avoidance. In accordance with operant conditioning conceptualisations,
individuals engage in avoidant characteristics subsequent to negative body image
appraisals as a mechanism of affect regulation (Thompson et al., 1999). Behavioural
avoidance was a crucial theme for both the exercisers and non-exercisers, and included
the rejection of situational or interpersonal factors that placed emphasis on body-related
assessment and evaluation. Avoidant behaviour also included the action of thought
control, such as the suppression of negative or anxiety-provoking thoughts (Bandura,
1997). Another avoidance behaviour that emerged from the focus groups was that of
cognitive restructuring as a means to refute irrational thought processes. Non-exercisers
employed avoidant behaviours as a means of dietary regulation, and as a protective
mechanism against physique evaluation. One non-exerciser described her personal
struggle with her appearance images and exercise participation, “I don’t feel like exercising, but I know it would make me feel better…it’s just easier to just go to sleep and ignore it, or just go do something else.” Exercisers primarily employed avoidance behaviours to regulate their eating habits, but also to protect themselves from visual inspection (e.g., by wearing loose clothing to disguise the physique). With reference to her negative appearance image resulting in discomfort at a public fitness facility, one regular exerciser stated, “…at the gym I go to, it has a women’s section and it’s always dark and there’s no one in there. So that image of myself…sometimes impedes my going and working out.”

Compensatory actions. Compensatory actions were employed as an alternative method of affect regulation, specifically to diminish negative affect resultant from cognitive dissonance (Festinger, 1957). That is, individuals may compensate for dissonant behaviours with self-concordant actions (Festinger, 1957). Similarly, dissonance is also reduced through the mitigation of the importance placed on the attitude (i.e., the appearance image) that is discordant with the undesirable behaviour (i.e., a behaviour that will not support the desired appearance image; Festinger, 1957). Bandura (1997) describes such actions as powerful motivators. The non-exercisers described their use of compensatory behaviours as a means of justification following their engagement in dissonant eating behaviours by mitigating the importance of its outcome on their appearance images. The exercisers compensated for their dissonant behaviours, such as overeating, by engaging in an alternative behaviour, such as increased exercise exertion, as a means of dissonance reduction and maintenance of their appearance imagery. For
example, one exerciser described her appearance images in terms of weight-regulation strategies:

...I’ll go work out at the gym for 45 minutes, then go get McDonald’s and I feel justified. I just burned off all these calories and now I’m putting them all back on as like a justification for wanting to eat candy and junk food and not vegetables.

**Lack of control.** The category lack of control is defined as a lack of behavioural control, which was manifested primarily in the form of eating habits by both the exercisers and the non-exercisers. One non-exerciser described her struggle with incorporating exercise and healthy eating into her schedule to acquire her desired appearance image, “...then I’m just shoving whatever I can in my mouth so I can study.” An exerciser expressed guilt and frustration with herself in reference to a binge eating episode and its impact on her appearance image, “Why do I do that over and over again...I know the effects and I know I’m not going to be happy with it, but I still don’t make the right decision beforehand.” The shame expressed by these participants with reference to their lost control exemplifies the tenets of objectification theory (Fredrickson & Roberts, 1997).

**Body awareness.** The category of body awareness encompasses awareness of the body and physique through physical means, including touching and manipulating folds of skin. Non-exercisers used clothing as a reference with which to judge their body size and shapes, and subsequently compare these objective images with their appearance images. One exerciser described her private body awareness, “If no one’s around me, there’s times when I kind of look down and...start playing with things, start grabbing things.” The internal awareness of the body depicted by these young women has been identified
as a mediator between self-objectification and symptoms of depression (Muehlenkamp & Saris-Baglama, 2002).

**Body correction.** Finally, common to exercisers and non-exercisers was the category of body correction, which is parallel to the positive behaviour of appearance management, however motivated by shame. Fredrickson and Roberts (1997) describe body correction techniques as methods of appearance regulation that are employed based on negative body affective experiences, such as shame or guilt. Although similar to the positive behaviour of appearance management, these two categories are differentiated based upon their respective motivation and behavioural outcomes. Non-exercisers primarily discussed dietary techniques, such as restrained eating and following fad diets discovered on the Internet to meet their appearance imagery demands. Exercisers also described their experiences with fad dieting and caloric restriction as a means to ‘correct’ or change the body depicted in their appearance images. The addition of regular and excessive exercise to dieting behaviours appeared to result in dangerous physiological consequences. One exerciser described her battle with negative appearance images that resulted in restrained eating, “I was...limiting my caloric intake and was working out really hard, and did not lose a pound...because my body was like ‘no’.” Additionally, the exercisers referred to their exercise behaviour as a means of ‘fixing’ their bodily imperfections. One exerciser described her use of exercise for body correction as a consequence of negative appearance imagery, “There are nights where it’s 10:30 and I’m thinking ‘yup, I don’t like this today’, and I will get up and walk to the gym for even 20 minutes.” From a feminist perspective, objectification theory suggests that body
correction is employed as a means by which women can manipulate their bodies to either meet or opt out of the ideal images portrayed by society (Fredrickson & Roberts, 1997).

Diet. Specific to the exercisers was the category of diet, which was defined as all unhealthy behaviours related to eating habits or diet, which included overeating, poor decision-making, and the employment of maladaptive dietary supplements. Exercisers spoke about their regular exercise as a mechanism to balance their eating habits, such that they could maintain their appearance images. One exerciser expressed this sentiment succinctly, “I guess I would rather work out harder to be able to eat.” Another exerciser described a time in her life when she was experiencing negative appearance images related to weight gain and decided to engage in a fad diet:

…what I failed to take into contrast was that all I was eating was [dietary supplement], so I would have [one] for dinner, [one] for lunch, and then I would have a tiny piece of meat, and I was running four to six [kilometres] a day, so it was a whole distorted mind…it didn’t work because I was passing out and throwing up because I was drinking milk and that’s all.

Objectification theory proposes mental health consequences, including eating pathology, affiliated with the shame emergent from discrepancies between personal appearance images and societal ideals (Fredrickson & Roberts, 1997). Moreover, Greenleaf and McGreer (2006) found that disordered eating and experiences of bodily shame were prevalent in a sample of physically active female college students.

General Discussion

The purpose of this study was to explore the appearance-related images of female exercisers and non-exercisers in terms of their valence and their facilitative or debilitative
impact on exercise participation. This qualitative investigation into the valence and nature of appearance-related imagery underscored the prevalence of negative appearance images among female exercisers and non-exercisers. Furthermore, intriguing distinctions were highlighted in the manifestation of appearance images between these groups of young women. Indeed, the linear relationship between influential factors, experiential consequences, and the resultant cognitive and behavioural outcomes of appearance imagery revealed notable variations within the emergent themes as a function of exercise status.

In terms of influential factors on appearance imagery, the contextual influence of the fitness facility setting was reflected in the meaning units expressed by the exercisers, while clothing was described as an influential factor to the non-exercisers. Regardless of exerciser status, self-evaluations of appearance emerged as determinants of self-worth. In general, exercisers tended to set concrete goals to attain their desired appearance outcomes, and incorporated their goal-setting techniques into their exercise regimen. By contrast, non-exercisers generated lofty outcome goals, generally pertaining to weight loss, with perceptions of physical inefficacy that prevented them from attempting to initiate their exercise programmes.

Analysis of the meaning units indicated that both self-appraisals and other persons contributed to the formation and experience of appearance images by way of social comparison processes. For the exercisers, social comparisons were generally employed with relevant others, and thus, were facilitative to their exercise motivation, particularly within the fitness facility. The appearance imagery of non-exercisers was employed in upward social comparisons to models and celebrities. The results indicated that these
processes of social comparison resulted in feelings of dysphoria and hopelessness. Participants endorsed the thin and athletic ideals portrayed by the media and additionally indicated that non-exercisers internalised the thin ideal, while exercisers internalised the athletic ideal. The media influenced the appearance imagery formation and experiences of the participants in this study, and was manifested in positive and negative consequences.

Of particular interest was the disparity between the exercisers and non-exercisers in terms of their efficacy beliefs. Self-infficacy, in terms of physical competence and self-regulation, emerged as a determinant of negative consequences among non-exercisers. Future researchers may benefit from the quantitative examination of these forms of self-efficacy as mediators of the appearance imagery – exercise intention relationship. Based on the data that emerged from these focus groups, further research is warranted to determine if this mediating effect does indeed exist, and if so, efficacy beliefs may be a desired target for interventions to encourage exercise initiation.

In general, the exercisers perceived their negative appearance imagery as a mechanism for motivation with regard to healthful eating habits and exercise adherence. Remarkably, outside of the exercise context, the guilt and shame from negative appearance images were often construed as debilitative to exercise and diet, as they resulted in avoidance behaviours. Social support from family and peers tended to serve as a protective mechanism from these avoidant characteristics. Moreover, when participants were engaged in exercise and experienced negative appearance imagery (e.g., through social comparison processes at the fitness facility), exercise behaviour was facilitated through increased motivation and exertion. Consistent with objectification theory.
negative images that were not associated with feelings of shame were also interpreted as motivational to some exercisers, which then facilitated their diet and exercise accordingly.

The meaning units indicated that the exercisers in this sample were involved in an intricate relationship between their exercise behaviour and their eating habits. Food evoked emotional responses from these young women, and they engaged in exercise partially to compensate for their dietary obsessions, in order to regulate their appearance imagery. The non-exercisers were also passionate about their diets as a source of image attainment, however, engaged primarily in thought suppression or other avoidant behaviours to compensate for their lack of dietary control.

These focus groups revealed a particular emphasis on body image, which appears to be inextricably linked to appearance imagery. The attitudinal, perceptual, cognitive and behavioural components of body image disturbance were portrayed in the discussions between exercisers and non-exercisers alike. Consistent with prior qualitative research conducted with female athletes and exercisers, some exercisers in this study relied on diet and exercise, rather than self-appraisals, to determine their body image (Krane, Waldron, Michalenok, & Stiles-Shipley, 2001). Body image was generally considered within the context of the sociocultural ideal to which the individual subscribed. The emergence of normative discontent as a theme among non-exercisers was intuitive, as their appearance images suggest that they are striving for an ideal physique that is unattainable, especially without regular exercise and a healthful diet.

Perhaps the most significant finding from this study was that, regardless of the imagery valence and its affiliated cognitive and behavioural consequences, the nature of
both positive and negative outcomes were individually interpreted and considered either facilitative or debilitative to exercise intention and behaviour. In future examinations of imagery valence, researchers need be vigilant in their practices of assigning direction to the imagery outcomes. Individual interpretations of the facilitative or debilitative nature of a positive or negative image should take priority over those assigned by researchers.

Although the findings from this study offer great insight into the appearance imagery of exercisers and non-exercisers, it is important to interpret these data with caution. The emergent themes appear to be related in a linear fashion, however, one must note that this does not imply causal relationships. Furthermore, from left to right within the hierarchical trees of knowledge, the first level of themes should not be interpreted as determinants of the subsequent levels of themes. The qualitative nature of this study provided an excellent venue for interaction between young women with shared beliefs, yet underlying individual differences. There was one instance in which a participant appeared to share opinions discrepant from those of the majority in her respective focus group. This was unfortunate; as she may have provided rich information through her unique interpretations had she not possessed such distinctive beliefs within the group. Moreover, ethnicity and body composition were not controlled for in the allocation of volunteers to their respective focus groups. Although there was little variation overall, the unique distinctions may have been influential in the overall findings. Future qualitative investigations into appearance imagery would benefit from a priori consideration of both ethnicity and body composition of the participants.

The information procured from these focus groups could be further explored in future investigations into appearance imagery and exercise participation in young
females. Future research into this area could include the development of a measurement tool based on the emergent content and themes in order to identify the moderating factors that determine the nature of the exercise outcome resultant from the valence of the appearance imagery. In addition, the measurement and dichotomy of high and low body objectification would be informative, as self-objectification remains stable across the lifespan, and significantly predicted exercise behaviour in female exercisers (Greenleaf, 2005). Furthermore, appearance imagery could be explored through similar methods with different sub-groups, such as midlife women. Body objectification would be of particular interest in this sample, as bodily function becomes increasingly important while the value placed on body appearance declines with age (Reboussin et al., 2000).

Although exercise imagery research suggests that men use appearance imagery with less frequency in comparison with their female counterparts (Gammage et al., 2000), male body image dissatisfaction is proliferating in society (Strelan & Hargreaves, 2005), as is research examining male body image and its associated factors. Gender comparisons of appearance imagery use and its consequences would be an interesting avenue of future research in order to identify gender-specific mechanisms that may influence physical activity promotion. Furthermore, an informative extension to the present study would be the use of focus groups to explore other identified forms of exercise imagery, such as energy and technique, (Hausenblas et al., 1999); health, exercise feelings, and self-efficacy (Giacobbi et al., 2003); and exercise routines (Giacobbi, Tuccitto, Buman, & Munroe-Chandler, 2008).

The present study has numerous applications, many of which stem from a programme of research that will be conducted subsequent to this investigation. This study
has offered insight into appearance images experienced by active and inactive young women. With further investigation into the relationships between these images and their experiential consequences, we will be able to identify common cognitive and behavioural outcomes and their subsequent impact on exercise participation. Gaining insight into these relationships will allow for the design of physical activity promotion among young, inactive women. The identification of appearance-related images that distinguish exercise intenders from regular exercisers is knowledge that could be used in interventions designed to promote regular exercise while addressing the related public health concerns.
References


Table 1

*Frequency and Percentages for the General Dimension "Appearance Imagery" for Non-exercisers*

<table>
<thead>
<tr>
<th>Appearance imagery</th>
<th>Frequency</th>
<th>Percentage</th>
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<tbody>
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<td>Context</td>
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<tr>
<td>Mirror</td>
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<tr>
<td>Body image dissatisfaction</td>
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<tr>
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<td>Normative discontent</td>
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<tr>
<td>Appearance Imagery</td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-----------</td>
<td>------------</td>
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<tr>
<td>Negative behaviours</td>
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<tr>
<td>Avoidance</td>
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<tr>
<td>Compensatory actions</td>
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<tr>
<td>Lack of control</td>
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<td>2.43</td>
</tr>
<tr>
<td>Body awareness</td>
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<td>1.27</td>
</tr>
<tr>
<td>Body correction</td>
<td>8</td>
<td>2.99</td>
</tr>
</tbody>
</table>

*Note.* Themes with frequencies and percentages reported do not necessarily represent the sum of their respective category frequencies, as participants may have referred to the general theme itself in addition to its corresponding categories.
Table 2

Frequency and Percentages for the General Dimension “Appearance Imagery” for Exercisers

<table>
<thead>
<tr>
<th>Appearance imagery</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mirror</td>
<td>11</td>
<td>4.26</td>
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<tr>
<td>Clothing</td>
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<tr>
<td>Shower</td>
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<td>1.35</td>
</tr>
<tr>
<td>Fitness facility</td>
<td>24</td>
<td>7.70</td>
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<tr>
<td><strong>Private</strong></td>
<td>91</td>
<td>23.02</td>
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<tr>
<td>Self-appraisal</td>
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<tr>
<td>Possible self</td>
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<td>6.59</td>
</tr>
<tr>
<td>Goals</td>
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<td>1.58</td>
</tr>
<tr>
<td>Experience</td>
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<td>3.26</td>
</tr>
<tr>
<td><strong>Public</strong></td>
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<tr>
<td>Others</td>
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<td>Feedback</td>
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<tr>
<td>Reflected appraisals</td>
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<td><strong>Media</strong></td>
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<td>18.49</td>
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<tr>
<td>Thin ideal</td>
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<td>6.39</td>
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<td>Athletic ideal</td>
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<td>Body-ism</td>
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<td>Social support</td>
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<td>Appearance imagery</td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>--------------------------------</td>
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<tr>
<td>Social comparison</td>
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<tr>
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<tr>
<td>Outcome expectations</td>
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<tr>
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<tr>
<td>Positive cognitions</td>
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<td>11.87</td>
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<tr>
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<tr>
<td>Motivation</td>
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<tr>
<td>Body image satisfaction</td>
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<tr>
<td>Body size estimation accuracy</td>
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<td>0.77</td>
</tr>
<tr>
<td>Positive behaviours</td>
<td>54</td>
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<tr>
<td>Self-regulation</td>
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<td>4.34</td>
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<td>Appearance management</td>
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<td>4.39</td>
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<tr>
<td>Exercise exertion</td>
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<td>Negative cognitions</td>
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<td>35.43</td>
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<td>Affect</td>
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<tr>
<td>Self-devaluation</td>
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<td>Social physique anxiety</td>
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<td>Body image dissatisfaction</td>
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<td>Body size estimation inaccuracy</td>
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<tr>
<td>Appearance imagery</td>
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<td>Percentage</td>
</tr>
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</tr>
<tr>
<td>Negative behaviours</td>
<td>131</td>
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<tr>
<td>Diet</td>
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<td>8.83</td>
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<tr>
<td>Avoidance</td>
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<td>Compensatory actions</td>
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<td>Lack of control</td>
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<td>Body awareness</td>
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<td>Body correction</td>
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<td>8.86</td>
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*Note.* Themes with frequencies and percentages reported do not necessarily represent the sum of their respective categories, as participants may have referred only to the general theme itself, and not one of its corresponding categories.
Figure Captions


Figure 2. Hierarchical Structure of Appearance Imagery as a Function of Exercise Intention in Female Non-exercisers. The relationship between the themes is linear in nature, whereby the influential factors impact the experiential consequences of appearance imagery, which are manifested in positive and negative cognitive and behavioural outcomes. One notable exception is that of the theme “Efficacy beliefs”, from which participants’ perceived inefficacy contributed only to negative cognitive and behavioural outcomes. Furthermore, each cognitive and behavioural outcome (both positive and negative in valence) was both facilitative and debilitating to exercise intention in this sample.

Figure 3. Hierarchical Structure of Appearance Imagery as a Function of Exercise Behaviour in Female Exercisers. The relationship between the themes is linear in nature, whereby the influential factors impacted the experiential consequences of appearance imagery, which were manifested in positive and negative cognitive and behavioural outcomes. Furthermore, each cognitive and behavioural outcome (both positive and
negative in valence) was both facilitative and debilitating to exercise behaviour in this sample.
Level 1. Influential factors  Level 2. Experiential consequences  Level 3. Cognitive and behavioural outcomes
Level 1. Influential factors

- Context
  - Fitness facility
  - Mirror
  - Shower
  - Clothing

- Appearance Imagery
  - Private
    - Self-appraisal
    - Possible self
    - Goals
    - Experience
  - Public
    - Others
    - Feedback
    - Reflected appraisals
  - Media
    - Thin ideal
    - Athletic ideal
    - Body-ism

Positive Cognitions
- Affect
- Self-esteem
- Motivation
- Body image satisfaction
- Body size estimation accuracy

Level 2. Experiential consequences

- Social support
- Social comparison
- Ideal discrepancy
- Expectancy beliefs
  - Outcome expectations
  - Outcome value

Positive Behaviours
- Self-regulation
- Appearance management
- Exercise exertion

Level 3. Cognitive and behavioural outcomes

Negative Cognitions
- Affect
- Self-devaluation
- Social physique anxiety
- Body image dissatisfaction
- Body size estimation inaccuracy

Negative Behaviours
- Diet
- Avoidance
- Compensatory actions
- Lack of control
- Body awareness
- Body correction
REVIEW OF LITERATURE

There is a pressing emphasis in current health and psychosocial research on the promotion of regular physical activity; with social, physiological, and emotional benefits well documented (Haskell et al., 2007). In fact, approximately 52% of American women do not meet current guidelines for physical activity (Haskell et al.). Furthermore, societal ideals favour a thin and toned physique, leaving many women plagued with concerns regarding their physical appearance (Tiggemann, 2003). Despite experimental and correlational findings suggesting a positive relationship between exercise and both appearance and global self-esteem (Strelan, Mehaffey, & Tiggemann, 2003), the prevalence of the sedentary lifestyle among women remains of individual and public health concern.

Research into exercise imagery suggests that this may be a promising mental strategy with which to enhance exercise behaviour (Hall, 2001). Mental imagery is a skill that all individuals are capable of, and it has been inextricably linked to motor skill and performance (e.g., Lang, 1979) with posited cognitive and motivational functions (Paivio, 1985). Moreover, Hall (1995) proposed that the documented benefits of imagery to athletic performance, such as confidence, might extend to the exercise domain.

Research into the use of mental imagery in exercise, although in its infancy, has focussed on its applications to appearance, energy, and technique (Hausenblas, Hall, Rodgers, & Munroe, 1999). It is important to note, however, that these three applications do not fully capture Paivio’s (1985) pivotal framework of imagery. Moreover, exercise imagery research has been plagued with conceptual, measurement, and methodological inconsistencies. Thus, it is imperative that future researchers conceptualise exercise
imagery with a framework that fully encapsulates the functions of imagery proposed by Paivio (1985).

In light of empirical findings that suggest appearance imagery predicts intention to exercise, Munroe-Chandler and Gammage (2005) hypothesized that motivational images specific to weight and appearance may impact individual body image concerns. That is, individuals may create images of how they desire to look. By contrast, individuals may imagine their appearance as it is, which is likely a more realistic perception of their physical appearance (Munroe-Chandler & Gammage). As posited by objectification theory (Fredrickson & Roberts, 1997), women consistently monitor their physical appearance as a result of an acculturated response to a societal focus on the physical self. It is important to determine whether negative images of a woman’s physical appearance are in fact, detrimental to her exercise intention and subsequent behaviour. Rather, it is possible that some women may find such negative images motivational, and use them to facilitate their exercise behaviour.

Research into the impact of negative imagery has been confounded by its very conceptualisation. In particular, researchers have deemed all negative images as debilitative, when more accurately; images likely serve a different function for each individual. More specifically, although researchers may classify an image as negative in valence, it is not necessarily debilitative in nature. In fact, as indicated by Short et al. (2002), an image that may be debilitative for one individual may be motivational for another. Hall (2001) discouraged practitioners from a focus on negative imagery in future research endeavours. Subsequently, imagery valence has received considerably less research attention in comparison to imagery content, function, and frequency.
In one of the few studies that examined debilitative imagery in an exercise domain, a qualitative investigation into exercise imagery use by exercisers and non-exercisers alike revealed that sedentary participants endorsed more frequent debilitative images than did their active counterparts (Short, Hall, Engel, & Nigg, 2004). In their discussion, the authors suggested that the negative outcomes imaged by the non-exercisers might decrease in frequency with greater exposure to exercise. A recent review of exercise imagery research further highlighted the importance of future investigations into imagery use among sedentary populations (Kossert & Munroe-Chandler, 2007). Indeed, the impact of the valence of imagery on exercise behaviour warrants further investigation. Thus, the purpose of the current study is to explore the nature and valence of appearance-related images reported by female exercisers and non-exercisers.

Imagery

Mental practice has been defined as “the symbolic rehearsal of a physical activity in the absence of any gross muscular movements” (Richardson, 1969, p. 95). It is established that athletes use mental imagery as an effective form of mental practice to enhance performance (Hall, 2001). Mental imagery has been defined as “those quasi-sensory and quasi-perceptual experiences of which we are self-consciously aware and which exist for us in the absence of those stimulus conditions that are known to produce their genuine sensory or perceptual counterparts” (Richardson, 1969, pp. 2-3).

Analytic Framework for Imagery Effects

There is substantial anecdotal (e.g., Nicklaus, 1981) and empirical (see Hall, 2001, for a review) support indicating that mental practice, and specifically imagery rehearsal, can have a positive impact on motor performance (Paivio, 1985). Imagery is
posited to impact motor performance through two mechanisms: (a) cognitive, related to skills and strategies, and (b) motivational, related to physiological and emotional arousal (Paivio, 1985). The cognitive functions of imagery can be further divided into cognitive specific (CS) imagery, which comprises images of specific skills, and cognitive general (CG) imagery, which consists of images of strategies and game plans (Paivio, 1985).

The motivational applications of imagery are typically applied to increase self-confidence, and to regulate levels of arousal (Paivio, 1985). It was posited that motivational specific (MS) imagery includes goal-related images, such as the necessary steps to achieve goals, and the consequences of goal achievement or goal failure (Paivio, 1985). By contrast, Paivio (1985) proposed that motivational general (MG) imagery consists of images related to the emotions experienced subsequent to success or failure at goal attainment. The motivational general function of imagery was further divided into two lower-order functions as a result of analysis into its factor structure during the validation of the Sport Imagery Questionnaire (SIQ; Hall, Mack, Paivio, & Hausenblas, 1998). The motivational general-mastery (MG-M) function comprises images used to build confidence and sustain focus, while the motivational general-arousal (MG-A) function of imagery is employed for mood regulation (Hall et al.).

Exercise Imagery

Indeed, there is no disputing the benefits of imagery use within the sport context. Hall (1995) further proposed that the efficacy of the motivational function of imagery use in the sporting domain could be extended to that of exercise and physical activity. To date, the central focus within the extant exercise imagery research has revolved around three functions of imagery: appearance, energy, and technique. Despite researchers
indicating that these three applications do not satisfy the functions of imagery as postulated in Paivio’s (1985) conceptual framework, even recent empirical investigations tend to consistently focus on these three factors (e.g., Milne, Burke, Hall, Nederhof, & Gammage, 2005-2006). Appearance imagery is defined as the images we create related to weight loss, or attaining a toned physique (Hausenblas et al., 1999). Alternatively, energy images consist of those images related to arousal and stress management. Finally, technique imagery comprises images employed to improve form or specific components of an exercise routine. The aforementioned functions of imagery (appearance, energy, and technique) are typically assessed using the Exercise Imagery Questionnaire (EIQ; Hausenblas et al.).

Preliminary investigations into imagery use in exercise indicate that exercisers do, in fact, use imagery (e.g., Hausenblas et al., 1999). Furthermore, empirical findings indicate a positive relationship between the frequency of imagery use and exercise behaviour (e.g., Gammage, Hall, & Rodgers, 2000; Hausenblas et al.). In fact, Gammage and colleagues (2000) found that exercise imagery use discriminated the frequency with which male and female exercisers participated in a variety of physical activities. The high-frequency exercisers used imagery significantly more than did their low-frequency exercising counterparts. Moreover, the application of imagery reported most often was appearance imagery, regardless of the participants’ gender, exercise frequency, or activity type.

Hall (1995) further posited that exercise imagery might not only inform exercise participation, but that excessive levels of exercise imagery may predict obligatory
exercise behaviour. Subsequent research into the imagery use of obligatory exercisers indicated that the strongest predictor of excessive exercise was energy-related imagery (Rodgers, Hall, Blanchard, & Munroe, 2001). A further examination of imagery as the motivational underpinning of exercise dependence indicated that gender differences do exist (Hausenblas & Symons-Downs, 2002). In addition to exercise behaviour, the strongest predictor for exercise dependence amongst men and women was energy imagery. Contrary to the findings from Rodgers and colleagues (2001), however, in addition to energy imagery, appearance imagery also significantly predicted dependence among the female obligatory exercisers. Moreover, weightlifting dependence was likewise predicted by energy imagery, in addition to the hours spent weight training per week (Munroe-Chandler, Kim, & Gammage, 2004).

**Measurement of Exercise Imagery**

*Exercise Imagery Questionnaire.* The majority of research conducted on exercise imagery to date has employed the EIQ (Hausenblas et al., 1999). In fact, a recent review of exercise imagery research revealed that ten of the thirteen studies conducted had utilised a version of the EIQ to assess exercise imagery use (Kossert & Munroe-Chandler, 2007). The EIQ was developed in a seminal three-part study exploring the nature of exercise imagery, which was conducted using semi-structured interviews with female aerobic exercisers (Hausenblas et al.).

Items for the EIQ were generated based on responses to open-ended questions asked of female aerobic exercisers regarding their imagery use (Hausenblas et al., 1999). The measurement tool (EIQ-Aerobics Version) initially contained 23 items, and a principal components factor analysis revealed a three-factor structure: (1) Appearance: “I
imagine losing weight by exercising”; (2) Energy: “When I imagine exercising, it relieves my stress”; and (3) Technique: “When learning a new routine, I imagine doing the moves perfectly”. As indicated in the applied model of exercise imagery use, Munroe-Chandler and Gammage (2005) proposed that the appearance, energy, and technique factors of the EIQ corresponded with the MS, MG-A, and CS functions of imagery, respectively (Hall et al., 1998; Paivio, 1985). Respondents were asked to rate items on a nine-point scale, anchored at 1 (“never engaging in this type of imagery”) and 9 (“always engaging in this type of imagery”).

Examination of its psychometric properties indicate that the EIQ is an acceptable measurement tool, as demonstrated through adequate internal consistency values, with Cronbach’s alphas ranging from .65 to .85 for the three factors, as well as adequate test-retest reliability ($r = .88$; Hausenblas et al., 1999). In addition to the reliability of the measurement tool, concurrent validity evidence was supported in the significant discrimination in the imagery use of low- and high-frequency exercisers in all three factors (Hausenblas et al.).

Indeed, the EIQ has received its fair share of criticism. In the third phase of the EIQ development and validation, the 23-item measure was reduced to a nine-item measure without any statistical justification (Morris, Spittle, & Watt, 2005). A further notable criticism of the EIQ is that the progression from the EIQ –Aerobics Version into a general version for use with heterogeneous samples was not reported (Morris et al.). As the EIQ, in its original form, was constructed on a homogeneous sample of female aerobic exercisers, Hall (1998) recommended a more generalisable measure of exercise imagery be developed. Moreover, although a multidimensional approach to exercise
imagery emerged statistically, only three of the five functions of imagery as put forth by 
Paivio (1985) and Hall et al. (1998) are represented on this measurement tool.

Given that the EIQ and its modified versions (specific to aerobic exercisers or to 
weightlifters) do not assess the entire multidimensional nature of exercise imagery, it is 
imperative that a more comprehensive measurement tool be designed and implemented in 
future exercise imagery investigations. Regrettably, as the majority of the extant exercise 
imagery research has employed the EIQ, findings must be interpreted with trepidation. 
Munroe-Chandler and Gammage (2005) highlight the need for a more comprehensive 
measurement tool that captures the construct of exercise imagery in its entirety. Indeed, 
the recently constructed Exercise Imagery Inventory (EII; Giacobbi, Hausenblas, & 
Penfield, 2005) is a promising development, however further work is needed to fully 
capture the theoretically and empirically derived framework of exercise imagery.

Exercise Imagery Inventory. The EII was constructed by Giacobbi and 
colleagues (2005) based on qualitative evidence of exercise imagery use of active female 
college students (Giacobbi et al., 2003). In the development of the EII (Giacobbi et al., 
2005), the authors attempted to incorporate functions of imagery use that were 
highlighted in their qualitative investigation, and not included in any previous measure of 
exercise imagery use. Giacobbi et al. (2003) conducted open-ended interviews with 16 
female college students who reported regular participation in a variety of physical 
activities. In their inductive grounded theory approach, Giacobbi et al. (2003) concluded 
that, not only do exercisers use imagery for the functions of appearance, energy, and 
technique (Hausenblas et al., 1999), but, additional images may include health and fitness 
outcomes, as well as images of increased exercise self-efficacy.
The EII (Giacobbi et al., 2005) is a 19-item measure purported to assess imagery use on four subscales. The psychometric properties of the EII are strong; with reliability for each of the four factors assessed through weighted omega values at .93, .82, .90, and .82, respectively (Giacobbi et al., 2005). In addition, the factorial validity for the EII was supported. A confirmatory factor analysis was conducted, and a four-factor structure emerged: (a) Appearance-Health imagery; (b) Exercise Self-efficacy imagery; (c) Exercise Technique, and (d) Exercise Feelings. Furthermore, convergent validity was demonstrated through correlations of EII subscales and measurements of exercise behaviour and exercise self-efficacy (Giacobbi et al., 2005). Indeed, the EII is a promising advancement in the measurement of exercise imagery; however, the CG function of imagery remains untapped in all measurement tools to date (Munroe-Chandler & Gammage, 2005).

Consequently, Giacobbi, Tuccitto, Buman, and Munroe-Chandler (2008) revised the EII with the addition of a subscale purported to measure CG imagery (e.g., “I imagine my typical exercise routines”). Confirmatory factory analyses supported a five-factor structure, consistent with the conceptualization of exercise imagery (Hall et al., 1998; Paivio, 1985). Construct validity evidence was further demonstrated for the EII-R (Giacobbi et al., 2007), as both motivational and cognitive functions of exercise imagery were confirmed in the measurement model, as higher- and lower-order functions, respectively.

Applied Model of Imagery Use in Exercise

Munroe-Chandler and Gammage (2005) proffered a conceptual framework to explore the influence of imagery on exercise behaviour (see Figure 1). The applied model
of imagery use in exercise not only taps into all of the functions of imagery (Hall et al., 1998; Paivio, 1985), but is also both theoretically and empirically derived. Furthermore, the model consists of testable relationships, and thus provides both a theoretical extension of previously proposed frameworks (e.g., Hall, 1995; Paivio, 1985) as well as an appropriate tool for future research. Antecedents, with cognitive and behavioural consequences mediated by the functions of imagery and efficacy beliefs, constitute the model, in addition to hypothesized and supported moderating variables (Munroe-Chandler & Gammage).

**Antecedents.** The applied model of imagery use in exercise (Munroe-Chandler & Gammage, 2005) consists of testable relationships and appears to be a promising guide for future research in exercise imagery. Antecedents are proposed to impact the nature and functions of exercise imagery. The authors suggest that the outcome goals put forth by the individual will likely match the imagery content. To illustrate, an individual who desires a leaner physique from his or her exercise programme will most likely use appearance imagery.

**Functions of imagery.** The antecedents of exercise imagery are posited to influence the type of imagery (i.e., the imagery function) selected by the individual (Munroe-Chandler & Gammage, 2005). The five functions of imagery as originally proposed by Paivio (1985) and modified by Hall et al. (1998) are posited to mediate the cognitive and behavioural outcomes of the exercise imagery (Munroe-Chandler & Gammage). For example, a woman who engages in exercise for weight loss might employ various functions of images to attain her desired new physique. To illustrate, a relevant CS image might contain images of the woman completing 30 minutes of
vigorous cardiovascular activity on the treadmill. She might also envision herself at the fitness facility, and image the entire workout that she plans to execute (CG).

For motivational purposes, that same woman might attempt to build and sustain her confidence with her exercise programme through MG-M images, such as imagining herself sustaining mental toughness for the duration of her hour-long group aerobics class. Furthermore, she may use MG-A imagery to regulate her arousal levels even when she feels as though her goal is unattainable. Moreover, she might envision the excitement she encounters upon completing her 30 minutes on the treadmill.

**Efficacy beliefs.** Hall's (1995) contention that imagery could motivate exercise behaviour was derived from not only the effectiveness of imagery in the sport domain, but also based on the tenets of Bandura's (1986, 1997) social cognitive theory. One mechanism by which exercise participation may be intuitively examined is that of self-efficacy, which stems from Bandura's (1986, 1997) comprehensive social cognitive framework. Bandura (1986, 1997) postulates a reciprocal and interacting relationship between the following determinants: (a) personal factors (including biological, cognitive, and affective processes), (b) situational and environmental factors, as well as (c) behavioural determinants. Furthermore, Bandura (1986, 1997) proposed that efficacy beliefs influence individual decision-making and, ultimately, behaviour. That is, individuals are more likely to engage in behaviours for which they feel efficacious. To illustrate, an individual who believes that she is efficacious in the exercise environment is more likely to exercise regularly in comparison to one who does not possess such positive efficacy beliefs. Self-efficacy theory offers a practical framework by which individuals can influence their behaviour through the exercise of control over perceived efficacy
beliefs (Bandura, 1997). Efficacy beliefs are suggested to mediate the relationship between the functions of imagery and its cognitive or behavioural consequences, which are posited to, in turn, impact efficacy beliefs (Munroe-Chandler & Gammage, 2005).

Bandura (1986, 1997) postulated that imagery could have a strong impact on individual self-efficacy. Specifically, Bandura (1986, 1997) suggested that vicarious experiences (including thoughts and feelings) derived from watching another individual executing a particular exercise routine could contribute to one's own efficacy beliefs regarding that same routine. Self-efficacy is further posited to influence both cognitions and behaviours. Appraisals of individual efficacy beliefs are further influenced by modelling, or vicarious experiences (Bandura 1986, 1997). The majority of activities do not have absolute measurements of success or failure, and as such, we must rely on information through comparison with relevant others. Through social comparison, we also may imagine the cognitions and associated sensations involved with executing the modelled movements.

Imagery could influence an individual’s efficacy expectancy, outcome expectancy, and outcome value (Munroe-Chandler & Gammage, 2005). Additionally, self-presentational efficacy is a hypothesised mediator among the efficacy beliefs proposed in the model. Efficacy expectancy is defined as the judgment of an individual’s ability to execute a particular performance (Bandura, 1997). To illustrate, a young woman who wishes to have a leaner, more muscular physique will assess her personal capabilities to achieve her desired appearance; that is, to initiate an exercise programme. Bandura (1997) defines outcome expectancy as the individual assessment of the consequences that will occur based on that individual’s performance. Indeed, outcome
expectancies play an important role in determining human behaviour, as that same young woman may image herself exercising in order to attain her desired appearance. It is important to note, however, that outcome expectations may be positive or negative in valence, and the tone of the expectation can be extremely influential on the resultant behaviour. Additionally, Bandura (1997) describes outcome value as the importance the individual proscribes to the desired outcome, such that the greater the importance to the individual that he/she achieve that outcome, the more likely that he or she will execute the behaviour. Finally, self-presentational efficacy is described as the assessment of an individual's beliefs to present oneself to others in a desired fashion (Gammage, Hall, & Martin, 2004).

Cognitive outcomes. Cognitive and behavioural outcomes are proffered as the outcomes of exercise imagery, and a reciprocal relationship is demonstrated between efficacy beliefs and both the behavioural and cognitive outcomes of the model (Munroe-Chandler & Gammage, 2005). More specifically, as efficacy beliefs are strengthened, exercise cognitions and behaviours are subsequently improved. These outcome improvements may then serve as sources of mastery and arousal, resultant in further increased efficacy beliefs.

Exercise dependence, along with intention or motivation to exercise, are cognitive outcomes that have received empirical support (Munroe-Chandler & Gammage, 2005). In a sample of male and female undergraduate students enrolled in aerobics fitness classes, male students endorsed the use of energy imagery more than did their female counterparts (Hausenblas & Symons-Downs, 2002). Furthermore, along with the reported frequency and intensity of their exercise behaviour, energy imagery was a significant
predictor of exercise dependence for both male and female exercisers. Finally, appearance imagery additionally accounted for exercise dependence, but exclusively among the female participants. Moreover, in an investigation of self-efficacy and exercise imagery as independent contributors to exercise intentions and behaviour, two samples were employed, consisting of aerobic exercisers from university and community samples, recruited from public fitness facilities (Rodgers, Munroe, & Hall, 2001-2002).

Appearance imagery was the most frequently cited function of imagery use across participants, however; although appearance imagery predicted intention to exercise, it was not a significant predictor of exercise behaviour.

In addition, hypothesised cognitive outcomes are offered in the model, including body image. Indeed, body image concerns would likely be related to individual imagery use. Munroe-Chandler and Gammage (2005) suggest that appearance and weight-related MS images would be associated with body image. Perception may play an important role, as it is suggested that many people image the appearance or physique that they desire. By contrast, however, individuals may image a more accurate representation of themselves. Consequently, body image satisfaction may be negatively impacted. It is further posited that CS and CG images might influence body image in terms of how individuals perceive the worth of their bodies (Munroe-Chandler & Gammage). In terms of body objectification, these images may help women to appreciate their bodies in a more functional manner, which is ultimately distinct from the evaluative perspective that tends to be placed on body appearance. To illustrate, an individual’s satisfaction with her body function differs from that of her body appearance in that body function may encompass not only the muscular strength in one’s legs, for example, but also her physical ability to
carry out a desired action (Reboussin et al., 2000). In particular, among older adults, body function satisfaction is quite distinct from body appearance satisfaction (Cash & Pruzinsky, 1990). In fact, in a sample of middle-aged and older adults, satisfaction with bodily function was a greater predictor of perceptions of well-being than was satisfaction with body appearance (Reboussin et al.). Indeed, investigation of the value of body function among younger aged samples is warranted, as younger individuals may place a higher importance on the appearance of the body in comparison to its functional outcomes.

*Behavioural outcomes.* The impact of exercise imagery on initiation and adherence to exercise programmes has received empirical support (e.g., Gammage et al., 2000). In their seminal investigation of moderators of exercise imagery use, Gammage and colleagues (2000) explored the influence of exercise frequency, activity type, and gender on exercise imagery. With a sample that consisted of male and female high- and low-frequency exercisers, of both aerobic and recreational exercise backgrounds, appearance imagery was endorsed with the greatest frequency across participants. Additionally, gender, activity type, and exercise frequency all influenced the use of exercise imagery by participants. Other behavioural consequences of exercise imagery are proposed in the applied model of imagery use in exercise, such as the influence of imagery on improved form and technique (Munroe-Chandler & Gammage, 2005).

*Moderating factors.* Munroe-Chandler and Gammage (2005) also proposed that moderating variables might further influence the effectiveness of imagery use. Well documented are the influence of imagery use on such variables as gender, type of activity, and the exercise frequency of the individual. Furthermore, the authors suggested
that other factors may moderate imagery use, including age, imagery ability, and various personality variables. Additionally, it is posited that the imaged outcome will vary as a function of individual differences, which is particularly salient when considering a sedentary individual. For example, someone in poor physical health who does not exercise may benefit from imaging a more immediate outcome (such as completing one exercise session). By contrast, a regular exerciser might image the long-term outcomes of exercise, such as improved strength and endurance.

The hypothesized moderating influence of age on imagery use has since been investigated. Milne and colleagues (2005-2006) examined the extent to which imagery is employed by younger exercisers, with a mean age of 22 years, in comparison to their older exercising counterparts, with a mean age of 71 years. Results indicated that, although both age groups endorsed extensive imagery use, younger exercisers employed significantly greater levels of appearance imagery than did their older counterparts. It is important to note, however, that imagery use was assessed with the EIQ in this study. It is possible that among an older population in particular, there may be more salient functions of imagery other than appearance, energy, and technique. Perhaps functions such as health and fitness may be more valued by older adults.

In addition, Milne et al. (2005-2006) explored differences in imagery use as a function of gender in the previously understudied population of older adults. Unexpectedly, imagery use was not moderated by gender in this sample. Furthermore, contrary to the findings of Gammage et al. (2000), no gender differences emerged for the younger exercisers in their reported use of appearance, energy or technique imagery. Milne et al. suggested that, although gender differences were particularly salient in the
study conducted by Gammage and colleagues (2000), the measurement of activity type might have confounded the findings for gender. If gender, age, and activity type do moderate imagery use, however, it is important in future investigations that researchers be cognizant of the impact of these variables on exercise imagery.

*Objectification Theory*

Given that the applied model of imagery use in exercise (Munroe-Chandler & Gammage, 2005) proposes that appearance is a prevalent function of exercise imagery, objectification theory (Fredrickson & Roberts, 1997) may be a useful framework by which to illustrate the impact of sociocultural ideals for body appearance on women and how the internalisation of such ideals impact exercise behaviour. This theoretical framework highlights the experiences and consequences of the female population who experience sexual objectification. Sexual objectification is operationalised as the occurrence of being treated and valued by society as a body or compilation of body parts for their use or expenditure (Fredrickson & Roberts). Indeed, sexual objectification is experienced differentially amongst women. When objectified, a woman’s body is isolated from her person. That is; she is treated as a body that is in existence for the use and enjoyment of other individuals.

Objectification may be as subtle as a gaze, or visual assessment of a woman’s body (Fredrickson & Roberts, 1997). Indeed, a gaze by another individual is not under a woman’s control, and as such, it remains extremely difficult to extricate oneself from an objectifying environment. In the exercise context, one must consider that for those women who internalise such visual inspections of their bodies, exercising in a public setting may be psychologically damaging. For example, in one study, women who
exercised at a public fitness facility were more likely to self-objectify than were women who did not exercise at public fitness centres (Strelan et al., 2003). Consequently, Prichard and Tiggemann (2005) applied objectification theory to the aerobic fitness context to determine the differences between aerobic instructors and participants in their respective risks for self-objectification. Contrary to theoretically derived predictions, the aerobic instructors endorsed healthy levels of self-objectification and its psychological outcomes in comparison to the aerobic participants. The authors suggested that the instructors might be more likely to be comfortable with their bodies in order to place themselves in such an observable position, and perhaps may even become habituated to having their bodies on display. In terms of the motivation for individuals to exercise, women high in self-objectification were more likely to exercise for appearance reasons, which offers support for previous research findings (Strelan et al. 2003; Strelan & Hargreaves, 2005).

Frederickson and Roberts (1997) highlighted the concept of “body correction”, which they defined as the efforts taken by women to alter their physical appearance through diet and exercise, among numerous other strategies. Of particular relevance to the current study, Greenleaf (2005) found that women who tended to observe their bodies much like an observer would view an object were less likely to participate in physical activity in comparison to women low in self-objectification. Furthermore, in a sample of adolescent females, self-objectification predicted diminished motor performance, assessed by an over-arm throwing task (Fredrickson & Harrison, 2005). The implication that self-objectification may actually deter women from engaging in physical activity is
alarming, and indeed warrants further research guided by an objectification theory framework.

One could argue that, analogous to the potentially damaging self-monitoring component proposed in objectification theory, is external mental imagery (Mahoney & Avener, 1977). When employing imagery in the sport or exercise context, individuals might adopt an external perspective in order to improve form through visual rehearsal (Annett, 1991). Although the effectiveness of imagery as a function of perspective remains debateable, it is established that the contribution of maximal sensory modalities (e.g., visual, auditory, kinaesthetic) to each mental image improves the overall effectiveness of the image (e.g., Vealey & Greenleaf, 2001). Nonetheless, those individuals who adopt an external viewpoint when employing imagery may actually diminish their sensory experience from the mental image, by restricting themselves to only the visual modality (Mahoney & Avener). Thus, it seems important that we consider not only the perspective of the image, as may be suggested by objectification theory, but also its nature and content.

Imagery Content

Extensive research has been conducted into imagery use in the sport context. As sport and exercise are both health-related behaviours, indeed one could expect that investigations into sport imagery may likely inform exercise imagery research. In their pivotal investigation into the imagery employed by athletes, Munroe, Giacobbi, Hall, and Weinberg (2000) conducted interviews with elite athletes regarding where, when, why, and what they image. The interviews were comprehensive and included imagery use prior to, during, and following competition, in addition to images in and out of the practice
setting. The five functions of imagery (CS, CG, MS, MG-A, and MG-M; Hall et al., 1998; Paivio, 1985) emerged as the “why” for the athletes’ imagery use. In terms of “where” athletes image, responses included images both in practice and competition. The “when” of athletes’ imagery use consisted of five categories: (a) while in training; (b) outside of training; (c) prior to competition; (d) during competition, and (e) following competition.

The content of images endorsed by athletes was categorised into its characteristics in terms of the image frequency and duration, the effectiveness of the image, the nature of the image, its environment, in addition to the sensory classification and controllability of the images endorsed (Munroe et al., 2000). Of particular interest to the current investigation is the nature of imagery, which included the valence and perceived accuracy of the image. Athletes reported most frequent use of positive imagery during practice and prior to competition. By contrast, negative images were reported most frequently during competition. The authors concluded that images positive in nature should be encouraged for the most effective performance outcomes. Support for this contention can be derived from early investigations into the impact of imagery valence (also referred to as direction, or tone) on performance (e.g., Powell, 1973; Woolfolk, Parrish, & Murphy, 1985).

In his examination of the effects of imagery direction on motor performance, Powell (1973) assigned female graduate students into one of two experimental groups: (a) positive imagery, or (b) negative imagery, to complete a dart-throwing task. Participants in each of the experimental conditions were instructed to focus on the outcome; that is, to imagine the dart landing. Imagery scripts differed only by the nature of the outcome; i.e., positive (success) or negative (failure). As predicted, participants assigned to the positive
imagery group performed significantly better than did the participants in the negative imagery group on the dart-throwing task. Although groups were matched for initial task performance and imagery ability, no control group was employed, and thus, results need be interpreted with caution.

Further support for the use of positive imagery as a tool to enhance motor skill performance was offered in a golf-putting task that included not only positive and negative imagery experimental groups, but also a control condition (Woolfolk, Parish, et al., 1985). Golf putting performance of primarily male undergraduate students with little prior golf experience was assessed at baseline, followed by six consecutive testing days. Following baseline assessment, participants were randomly assigned to one of the two experimental conditions, or to the control group. The imagery conditions included both process (CS imagery) and outcome (MS imagery) components of the golf putting task. Participants in the control group were merely instructed to attempt to yield a successful putt. The participants in the positive imagery group displayed significantly greater levels of improvement in comparison to those assigned to the negative imagery group and their control counterparts. Notably, the control group displayed greater improvements in performance in comparison to the participants in the negative imagery group. In fact, those participants assigned to the negative imagery condition exhibited a marked and significant decline in their golf-putting performance. Following comments generated by the participants, the authors suggested that a possible mechanism by which the participants’ respective imagery condition impacted their subsequent performance might be through self-confidence. Indeed, imagining only the outcome of failure could be understandably detrimental to one’s performance. It is important to note, however, that
although a control condition was included that did not include an imagery component; participants in the control group were nonetheless instructed to achieve a positive outcome. Therefore, it is possible that results attributed to the imagery rehearsal of the control conditions may be confounded by the simple yet successful outcome instructions assigned to the control group.

Subsequent research into the impact of the valence of imagery on motor performance, however, has produced equivocal findings. In a golf-putting task, Taylor and Shaw (2002) found that, although negative imagery was debilitative to putting performance, positive imagery did not provide any improvements over and above those attributed to the control condition. Furthermore, Woolfolk, Murphy, Gottesfeld, and Aitken (1985) also found that the positive imagery condition contributed no improvements to performance, while negative imagery again produced debilitative effects. Indeed, inconsistencies exist among not only the methodologies employed, but also in the conceptualisation of imagery direction. Given that early research into imagery direction consistently operationalised positive and negative imagery in terms of outcomes (MS imagery), imagery content was therefore assumed predictive of imagery direction. Short et al. (2002) argued that this conceptualisation of imagery direction might not, in fact, be truly representative of the relationship between imagery direction and imagery content.

Contrary to prior operationalisations of negative imagery, Short et al. (2002) suggested that circumstances might exist in which the allegedly negative outcome may actually be interpreted as positive to the individual. For example, a participant who is inexperienced at golf putting might be rather impressed with his performance when
narrowly missing a putt, although researchers have consistently classified all misses as negative outcomes. Therefore, Short et al. (2002) recommended that imagery direction instead be operationalised similarly to that of competitive anxiety, as facilitative or debilitating in nature. Facilitative imagery was defined as those images that positively impact an individual’s ability to: (a) learn and execute a specific skill or strategy; (b) adjust cognitions as required, such as self-efficacy; and (c) regulate affect and arousal. By contrast, debilitating imagery was defined as those images that impede an individual’s ability to achieve the same aforementioned results.

Research has subsequently been conducted employing the operationalisation of imagery direction as facilitative and debilitating, as recommended by Short et al. (2002). Interestingly, the imagery direction component of the imagery scripts employed in the Short et al. (2002) investigation were identical, with the exception of the outcome. The outcome for the debilitating group, however, involved only a narrow miss of the hole in a golf-putting task. As Short and colleagues (2002) argued, for some individuals, this may be considered a positive outcome. Murphy and Martin (2002) argued that the meaning of the image to the participant often differs from the meaning intended by the experimenter. Therefore, it is imperative to consider the perception of the image direction by the individual, rather than a proscribed meaning that may not be a fitting interpretation.

Following Short and colleagues’ (2002) investigation, imagery direction was explored in two separate studies employing dart-throwing tasks, in order to investigate differences as a function of task variation (Cumming, Nordin, Horton, & Reynolds, 2006; Nordin & Cumming, 2005). In order to address previous conceptual inconsistencies, Cumming et al. employed manipulation checks to explore the participants’ interpretations
of their designated imagery direction. Perceptions of the participants regarding their assigned imagery direction condition were generally consistent with those of the experimenter. Debilitative imagery had a profoundly negative impact on performance of participants in the dart-throwing task. Not only was their performance significantly poorer than those assigned to the facilitative imagery group, but also to their control counterparts. The authors suggested that the impact of debilitative imagery might overpower the effects of facilitative imagery due to the cognitive load placed on the participants, namely anxiety. Cumming et al. also investigated the role of self-efficacy as a mediator of imagery direction and performance. Although self-efficacy did not meet requirements for mediation in this particular study, it is interesting to note that self-efficacy was significantly greater among participants in the facilitative imagery group in comparison to their debilitative imagery and control counterparts. It is possible that self-efficacy may serve as a protective factor against negative performance feedback for athletes.

In their qualitative investigation into exercise imagery, Short et al. (2004) employed an open-ended questionnaire to examine the imagery use of active and sedentary individuals. Notably, the most frequently reported function of imagery use across participants was motivation. Furthermore, close to 11% of all images reported were debilitative in nature, and the majority of these images were reported by the sedentary participants. Short et al. (2004) offered an interesting suggestion to account for these findings. The authors suggested that with little exposure to exercise, the sedentary subjects would be more likely to imagine the negative consequences of exercise, which would be minimized with greater exposure. For example, the negative images of a
physiological nature, such as pain or profuse perspiration, would not necessarily be debilitating to an experienced exerciser. Short et al. (2004) further advised sport and exercise psychologists that it might be important to convince non-exercisers that some of their debilitating images of exercise may be inaccurate. This study was the first investigation into exercise imagery that explored the nature of the images of inactive participants in addition to regular exercisers. Findings, however, should be interpreted with caution, as no psychometric properties of the measurement tool were offered.

Dual Coding Theory

The applied model of imagery use in exercise suggests that individual differences may moderate exercise imagery use (Munroe-Chandler & Gammage, 2005). Indeed, one key individual difference variable that would likely impact imagery use is individual preference for information processing (Paivio, 1971). Dual coding theory (Paivio 1971, 1990) posits that individuals have a cognitive processing preference when encoding information. Specifically, while some individuals may favour information that is visual in nature, others may prefer to process instructions that are coded either verbally or in text format. In turn, the cognitive style of individuals impacts not only their preference for information processing, but also the effectiveness of verbal in comparison to non-verbal processing on a given task.

Dual coding theory postulates an orthogonal relationship between verbal and non-verbal (imagery) processes (Paivio, 1990). Functionally, verbal and imaginal processes are proposed to work independently, as well as in conjunction with one another. With objects or pictures as stimuli, imaginal representations are more likely to be evoked in comparison to verbal representations. By contrast, stimuli involving words, especially
words that are more abstract in nature, are more likely represented by verbal processes. Instructional sets further influence the activation of verbal or non-verbal processes. That is; when an individual is instructed to image a particular setting through a specific imagery script, that individual will be more likely to use imagery as opposed to verbal processes.

Thus, information processing preference could indeed influence individual ability in the use of imagery or self-talk (Paivio, 1971, 1990). Although the tenets of dual coding theory are yet to be empirically tested in the sport or exercise domains, the processing preference of individuals need be considered when selecting an appropriate intervention. Consequently, self-talk research should likewise inform imagery research. In addition to research conducted on the impact of the valence of mental imagery, it is important to also consider research endeavours on the valence of self-talk, and its subsequent impact on motor performance.

Self-talk

Hardy (2006) recommended that the definition of self-talk be characterised as a multidimensional construct, which should incorporate the following components: (a) expressions directed towards the self; (b) contents of the self-statements are examined from an interpretive perspective; (d) at least partially dynamic in nature, and (e) serve a minimum of two functions for the athlete, i.e., instructional and motivational. Research into self-talk in sport and exercise consists primarily of the valence of the statements (i.e., the impact of positive or negative valence on performance outcomes; Hardy). Furthermore, self-talk research has investigated the differences between covert (e.g., Hardy, Hall, Gibbs, & Greenslade, 2005) and overt (e.g., Van Raalte, Brewer, Rivera, &
Petitpas, 1994) statements, and of the impact of varying levels of self-determination in self-statements on performance (e.g., Van Raalte, Cornelius, Brewer, & Hatton, 2000).

Moreover, self-talk in exercise has been examined in terms of its frequency and the functions that self-talk may serve the athlete (e.g., Gammage, Hardy, & Hall, 2001; Hardy, Gammage, & Hall, 2001). Hardy (2006) further suggested that the self-talk literature has lacked theoretical direction and offers several applicable theories by which researchers might pursue future studies in athlete use of self-talk from a more theoretical perspective. Applicable theoretical frameworks recommended by Hardy include: attentional focus, developmental cognitive theories, and of particular relevance to the current study, self-efficacy theories and imagery models.

Given that the primary focus of self-talk research has consisted of examinations into the impact of valence on performance, it is possible that research into imagery direction may benefit from similar self-talk research. Consistent with findings in the imagery literature, upon completion of a balance task, participants who had engaged in positive self-talk exhibited significantly greater performance than those who employed negative or mixed self-talk (Araki et al., 2006). From a methodological standpoint, it is important to note that participants self-selected the self-talk that they employed. Thus, it would constitute a natural dialogue, and consequently, the direction of the self-talk would be in accordance with the participant's individual perception of its direction. This may be an important methodological direction for future research into imagery valence.

Other studies have found no effect of self-talk direction on performance. For example, golfers selected self-talk phrases from a list created by the researcher based upon phrases used in pilot studies (Harvey, Van Raalte, & Brewer, 2002). Unexpectedly,
greater use of both positive and negative self-talk was associated with decreased accuracy in golfing performance. By contrast, although a sample of male and female high school athletes ($N = 90$) interpreted increased levels of positive self-talk as motivational, several athletes endorsed their use of negative self-talk as also being motivational in nature (Hardy, Hall, & Alexander, 2001). Remarkably, some athletes who reported using positive self-talk considered it demotivating, particularly in the practice setting.

Substantial research has been conducted into the valence of self-talk and its subsequent impacts on motor performance. The impact of imagery valence, however, has received considerably less attention. Despite empirical evidence supporting the use of negative self-talk for motivational purposes by some athletes, the meaning of negative imagery has not been explored. Dual-coding theory would predict that information-processing preferences exist among individuals, and, as such, it is important to investigate the meaning of negative imagery to at least the extent to which self-talk has been explored.

**Conclusions**

Research into exercise imagery remains in its infancy, however, it is established that it is positively related to exercise behaviour, and thus may be a promising tool for interventions designed to promote physical activity. Regrettably, exercise imagery research to date has been plagued with methodological inconsistencies, measurement concerns, and fundamental variations in its very conceptualisation. Of particular concern to the proposed study are the differential interpretations of negative or debilitative imagery.
In order to examine the role of negative imagery in the exercise domain, one could argue that an essential first step would be to discover the meaning of negative images to exercisers and non-exercisers alike. Therefore, the purpose of the current study is to explore the meaning of negative imagery, specifically appearance-related imagery, with physically active and inactive young women. As this study is purely descriptive in nature, a qualitative approach is appropriate. Focus groups will be conducted, and the questioning route will be derived from the applied model of imagery use in exercise (Munroe-Chandler & Gammage, 2005), and objectification theory (Fredrickson & Roberts, 1997).

The implications of the proposed study are widespread. Gaining insight into the relationship of appearance-related exercise imagery with exercise participation will further our understanding of the relationship between imagery and exercise in young women. Of particular interest will be any differences that may emerge between the exercisers and non-exercisers with how they react to negative appearance-related imagery. Future investigations would benefit from using a similar approach to investigate the meaning of negative appearance-related imagery in other sub-groups, such as middle-aged women, or even amongst men. It would also be of interest to determine the meaning, and any existing differences, of technique and of energy-related imagery between exercisers and non-exercisers. Also, future researchers may consider utilising the themes gathered from this study to develop a quantitative assessment of negative imagery and its effects on exercise participation. This, in turn, will allow for the design and implementation of imagery-based interventions that could potentially encourage the adoption of a more active lifestyle among young women.
References


Figure Caption

*Figure 1. An Applied Model of Imagery Use in Exercise (Munroe-Chandler & Gammage, 2005).

Appendix A
Poster for Recruitment

Discussion Group

University of Windsor, Department of Kinesiology, (519) 253-3000, ext. 4058

Are you a female student between 18 and 25 years of age?
Do you exercise regularly? OR wish that you did?
Are you interested in participating in a research study that consists of a discussion group about physical appearance and exercise?

Your opinion matters!
Discussion groups will take place {insert dates}, and are approximately one hour in length. You will be given the opportunity to share your thoughts and feelings on an important topic.

Light snacks and refreshments will be provided, and upon completing the research study, you will be given $10.00 cash to thank you for your time.

If you are interested in participating, or would like further information, please contact Amy at: discussiongroup2008@yahoo.ca
Appendix B
Screening Questionnaire: Godin Leisure-Time Exercise Questionnaire

1. During a typical 7-day period (a week), how many times on the average do you do the following kinds of exercise for more than 15 minutes during your free time (write on each line the appropriate number).

   a) STRENUOUS EXERCISE
      (HEART BEATS RAPIDLY)
      (e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling).
      Times Per Week

   b) MODERATE EXERCISE
      (NOT EXHAUSTED)
      (e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing).

   c) MILD EXERCISE
      (MINIMAL EFFORT)
      (e.g., yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking).

2. During a typical 7-day period (a week), in your leisure time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?

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3. Age: _______
Appendix C
The Nature and Valence of Appearance-Related Exercise Imagery
Focus Group Interview Guide

1. Welcome:
   a. Thank you for taking the time to join me in this discussion group on body appearance and exercise participation. My name is Amy, and assisting me this evening is Bianca.

2. Overview of the topic:
   a. We want to learn from you about the imagery you may have with regard to your physical appearance, and how that may impact your motivation to exercise. We are asking other young women in your age group, some who exercise and some who do not, as we are interested in hearing about different types of appearance images.
   b. Today we will be discussing your use of imagery; in particular, imagery related to your physical appearance. I will be asking questions such as how you would describe the appearance-related images that you have, and how they impact your motivation to exercise. There are no right or wrong answers. Please feel free to say whatever you like, even if you feel that it is different from what other people have been saying.

Guidelines:
- Before we get started, let me suggest some ways that may help the discussion go smoothly. You will be audio taped because we don’t want to miss any of your feedback in the discussion. Please be sure to speak loudly enough and that only one of you speaks at a time. We will use our first names in the discussion group here this evening, but in a report that we will write after we complete all of the discussion groups, your names will not be included. That way, nobody will know who made the comments.
- My role is simply to ask questions and to listen to what you have to say. I won’t be participating in the conversation, but I want you to feel free to speak openly with one another. I will be asking approximately 10 questions, and will move from one question to the next. The discussion should be finished in about an hour and a half. It is important that I hear from each and every one of you, as you all have different images and thoughts to share. So if one of you is sharing a lot, I may ask if some others have something to share as well. And, if you aren’t saying too much, I may ask if you have something to add to the discussion. We have placed name cards in front of each of you on the table to help all of us in remembering each other’s names.

Opening Question:
Let’s get to know each other a bit by going around the table.

Exercisers:
- Tell us your name and tell us for how long you have been exercising regularly. For example, have you been physically active on a regular basis for less than six months or for more than six months. Also, please indicate the types of physical activities that you do participate in on a regular basis.
Non-exercisers:
- Tell us your name and also, please share with us where you would classify yourself right now in terms of your exercise behaviour. Would you say that you are not intending to start exercising, considering to start exercising within the next six months, or intending to start an exercise programme within the next month and already making attempts at doing so?

Introductory Question:
What comes to mind when I say “appearance imagery”?

Transition Question:
Let’s first define imagery. “Imagery may be defined as using all the senses to re-create or create an experience in the mind” (Vealey & Greenleaf, 2001, p. 248). “We can be aware of ‘seeing’ an image, feeling movements as an image, or experiencing an image of smell, taste or sounds without experiencing the real thing” (White & Hardy, 1998, p. 389).

Exercisers:
Think back to when you first started to exercise regularly. How would you describe the images that motivated you to start exercising?

- Probes: How would you describe the images that motivate you to maintain and continue to exercise on a regular basis?

Non-exercisers:
Think back to the times when you have wanted to make a change to one of your behaviours. How would you describe the images that motivated you to want to make that change?

- Probes: What kind of behaviours have you wanted to change, or have you changed in the past?
- Probes: Has anyone ever tried to quit smoking?
- Probes: What about trying to improve your time management skills?

Key Questions:
1. Please describe in detail the kinds of images you have about your physical appearance?
   - Probes: Can you elaborate on that?
   - Probes: Would you classify that image as a positive image, or a negative one?
   - Probes: If you imagine yourself with a leaner physique, does the physique you desire have any muscle tone, or is it just thinness that you imagine?
   - Exercisers – Probes: Are your appearance images related to your motivation to continue exercising?
   - Non-exercisers – Probes: Are your appearance images related to your motivation to start exercising?

2. Where, or when, is it that you find yourself having appearance images most often?
   - Probes: Exercisers: Do you imagine your appearance most often while you are in the exercise setting? OR Outside of the exercise setting? If so, where do you find you have the most frequent appearance images?
   - Probes: Non-exercisers: Do you imagine your appearance most often while you are thinking about your intention to start exercising? Where do you find you have the most frequent appearance images?

3. Think back to the images that you have of your appearance. From what
perspective do you typically envision yourself? Do you imagine yourself as others would see you (as though you were watching yourself on TV), or do you imagine yourself from your own viewpoint?

4. Again, think back to the images you have of your appearance. What factors influence your physical appearance image?
   - Probes: How does the media influence your images?
   - Probes: How do your peers influence your appearance images?
   - Probes: How do your parents influence your appearance images?
   - Probes: What about work colleagues or classmates: how do they impact your appearance images?
   - Probes: What about the way you feel that others perceive you in everyday life from the way that you are looked at or spoken to? How do you feel that those everyday encounters with other people impact how you image your appearance?

5. How do those appearance images make you feel?
   - Probes: When you do have an appearance image, does it make you feel good or bad about yourself?
   - Probes: Do you typically imagine a physique that you feel resembles your own quite accurately?
   - Probes: What would it take for you to achieve the image you have about your physical appearance?
   - Probes: What other things do you do (if any), besides exercise, to attempt to attain the appearance that you imagine yourself having?

6. Exercisers:
   How do you feel that your appearance images impact your exercise behaviour?
   - Probes: So, would you say that when you imagine your appearance, it encourages you to exercise, or that it discourages you?
   - Probes: To take that a step further, if you exercise after (or while) imagining your appearance, would you say that it helps your performance, or that it has a more negative impact on your exercise routine?

Non-exercisers:
   How do you feel that your appearance images impact your intention to start exercising?
   - Probes: So, would you say that when you imagine your appearance, it encourages you to exercise, or that it discourages you from exercising?
   - Probes: How do you think that your images of your physical appearance impact your desire to exercise?

Summary:
   - Summarize the most important findings (refer to the assistant moderator). Capture common themes, yet acknowledge different points of view.
     - Probes: Exercisers: Which of the appearance images we spoke of today do you feel is most important in terms of its influence on your exercise behaviour? Is there anything that we should have talked about but didn’t? Did we miss anything?
     - Probes: Non-exercisers: Which of the appearance images we spoke of today do you feel is most important in terms of its influence on your
intentions to exercise? Is there anything that we should have talked about but didn’t? Did we miss anything?
CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: The Nature and Valence of Appearance-Related Exercise Imagery

You are asked to participate in a research study conducted by Amy Kossert, graduate student, and Dr. Krista Chandler, faculty member, from the Department of Kinesiology at the University of Windsor. Results will be contributed to a Master’s thesis project. If you have any questions or concerns about the research, please feel to contact Dr. Krista Chandler, Faculty Supervisor, at 519-253-3000, extension 2446.

PURPOSE OF THE STUDY
The purpose of the current study is to establish the nature of exercise imagery; specifically those images related to body appearance, and the impact that exercise images have on individual exercise intentions and behaviour.

PROCEDURES
If you volunteer to participate in this study, we would ask you to do the following things: Small discussion groups will take place. First, imagery would be defined and its appearance applications would be outlined. Next, you and your fellow group members would be asked a series of questions related to your images related to appearance. You would be asked to answer and discuss, when possible, the questions that are asked of you. As there is a potential social risk involved in a discussion group setting of this nature, participants will be asked to treat all group members with respect, and to appreciate the input of the others in the group. We will make every effort to minimize this risk. The study would take approximately 1 to 1 ½ hours to complete. There is a chance that the researchers may contact you for a brief follow-up session.

POTENTIAL RISKS AND DISCOMFORTS
No foreseeable risks, discomforts, or inconveniences are expected.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY
Subjects will benefit from participation in this study, as their exposure to research will be increased.
In addition, participants may gain insight into the nature of their exercise-related imagery and how those images impact their exercise behaviour, or their intention to exercise.
PAYMENT FOR PARTICIPATION
You will be rewarded $10.00 for your participation immediately upon completing the focus group.

CONFIDENTIALITY
Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. Although first names will be used during the discussion group, these names will not be included in the final report. The discussion group is a group event. This means that while confidentiality of all the information given by the participants will be protected by the researchers themselves, this information will be heard by all the participants and therefore will not be strictly confidential.

All audiotapes of focus groups will not be identifiable, or connected to the participant in any manner, in order to ensure anonymity. The audiotapes and transcripts will be contained in a locked filing cabinet, identified by number only. Only the researchers will have access to the audiotapes, and you have the right to review or edit the transcripts at your request. All tapes will be erased upon completion of the study.

PARTICIPATION AND WITHDRAWAL
You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don’t want to answer and still remain in the study.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE SUBJECTS
Research findings will be available to subjects through the University of Windsor Research Ethics Board website.
Web address: www.uwindsor.ca/reb
Date when results are available: May 2008

SUBSEQUENT USE OF DATA
This data may be used in subsequent studies.

RIGHTS OF RESEARCH SUBJECTS
You may withdraw your consent at any time and discontinue participation without penalty. If you have questions regarding your rights as a research subject, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: ethics@uwindsor.ca
SIGNATURE OF RESEARCH SUBJECT/LEGAL REPRESENTATIVE
I understand the information provided for the study *The Nature and Valence of Appearance-Related Exercise Imagery* 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.

Name of Subject

Signature of Subject ________________________________ Date __________

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

Signature of Investigator ________________________________ Date __________
LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: The Nature and Valence of Appearance-Related Exercise Imagery

You are asked to participate in a research study conducted by Amy Kossert, graduate student, and Dr. Krista Chandler, faculty member, from the Department of Kinesiology at the University of Windsor. Results will be contributed to a Master’s thesis project.

If you have any questions or concerns about the research, please feel to contact Dr. Krista Chandler, Faculty Supervisor, at 519-253-3000, extension 2446.

PURPOSE OF THE STUDY
The purpose of the current study is to establish the nature of exercise imagery; specifically those images related to body appearance, and the impact that exercise images have on individual intentions to exercise.

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POTENTIAL RISKS AND DISCOMFORT
No foreseeable risks, discomforts, or inconveniences are expected.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY
Subjects will benefit from participation in this study, as their exposure to research will be increased.
In addition, participants may gain insight into the nature of their appearance-related imagery and how those images impact their exercise behaviour, or their intention to exercise.

**PAYMENT FOR PARTICIPATION**
You will be rewarded $10.00 for your participation immediately upon completing the focus group.

**CONFIDENTIALITY**
Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. Although first names will be used during the discussion group, these names will not be included in the final report. The discussion group is a group event. This means that while confidentiality of all the information given by the participants will be protected by the researchers themselves, this information will be heard by all the participants and therefore will not be strictly confidential.
All audiotapes of focus groups will not be identifiable, or connected to the participant in any manner, in order to ensure anonymity. The audiotapes and transcripts will be contained in a locked filing cabinet, identified by number only. Only the researchers will have access to the audiotapes, and you have the right to review or edit the transcripts at your request. All tapes will be erased upon completion of the study.

**PARTICIPATION AND WITHDRAWAL**
You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don’t want to answer and still remain in the study.

**FEEDBACK OF THE RESULTS OF THIS STUDY TO THE SUBJECTS**
Research findings will be available to subjects through the University of Windsor Research Ethics Board website.

Web address: www.uwindsor.ca/reb
Date when results are available: May 2008

**SUBSEQUENT USE OF DATA**
This data may be used in subsequent studies.

**RIGHTS OF RESEARCH SUBJECTS**
You may withdraw your consent at any time and discontinue participation without penalty. If you have questions regarding your rights as a research subject, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: ethics@uwindsor.ca
SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

_________________________________________  __________________________
Signature of Investigator                                     Date
CONSENT FOR AUDIO TAPING

Research Subject Name: ________________________________

Title of the Project: The Nature and Valence of Appearance-Related Exercise Imagery

I consent to the audio-taping of interviews.

I understand these are voluntary procedures and that I am free to withdraw at any time by requesting that the taping be stopped. I also understand that my name will not be revealed to anyone and that taping will be kept confidential. Tapes are filed by number only and store in a locked cabinet.

I understand that confidentiality will be respected and the listening of materials will be for professional use only.

____________________________________
(Research Subject)
Department of Kinesiology
University of Windsor

{Date}

I received $10.00 for participating in a discussion group about appearance-related imagery and exercise.

______________________________  ________________________
Name                                    Signature
Appendix H
Receipt of Incentive: Academic Credit

Basic Quantitative Methods for the Social Sciences
02-02-250

I participated in a study entitled "The Nature and Valence of Appearance-Related Exercise Imagery" on Wednesday, June 11, 2008. I will be awarded two bonus percentage points towards my final grade because of my participation in this study.

Name (please print): ____________________________________________

Student number: ______________________________________________

Signature: _____________________________________________________
VITA AUCTORIS

NAME: Amy Leigh Kossert

PLACE OF BIRTH: Toronto, Ontario, Canada

EDUCATION:
- University of Windsor, Windsor, Ontario
  2001-2005, Bachelor of Arts, Honours, Psychology with Thesis
- University of Windsor, Windsor, Ontario
  2006-2008, Master's in Human Kinetics

PUBLICATIONS:

PRESENTATIONS:
Poster session presented at the annual meeting of the Association for Psychological Science, New York.


**AWARDS**

Social Sciences and Humanities Research Council of Canada
Canada Graduate Scholarship-Master's (2006-2007)
Ontario Graduate Scholarship (2007-2008)