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THE MALE MEDIA IDEAL: EFFECT OF BODY CONCEPTUALIZATION
AND KNOWLEDGE OF DIGITAL ALTERATION
ON OLDER ADOLESCENT AND COLLEGE-AGED MEN

By Katherine D. Krawiec

M.A., University of Windsor, 2008

A Dissertation
Submitted to the Faculty of Graduate Studies
through the Department of Psychology
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the Degree of Doctor of Philosophy
at the University of Windsor

Windsor, Ontario, Canada
2015
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The Male Media Ideal: Effect of Body Conceptualization and Knowledge of Digital
Alteration on Older Adolescent and College-Aged Men

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ABSTRACT

In two studies, the effects of exposure to media images that differed in body conceptualization and in disclaimer type on men's self-evaluations, negative affect, and muscle-building behaviour were examined. State and trait social comparison were included as moderators. For Study 1, it was hypothesized that men would report greater muscle dissatisfaction and negative affect, lower physical condition esteem, and engage in less muscle-building behaviour following the viewing of body-as-object images than those who viewed body-as-process images. These effects would be more pronounced for men who engaged in greater state comparison. Body conceptualization was manipulated by showing 101 men images that either emphasized the aesthetic or functional qualities of the male body, subsequently, the number of bicep curls was measured. As predicted, men in the body-as-object condition engaged in fewer biceps curls than did men in the body-as-process condition. Among men who engaged in greater comparison, those in the body-as-object condition reported greater muscle dissatisfaction and negative affect than did men in the body-as-process condition. For Study 2, it was hypothesized that men who viewed less relevant media ideal images (muscularity disclaimer condition) would report both lower muscle dissatisfaction and negative affect, greater physical condition esteem, and engage in less muscle-building behaviour than those who viewed control images (colour disclaimer condition). These effects would be more pronounced for men who engaged in greater state comparison. One hundred and two men viewed images that were described as digitally altered in terms of enhanced muscularity or colour, subsequently, protein consumption was measured. Unexpectedly, men in the muscularity

disclaimer condition reported greater muscle dissatisfaction and negative affect and consumed more protein than did men in the colour disclaimer condition. These effects were independent of level of comparison.

These findings suggest that compared to performance-focused images, appearance-focussed images are more damaging to men who engage in greater comparison. Attempting to mitigate these outcomes by informing men of digital alterations made to the models' physique was ineffective. Instead, knowledge of digital alterations exacerbated these negative effects by perhaps reinforcing the cultural norms for muscularity as well as the desirability of the male media ideal.

DEDICATION

In loving memory of my mother, Halina Krawiec. Her unconditional support and belief in me made this all possible.

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CHAPTER I

Introduction

Definition of Body Image

Body image is defined as a multidimensional construct, comprised of an attitudinal, a perceptual, and a behavioural component (Cash, 2012). Body image attitude can be divided into an evaluative component and a cognitive-behavioural component, also referred to as investment (Cash & Szymanski, 1995). Body image evaluation refers to judgments about appearance, expressed as degree of satisfaction with the one's body. In contrast, body image investment consists of two components. The first refers to the degree to which people evaluate and define themselves by their physical appearance, also known as self-evaluative salience (Cash, Melnyk, & Hrabosky, 2004). The second component, motivational salience, refers to the degree of engagement in appearance-management behaviours such as grooming for aesthetic purposes (Cash et al., 2004). The perceptual component of body image refers to body size estimation, and it is an indicator of over or underestimation of one's body size (Thompson & Gardner, 2002). Lastly, the behavioural component of body image refers to body-checking behaviours, avoidance of situations that elicit body image concerns, or appearance "correcting" rituals (Cash, Santos, & Williams, 2005; Cash, 2012).

Body image disturbances have been studied extensively in women demonstrating that preadolescent, adolescent, and adult women are dissatisfied with their body (Cash & Green, 1986; Forrest & Stuhldreher, 2007; Moriarty & Moriarty, 1986; Rosenblum & Lewis, 1999; Sands, Tricker, Sherman, Armatas, & Maschette, 1997). The prevalence of

body dissatisfaction in college-aged women ranges from 67% to 87% (Forrest & Stuhldreher, 2007; Neighbors & Sobal, 2007).

Over the last two decades researchers have begun to examine body image concerns in men and have found that preadolescent, adolescent, and adult males also are dissatisfied with their body (Dakanalis, & Riva, 2013; Folk, Pedersen, & Cullari, 1993; Frederick et al., 2007; Neighbors & Sobal, 2007). Moreover, prevalence rates of men's body dissatisfaction have risen steadily over the past three decades (Dakanalis, & Riva, 2013). A national survey of 548 American men, age 13 to 90, indicated that from 1972 to 1994 the proportion of men who reported body dissatisfaction increased from 15% to 43% (Pruzinsky & Cash, 2002). Men who participated in the 1994 survey reported dissatisfaction with their overall appearance, including their abdomen, weight, muscle tone, and chest. A study of college-aged men indicated a prevalence rate of body dissatisfaction of 68% suggesting that the proportion of men dissatisfied with their body approaches that of women reported above (Neighbors & Sobal, 2007).

Evolution of Male Body Image: Measurement and Empirical Findings

The understanding of men's specific body image concerns has evolved over the past two decades with the development of measurement strategies designed to assess their specific body image concerns (Cafri, & Thompson, 2004b). Initial efforts to measure male body image involved extrapolation from the measurement of female body image. More recently, researchers have created more sophisticated and internally valid measures of male body image, primarily by incorporating measures of muscularity (Morrison, Morrison, Hopkins, & Rowan, 2004; Tylka, Bergeron, & Schwartz, 2005). An overview

of the findings related to older adolescent and adult men's body image, specifically body satisfaction, and its associated measurement strategies will be discussed below.

Self-ideal discrepancy scales. Body satisfaction has been measured using contour-drawn silhouette scales (Frederick et al., 2007; Lynch & Zellner, 1999; Stunkard, Sorenson, & Schulsinger, 1983; Thompson & Gray, 1995; Thompson & Tantleff, 1992) and questionnaires using Likert ratings (Edwards & Launder, 2000; McCreary & Sasse, 2000; Morrison, Morrison, Hopkins, & Rowan, 2004; Tylka, Bergeron, & Schwartz, 2005). Contour-drawn silhouette scales depict a range of silhouettes that vary in body size and shape. Respondents are asked to choose the silhouette that best represents their current body and the silhouette that best represents their ideal body. Body dissatisfaction is calculated as the discrepancy between their current and ideal body. Greater discrepancy indicates greater body dissatisfaction. Earlier measures of the self-ideal discrepancy depicted silhouettes that varied in degree of body fat, from underweight to overweight, e.g., the Figural Rating Scale (FRS; Stunkard et al., 1983) and the Contour Drawing Rating Scale (CDRS; Thompson & Gray, 1995). Using these scales, researchers found that approximately one third of men indicated their ideal physique as similar to their current body type, suggesting that they are satisfied with their body (Barnett, Keel, & Conoscenti, 2001). Another one third of men indicated their ideal physique as smaller than their current size, indicating that they are dissatisfied with their body (Drewnowski & Yee, 1987; Neighbors & Sobal, 2007). Lastly, one third of men indicated their ideal physique as larger than their current size, also indicating that they are dissatisfied with their body (Drewnowski & Yee, 1987; Neighbors & Sobal, 2007). This

bidirectional dissatisfaction likely reflects the flaws associated with the FRS and CDRS. More specifically, these scales were created based on research conducted on women, for whom thinness and body fat are highly relevant (Rodin, Silberstein, & Striegel-Moore, 1984). These earlier measures failed to incorporate body image concerns relevant to men, such as muscularity (Ridgeway & Tylka, 2005; Tylka, Bergeron, & Schwartz, 2005).

In an attempt to address these limitations, researchers created body silhouette drawings that varied in muscularity (Lynch & Zellner, 1999; Thompson & Tantleff, 1992). Using these instruments, subsequent researchers have found that men are dissatisfied with their current level of muscularity and wish for a more muscular overall physique (Grieve, Newton, Kelley, Miller, & Kerr, 2005; Lynch & Zellner, 1999), as well as a more muscular upper torso and chest (Thompson & Tantleff, 1992). Although redesign of instruments improved upon the original figural drawings by incorporating the dimension of muscularity, researchers noted that such measures confounded level of body fat and muscle (Cafri & Thompson, 2004b). For example, choosing an ideal physique that is larger than one's current physique could reflect a man's desire to increase his level of muscularity or his desire to decrease his level of body fat, given that a muscular appearance can be enhanced via an increase in muscle mass, loss of adipose tissue, or some combination of the two strategies (Cafri & Thompson, 2004b; Ridgeway & Tylka, 2005).

Researchers then created silhouette scales that further distinguished body fat dissatisfaction from muscle dissatisfaction, e.g., the Body Builder Image Grid

(Hildebrandt, Langenbacher, & Schlund, 2004), the Somatomorphic Matrix (SM; Gruber, Pope, Borowiecki, & Cohane, 1999), the Muscle Silhouette Measure (MSM; Frederick et al., 2007) and the Fat Silhouette Measure (FSM; Frederick et al., 2007). Using these measures, researchers have found that men are dissatisfied with their muscularity, would like to be more muscular (Frederick et al., 2007; Gruber et al., 1999; Hatoum & Belle, 2004; Hildebrandt et al., 2004; Morrison, Morrison, Hopkins, & Rowan, 2004; Vartanian, Giant, & Passino, 2001), and wish to increase their muscle mass by as much as 25 pounds (Olivardia, Pope, Borowiecki, & Cohane, 2004).

In general, using the self-ideal discrepancy to measure body dissatisfaction, researchers have found that a significant proportion of men express dissatisfaction with their body and specifically state discontent with their current level of muscularity. Men generally indicate that they are not muscular enough and want to be more muscular.

Likert scales. Another frequently used method of measuring body dissatisfaction is via Likert scales. The degree of body dissatisfaction is assessed using a numerical value on the Likert scale (Cafri & Thompson, 2004a). Although some Likert scales are classified as measures of global body dissatisfaction, these scales assess dissatisfaction with specific appearance/body dimensions, such as physical attractiveness, body fat, leanness, body parts, and weight (Cafri & Thompson, 2004b). Examining the empirical evidence associated with these instruments highlights what aspects of body image are particularly relevant to men. Using measures of global body dissatisfaction, researchers have found that men are dissatisfied with their body (Hausenblas, Janelle, Gardner, & Hagan, 2003), their physical appearance (Franzoi & Shields, 1984), their abdomen

(Kashubeck-West, Mintz, & Weigold, 2005), their mid and upper torso (McFarland & Petrie, 2012), and their arms and chest (Ridgeway & Tylka, 2005). Findings related to men's body weight dissatisfaction remain inconclusive. Researchers have found that men desire to weigh less than their current weight (Neighbors & Sobal, 2007), more than their current weight (Kashubeck-West et al., 2005) or that they are satisfied with their current weight (Cullari, Vosburgh, Shotwell, Inzodda, & Davenport, 2002). These findings suggest weight to be a crude indicator of body dissatisfaction, as it cannot discern between fat and muscularity, i.e., body composition. An additional shortcoming of the aforementioned instruments is that, similar to the silhouette scales, the norms for these instruments were established using female populations. These instruments also were created by extrapolating from theories of anorexia nervosa and bulimia, as well as female body dissatisfaction (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Consequently, they failed to incorporate body image concerns specifically relevant to men, such as muscularity (Ridgeway & Tylka 2005; Tylka et al., 2005).

To address these shortcomings and provide a more comprehensive and accurate account of male body image concerns, researchers created a number of new instruments focussed on muscularity concerns (McCreary & Sasse, 2000; Morrison & Morrison, 2006; Morrison et al., 2004; Tylka et al., 2005). These instruments either measure muscle dissatisfaction (Tylka et al., 2005) or drive for muscularity (McCreary & Sasse, 2000; Morrison & Morrison, 2006; Morrison et al., 2004), which are related but distinct concepts. Muscle dissatisfaction refers to attitudes related to one's current level of muscularity, whereas drive for muscularity refers to desire to become muscular and

engagement in behaviours geared toward increasing their muscle mass (Bergeron & Tylka, 2007). Researchers that have measured men's muscle dissatisfaction have found that men are dissatisfied with their muscle tone (Giovannelli, Cash, Henson, & Engle, 2008) and think that they are not muscular enough (Ridgeway & Tylka, 2005; Tylka et al., 2005). Researchers that have measured men's drive for muscularity have found that men desire to be more muscular, such that they desire larger and more muscular arms, chest, and back (Ridgeway & Tylka, 2005) and that they engage in body-change strategies aimed at achieving this end (McCreary & Sasse, 2000; Morrison & Morrison, 2006; Morrison et al., 2004). Body-change strategies refer to behaviours intended to improve the appearance or performance of the body and for men, this improvement typically involves increasing muscle mass and/or losing body fat. These behaviours include diet modification, exercising, or using performance- or appearance-enhancing substances, such as diet pills, protein supplements, or steroids (McCabe & McGreevy, 2011).

In summary, using self-report questionnaires that measure body dissatisfaction via Likert ratings and body silhouettes, researchers have found that men report overall dissatisfaction with their body, as well as dissatisfaction with their muscularity that is specific to their upper body. Furthermore, men indicate the drive/desire to become more muscular and engage in body-change strategies to achieve this goal (Morrison & Morrison, 2006; Ridgeway & Tylka, 2005).

Normative and Pathological Body Dissatisfaction

Although men indicate dissatisfaction with their body, it cannot be assumed that body

dissatisfaction is unhealthy and that it necessarily negatively impacts men's psychological functioning. Therefore, delineating between normative and pathological body dissatisfaction is necessary. According to Thompson (1996), body satisfaction is measured on a continuum, ranging from none to extreme. On this continuum, most people fall in the middle indicating moderate body image concerns (Thompson & Gardner, 2002). Very high and low levels of body dissatisfaction are proposed to be potentially problematic, whereas moderate levels of body dissatisfaction can be beneficial (Heinberg, Thompson, & Matzon, 2001). Extreme body image concerns may result in engagement in dangerous dieting or exercise behaviour or in failure to engage in any diet or exercise. Failure to engage in dieting, for example, may result from feelings of being unable to overcome body image problems such as excess weight. Very low body image concerns also may be problematic, as people may not feel compelled to change their behaviours to, for example, improve their health (Heinberg et al., 2001).

Extreme forms of body image disturbance include body dysmorphia (Fitts, Gibson, Redding, & Deiter, 1989) and muscle dysmorphia (Pope, Katz, & Hudson, 1993). Body dysmorphia is characterized by an excessive preoccupation with some aspect of appearance that is perceived as a defect, despite all evidence to the contrary. Muscle dysmorphia is a subcategory of body dysmorphia and is characterized by an excessive preoccupation with muscularity and leanness. Empirical studies support that men who meet the criteria for these disorders experience greater psychological distress and engage in more extreme forms of body-change strategies than do men who report body dissatisfaction, but do not meet the criteria for these disorders (Gila, Castro, Cesena, &

Toro, 2005; Pope et al., 2005). The focus of the current research, however, is on nonpathological body dissatisfaction.

Researchers who have examined nonpathological body dissatisfaction have found association between disturbances in body image and various deleterious psychological consequences in older adolescent and adult men with an average BMI (Andersen & DiDomenico, 1992; Cafri et al., 2005; Cafri, Strauss, & Thompson, 2002; McCreary & Sasse, 2000; Olivardia et al., 2004). Findings from correlational studies on men's body dissatisfaction have linked higher dissatisfaction with lower trait self-esteem ($r = -.51$; Cafri et al., 2002; Heywood & McCabe, 2006; Olivardia et al., 2004), greater depression ($r = .44$) and lower satisfaction with life ($r = -.45$; Cafri et al., 2002). Muscle dissatisfaction also has been identified as a risk factor for developing muscle dysmorphia (Grieve & Bonneau-Kaya, 2007; Pope, Gruber, Choi, Olivardia, & Phillips, 1997). Greater drive for muscularity is associated with lower self-esteem ($r = -.41$), greater depressive symptoms ($r = .32$; McCreary & Sasse, 2000), greater internalization of the male media ideal ($r = .58$; Daniel & Bridges, 2010) and greater social physique anxiety ($r = .44$; McCreary & Saucier, 2009).

Researchers also have investigated the relationship between body dissatisfaction and engagement in potentially harmful body-change strategies, such as disordered eating, over-exercising, and anabolic steroid use (Cafri, van den Berg, & Thompson, 2006; Cahill & Mussap, 2007; Dodge, Litt, Seitchik, & Bennett, 2008; Giovannelli et al., 2008; Litt & Dodge, 2008). Results from these studies indicate that body dissatisfaction in men is associated with higher eating pathology (Tylka et al., 2005), such as bingeing and

purging (Giovannelli et al., 2008) and dieting (Cafri et al., 2005), as well as with greater levels of engagement in strategies to increase muscles (Cahill & Mussap, 2007). High levels of drive for muscularity also have been associated with potentially unhealthy body change strategies, such as willingness to use appearance- or performance-enhancing substances (Dodge et al., 2008), the actual use of performance-enhancing substances (Chittester & Hausenblas, 2009; Karazsia, Crowther, & Galioto, 2013; Litt & Dodge, 2008), and exercise dependence (Chittester & Hausenblas, 2009; Hale, Roth, DeLong, & Briggs, 2010). Furthermore, men with a greater drive for muscularity report higher levels of body compulsivity, i.e., greater need to maintain their workout or diet schedule ($r = .54$; Kelley, Neufeld, & Musher-Eizenman, 2010).

The aforementioned literature suggests that in men with an average BMI, higher body dissatisfaction, particularly related to muscularity, is associated with greater psychological distress in a number of domains. These domains include self-esteem, affect, eating pathology, and engagement in potentially unhealthy body-change strategies consistent with achieving a muscular physique.

Theories of Male Body Image

A review of published research from 1970 to 2015 has not revealed a comprehensive theory of male body image development, related dissatisfaction, and drive for muscularity. The evolutionary perspective offers an account to explain men's drive to be muscular. Furthermore, by extrapolating from empirically supported theories of female body image, researchers have proposed a developmental biopsychosocial model (Ricciardelli & McCabe, 2004) and a Sociocultural Theory (Levine & Smolak, 2006;

Morrison, Kalin, & Morrison, 2004) explicating body image development in males. A review of these theories and related empirical findings follows.

Evolutionary Perspective of Men's Drive for Muscularity

Empirical findings related to men's body image consistently show a desire to increase muscularity (Morrison & Morrison, 2006; Ridgeway & Tylka, 2005). From an evolutionary perspective, humans develop specific psychological mechanisms and preferences to find a potential mating partner who is reproductively fit (Cosmides & Tooby, 1992). Those who possess and act on these preferences are more successful in achieving their reproductive goals than are those who do not (Cosmides & Tooby, 1992).

Each gender has its own strategy for successfully passing on its genes. Females' reproductive strategy is to seek out a partner who is reproductively fit, can protect her and her offspring, and can physically fight and compete with adversaries for resources. As such, females are more selective in their search. Males' reproductive strategy is to have many offspring, and therefore, reproduce with many females. The degree to which males are successful in achieving their reproductive goals is influenced by a range of factors, including physique. Males' physique conveys information about their reproductive fitness, i.e., heritable good condition, as well as the ability to protect offspring and compete with other males for resources (Folstad & Karter, 1992; Johnston, Hagel, Franklin, Fink, & Grammar, 2001). A male who is muscular, strong, and large is deemed to have the most vigorous set of genes, to be better equipped to protect his offspring, defeat his male competitors, and procure scarce resources (Buss & Schmitt, 1993; Kenrick, Neuberg, Zierk, & Krones, 1994; Singh, 1995). Therefore, possessing a

muscular physique is adaptive and desirable for men. It provides men with an advantage while attempting to fulfil their reproductive goals and increases their attractiveness to females (Buss & Barnes, 1986).

Over time, the processes of evolution have shaped what men and women perceive as attractive and desirable in men, i.e., muscularity, perhaps explaining men's drive and desire to increase their level of muscularity (Buss & Barnes, 1986). These preferences have been documented in research (Coy, Green, & Price, 2014; Montoya, 2007; Oswald & Lindstedt, 2006; Wade, 2000). A brief review of this literature follows.

Empirical research. Researchers have found that women have a strong preference and desire for men who possess the tapered “V” physique, also known as mesomorphic body type (Coy et al., 2014) compared to men who possess other body types (Buss & Schmitt, 1993; Jackson, 1992). Women also prefer male body parts characteristic of the mesomorphic body type (Coy et al., 2014; Montoya, 2007; Wade, 2000). For example, Montoya (2007) asked women to rate their preference for body parts in their ideal male partner and found that women expressed a preference for body parts predictive of strength and overall fitness, such as muscle tone, as well as arm and shoulder strength. Wade (2000) examined women's ratings of men's physical and sexual attractiveness and found that women's ratings were predicted by the following traits and body parts: fitness, muscularity, strength, physical condition, width of shoulders, and the size of arms, chest, biceps, and waist. Preference for men with a muscular and strong physique also has been documented in men. For example, Oswald and Lindstedt (2006) found that men preferred the mesomorphic body type, to which they ascribed positive traits, such as

competitiveness, strength, and masculinity. Therefore, both sexes express a strong preference for the male mesomorphic physique, perhaps reflecting years of reproductive advantages related to same.

Men also believe that women prefer and find most attractive a muscular body type (Ridgeway & Tylka, 2005). However, men's ratings of women's body type preferences differ from women's actual reported preferences (Grossbard, Neighbors, & Larimer, 2011). Most women indicate a preference for the mesomorphic body type, whereas most men assume that women prefer a hyper-mesomorphic body type, i.e., a body type characterized by extreme levels of muscularity, definition, and leanness, often typical of body-builders (Lynch & Zellner, 1999; Tantleff-Dunn & Thompson, 2000). Lastly, men cite the wish to attract women as a motive for increasing their muscularity (Frederick et al., 2007; Ridgeway & Tylka, 2005).

In summary, men and women prefer and find most attractive the male mesomorphic body type, as well as body parts characteristic of strength and overall fitness. Furthermore, men believe that most women are attracted to men with a muscular body type and therefore they may desire, or be motivated, to increase their muscularity in an attempt to increase their attractiveness to the opposite sex. However, they may be striving for a higher level of muscularity than that actually preferred by women.

Developmental Biopsychosocial Theory

Over the last decade researchers have begun to examine risk and protective factors across the male life span in an attempt to identify factors relevant to the development of male body dissatisfaction (Steiner et al., 2003). According to the developmental

perspective, risk and protective factors aggregate in specific developmental phases and interact to produce various psychological outcomes, such as body dissatisfaction (Steiner et al., 2003). More specifically, researchers have identified biological, psychological, and sociocultural factors throughout male preadolescence, adolescence, and adulthood that interact to influence body image development (Ricciardelli, McCabe, Lillis, & Thomas, 2006).

Biological factors. Researchers have proposed that biological factors, such as body size (McCarthy, 1990) and pubertal timing (Connolly, Paikoff, & Buchanan, 1996), influence body image development.

Body mass index/body composition. Body size, measured by body mass index (BMI), has been suggested to influence the development of body dissatisfaction (McCarthy, 1990). Theoretically, increases in body weight cause one's body to diverge from the male media ideal, thus leading to dissatisfaction (McCarthy, 1990).

Researchers have found that the relationship between BMI and body dissatisfaction in men is moderated by age (Gardner, Sorter, & Friedman, 1997; Musher-Eizenman, Holub, Edwards-Leeper, Persson, & Goldstein, 2003; Rolland, Farnill, & Griffiths, 1997). In preschool children, body size is not related to body dissatisfaction (Musher-Eizenman et al., 2003). However, with increasing age, the association between BMI and body dissatisfaction strengthens, such that older preadolescent boys with a higher BMI report greater body dissatisfaction and express the desire to be thinner (Gardner et al., 1997; Rolland et al., 1997). Older preadolescent boys with a higher BMI also report greater body dissatisfaction compared to those with an average BMI (Vander Wal & Thelen,

2000). Findings from cross sectional and longitudinal studies have shown that higher baseline BMI predicts higher body dissatisfaction over time in older preadolescent boys (Ricciardelli et al., 2006; Ricciardelli, McCabe, Holt, & Finemore, 2003, Gardner, Friedman, & Jackson, 1999).

For adolescent boys, the relationship between BMI and body dissatisfaction is unclear. Body mass index has been shown to be a significant predictor of body dissatisfaction in both correlational (Lawler & Nixon, 2011; Vincent & McCabe, 2000) and longitudinal research, such that higher BMI predicted increases in body dissatisfaction over time (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013; Eisenberg, Neumark-Sztainer, Paxton, 2006; Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006). In contrast, findings from two studies show that the relationship between BMI and body dissatisfaction becomes curvilinear such that adolescent boys who are underweight, overweight, or obese report higher levels of body dissatisfaction than boys who are of average weight (Bearman, Presnell, Martinez, & Stice, 2006; Presnell, Bearman, & Stice 2004). In three studies, investigators found no relationship (Barker & Galambos, 2003; Jones, Bain, & King, 2008; Tata, Fox, & Cooper, 2001). Lastly, Smolak and Stein (2006) examined the relationship between BMI and muscle dissatisfaction in adolescent boys. Findings from this study showed no relationship between these variables.

For college-aged men, the relationship between BMI and body dissatisfaction also is unclear. For example, Watkins, Christie, and Chally (2008) found a curvilinear relationship between BMI and body dissatisfaction, whereas other researchers found no

relationship (Chittester & Hausenblass, 2009; McCreary, Karvinen, & Davis, 2006). Findings related to BMI and drive for muscularity also are mixed (Daniel & Bridges, 2010; McCreary et al., 2006). Daniel and Bridges (2010) found that BMI significantly predicted drive for muscularity, such that men with a lower BMI reported a greater desire to become more muscular. In contrast, McCreary et al. (2006) found no relationship between these two variables.

In summary, BMI is a better indicator of body dissatisfaction in preadolescence when weight concerns are more relevant than is muscularity. Among adolescent and college-aged men, BMI is not a reliable risk factor for body and muscle dissatisfaction perhaps because older males are focussed on body composition including high levels of muscularity and low levels of body fat, which BMI does not accurately reflect. For example, a high BMI may represent high muscle mass and/or body fat. To address the shortcomings of the information associated with BMI, anthropomorphic measures of body composition have been used to assess levels of body fat and muscularity (Sutton & Miller, 2006). Contrary to predictions however, levels of body fat and/or muscularity were not associated with muscle dissatisfaction or drive for muscularity (Chittester & Hausenblass, 2009; McCreary et al., 2006). For adolescents and young adult men, BMI and measures of body fat and muscularity may not accurately capture the physical changes occurring throughout adolescence and early adulthood that may contribute to body dissatisfaction.

Pubertal timing. Adolescence is a period of rapid change in which several biopsychosocial factors interact to intensify boys' focus on body image (Ricciardelli &

McCabe, 2004). A significant physiological change throughout this period is pubertal maturation (Connolly et al., 1996). During puberty, boys experience a number of physiological changes, including increases in height, weight, muscle mass, and shoulder width, etc. (Connolly et al., 1996). Upon completing puberty, adolescent boys have a marked increase in muscle mass.

According to the Maturation Deviance Theory, pubertal timing, i.e., whether pubertal development occurs earlier, later, or at the same time as most adolescents, impacts adolescents' psychological functioning, including body satisfaction (Petersen & Taylor, 1980). Compared to adolescent boys who meet pubertal maturation early or on-time, late-maturing boys are delayed in achieving the socially prescribed appearance norms and therefore are more likely to be dissatisfied with their body (Siegel, Yancey, Aneshensel, & Schuler, 1999).

The Maturation Deviance Theory has been supported by empirical research (Blyth et al., 1981; McCabe & Ricciardelli, 2003; Siegel et al., 1999). Findings from studies have shown that late-maturing boys experience higher levels of body dissatisfaction compared to boys who mature on-time or early (McCabe & Ricciardelli, 2003; Siegel et al., 1999). Therefore, boys who experience pubertal maturation later than their peers are at greater risk for experiencing body dissatisfaction.

Individual factors. Individual factors proposed to influence body image satisfaction include sexual orientation, negative affect, and self-esteem (Bardone-Cone, Cass, & Ford, 2008; Ricciardelli & McCabe, 2004).

Sexual orientation. Compared to heterosexual men, homosexual men place a greater

emphasis on physical appearance, and therefore may be at greater risk for feeling dissatisfied with their body. Research findings support this proposition, demonstrating that homosexual men report higher levels of body and weight dissatisfaction compared to heterosexual men (Boroughs & Thompson, 2002; Carper, Negy, & Tantleff-Dunn, 2010; Russell & Keel, 2002).

Negative affect. Affective disturbances have been implicated in the development of body dissatisfaction (Taylor & Cooper, 1992). Negative affect, including depression, is proposed to result in negative self-evaluations in general, as well as in negative evaluations specific to physical appearance. Furthermore, negative affect influences information processing such that depressed individuals prefer, and selectively attend to, negative information about most domains in their life (Beck, 1976) including their appearance.

Researchers have conducted longitudinal studies to examine the relationship between negative affect and body dissatisfaction in preadolescent (Ricciardelli et al., 2006) and early adolescent boys (Holsen, Kraft, & Roysamb, 2001) and found that negative affect did not predict body dissatisfaction. In studies of older adolescents, researchers have found that greater negative affect was associated with greater muscle dissatisfaction (Cafri et al., 2005) and body dissatisfaction (Bearman et al., 2006; Paxton et al., 2006; Presnell et al., 2004; Rodgers, Paxton, & Chabrol, 2010). Findings from studies of college-aged men are mixed (Heywood & McCabe, 2006; Lavender, Gratz, & Anderson, 2012). For example, Lavender et al. (2012) found that greater negative affect was associated greater body dissatisfaction and drive for muscularity, whereas other

researchers found no relationship (Heywood & McCabe, 2006).

Self-esteem. Self-esteem refers to positive or negative thoughts about the self and is intrinsically linked to thoughts about the body and physical appearance (Heatherton & Wyland, 2003). Therefore, higher self-esteem is associated with lower body dissatisfaction (Mäkinen, Puukko-Viertomies, Lindberg, Siimes, & Aalberget, 2012; McCabe & Ricciardelli, 2003).

Previous research supports the negative correlation between body dissatisfaction and self-esteem in college-aged men (Bergeron & Tylka, 2007; Grammas & Schwartz, 2009; Mäkinen et al., 2012; Olivardia et al., 2004); high body dissatisfaction is generally related to low self-esteem and vice-versa.

Sports involvement. An additional factor investigated is sports involvement. Sports participation has an important role in promoting physical, mental, and social development during childhood and adolescence, particularly for boys (Eppright, Sanfacon, Beck, & Bradley, 1997; Weiss, Smith, & Theeboom, 1996). Findings from studies have shown that, in general, adolescent and college-aged males who are involved in sports report higher body satisfaction when compared with those who are not involved in sports (Hausenblas, & Symons Down, 2001). However, the relationship between sports involvement and body satisfaction may depend on the type of sport and reasons for engaging in that sport (Cafri et al., 2005; Furnham, Badmin, & Sneade, 2002; Galli, Reel, Petrie, Greenleaf, & Carter, 2011). Specifically, participation in power sports such as football, wrestling, or weight-lifting, is associated with greater muscle dissatisfaction in both adolescent boys (Cafri et al., 2005) and adult men (Galli et al., 2011). Motivations

related to engaging in physical activity have been found to moderate this relationship. Furnham et al. (2002) found that adolescents who engaged in exercise for appearance reasons reported greater body dissatisfaction compared to adolescents who exercised for nonappearance reasons. Therefore, the degree to which sports involvement may serve as a protective factor depends on the type of sport, as well as on related motivations for engaging in same.

Lastly, internalization of the media ideal and social comparison have been implicated in the development of body dissatisfaction. These factors are discussed in context of the Sociocultural Theory.

Sociocultural Theory of Body Image

According to the Sociocultural Theory (Wertheim, Paxton, & Blaney, 2004), standards of beauty and appearance within society, including more proximal environments such as family and school, influence opinions and feelings about appearance. When these social standards or ideals are both difficult to achieve and portrayed as important, they may promote body image disturbance in those who perceive that they do not meet them (Wertheim et al., 2004). Standards of beauty can be transmitted by parents, peers, and media (Wertheim et al., 2004).

Parents. According to the Sociocultural Theory, a significant proximal risk factor for body dissatisfaction is parental influence (Wertheim et al., 2004). In childhood especially, parents are the main source of weight- and shape-related information (Schur, Sanders, & Steiner, 2000). Parents can influence boys' body satisfaction through direct communication that evaluates their body or encourages them to change their body. They

also can influence body satisfaction by modelling body-change behaviours, such as dieting (Wertheim et al., 2004).

Perceived pressure and messages related to weight and shape from parents have been shown to influence body image in preadolescent and adolescent boys. Thelen and Cormier (1995) found that, after controlling for the effect of actual body weight, encouragement from mothers and fathers to lose weight was associated with a desire to be thinner for preadolescent boys. For early adolescent boys, perceived messages from mothers and fathers to lose weight and increase muscle was associated with body dissatisfaction (Stanford & McCabe, 2005). One must note that the authors did not control for actual body weight or BMI. Findings related to older adolescents are mixed. After controlling for the effect of self-reported body weight, Ata, Ludden, and Lally (2007) found that pressure from parents to lose weight was associated with greater body dissatisfaction, whereas Presnell et al. (2004) found no relationship. In college-aged men, negative appearance-related comments from parents were positively correlated with body dissatisfaction, after controlling for the effect of BMI (Rodgers, Paxton, & Chabrol, 2009). In terms of modelling weight-control behaviours, Cromley, Neumark-Sztainer, Story, and Boutelle (2010) found that parent engagement in unhealthy weight-control behaviours, such as use of diet pills, was associated with greater body dissatisfaction in sons, after controlling for the effect of BMI. Paternal modelling of weight-lifting behaviour significantly predicted sons' greater self-reported engagement in strategies to increase muscularity, recognising however that the authors did not control for the effect of actual body weight or BMI (Galioto, Karazsia, & Crowther, 2012). Other researchers

have examined whether parental support in general can act as a protective factor for body image in sons (Barker & Galambos, 2003; Bearman et al., 2006; Presnell et al., 2004). Adolescents who feel unconditionally accepted by their parents may be less likely to attempt to conform to appearance ideals (Wichstrom, 1999). In contrast, those who experience rejection from their parents may attribute this lack of support in part to their physical appearance.

Researchers have found that parental support does act as a protective factor for early adolescent boys, such that greater parental support predicted higher body satisfaction (Barker & Galambos, 2003; Bearman et al., 2006). In contrast, parental support did not predict body satisfaction in older adolescent boys (Presnell et al., 2004).

Peers. Peers are a powerful source of social pressure associated with physical appearance, especially during adolescence and early adulthood (Wertheim et al., 2004). Peers communicate beliefs regarding acceptable appearance standards, and thereby dictate which body types are desirable. Peers also reward and punish adherence to these body types by rejecting those who do not meet their appearance standards (Wertheim et al., 2004).

Among preadolescent and adolescent boys, negative appearance-related criticism by peers has been shown to influence body satisfaction (Cafri et al., 2006; Jones, 2004; Muris, Meesters, Van der Blom, & Mayer, 2005; Stanford & McCabe, 2005). More specifically, boys who perceived pressure or teasing related to their appearance reported higher body dissatisfaction compared to boys who did not perceive teasing. Menzel et al. (2010) conducted a meta-analysis on the relationship between weight-based teasing and

body dissatisfaction and found that for adolescent males, weight-teasing was significantly related to body dissatisfaction ($d = .24$). Among college-aged men, a more extensive history of weight teasing was associated with greater weight dissatisfaction, albeit only in men with a low or high BMI (Bardone-Cone et al., 2008). Lastly, greater frequency of friends' comments regarding weight or eating habits was associated with greater eating pathology and drive for thinness in men (Forney, Holland, & Keel, 2012).

Media. The final sociocultural factor identified to influence male body image is the media (Levine & Smolak, 2006; Morrison, Morrison & McCann, 2006). This factor serves as the focus of the current research. Morrison et al. (2006) and Levine and Smolak (2006) propose mechanisms by which the media influence body satisfaction. According to the Sociocultural Theory put forth by Morrison et al. (2006), four social cognitive processes contribute to the media's influence on body image. These processes include a) the media's depiction and promotion of the male ideal, b) cultivation of appearance ideals, c) internalization of media ideal, and d) social comparison. The aforementioned processes will be discussed below.

Male media ideal. According to Morrison et al. (2006), media influence body image development by portraying and promoting appearance ideals. Currently, in Western society, the ideal male physique is defined as a "V shaped, muscleman body-type characterized by a well-developed chest and arm muscles and wide shoulders tapering down to a narrow waist" (Mishkind, Rodin, Silberstein, & Striegel-Moore, 1986, p. 547; Mulgrew, Johnson, Lane, & Katsikitis, 2014). The representation of the male body depicted in male-directed media also has evolved over the past 30 years (Baghurst,

Hollander, Nardella, & Haff, 2006; Burgess, Stermer, & Burgess, 2007; Leit, Gray, & Pope, 2002; Soulliere & Blair, 2006). More specifically, the male body has changed dramatically in terms of appearance and function.

Empirical research. The muscular body type has become increasingly pervasive throughout Western society via various forms of media, such as print and television, as well as video games and action figures (Baghurst et al., 2006; Burgess et al., 2007; Leit et al., 2002; Soulliere & Blair, 2006). Researchers have examined various types of print media depicting the male physique and have described its evolution over time. Labre (2005a) conducted a content analysis of popular men's magazines, such as Men's Health from 1999 to 2003, and found that the majority of images of the male physique were characterized as very muscular and low in body fat. Researchers also have examined the evolution of the male physique in Playgirl magazine and have found that, over the past 25 years, male models' physiques have become increasingly muscular and dense (Leit et al., 2002; Spitzer, Henderson, & Zivian, 1999).

Television is another form of media that transmits societal norms related to the ideal male physique. Similar to the male physique depicted in print media, the male physique represented on television has become increasingly large and more muscular, representing a "hyper-male" that constructs men's bodies as large, strong, and muscular. Researchers have documented these changes in men shown in World Wrestling Entertainment (WWE; Soulliere & Blair, 2006), action films, Mr. Universe contests (Connan, 1998), and reality television (Dallesasse & Kluck, 2013).

More recently, researchers have examined the male media ideal in other types of

media, such as video games and action figures (Burgess et al., 2007; Martins, Williams, Ratan, & Harrison, 2011; Pope, Olivardia, Gruber, & Borowiecki, 1999). Burgess et al. (2007) examined video game packaging and found that the majority of males depicted on the covers were categorized as muscular or “super muscular.” Similarly, researchers have found that the physiques of a variety of action figures, such as G.I. Joe, Batman, and Spiderman, have increased in size over the last 25 years (Baghurst et al., 2006; Pope et al., 1999). More specifically, the upper bodies have become increasingly larger and more defined, resulting in physiques that are impossible to achieve. In summary, the male media ideal depicted in various forms of media has evolved significantly over time. Presently, it is well-defined, very muscular, and nearly devoid of body fat. Furthermore, such physiques are likely unattainable without resorting to extreme and unhealthy body-change strategies, such as steroid use.

In addition to the male media ideal becoming increasingly muscular, dense, and lean, the conceptualization of the male body has changed. The male body has become increasingly objectified in media, such that there is a greater emphasis on its aesthetic qualities (Morrison, Morrison, & Hopkins 2003) and less emphasis on its instrumental quality, in other words, the function of the male body (Farquhar & Wasylikiw, 2007). This trend is evident in various forms of media as noted by Farquhar and Wasylikiw (2007). They examined images of male models depicted in *Sports Illustrated* over the last 30 years and categorized them in terms of their emphasis on aesthetic or performance qualities. They found that the majority of ads emphasized aesthetic qualities of the male body, focussing on discrete body parts and aesthetic appearance rather than function.

Objectification of the male body in media is further evidenced by the greater use of body parts rather than of the entire body in ads, as well as by the greater use of the male body in ads for products unrelated to the body (Pope, Olivardia, Borowiecki, & Cohane, 2001), such as ads for alcoholic beverages. Furthermore, greater objectification of the male body is evidenced by the increase in male nudity, with the proportion of undressed males increasing from 3% of ads in 1950 to 35% of ads in 1990 (Pope et al., 2001).

Researchers also have examined male body objectification in music videos and video games and found levels similar to that of female objectification (Burgess et al., 2007; Sommers-Flanagan, Sommers-Flanagan, & Davis, 1993). Therefore, the male body has become increasingly objectified, with an increased focus on the aesthetic qualities of muscularity, rather than on its functionality.

Lastly, the messages associated with images of objectified, muscular men also reflect and reinforce the emphasis on the aesthetic qualities of the male body. Male-directed print media tend to emphasize and encourage body-change strategies related to achieving the muscular media ideal, such as weight-lifting and protein supplement use (Andersen & DiDomenico, 1992; Grieve & Bonneau-Kaya, 2007; Labre, 2005a; Petrie, Austin, Cowley, & Helmcamp, 1996). These body-change strategies are emphasized more often than are other types of strategies related to dieting and weight loss (Andersen & DiDomenico, 1992; Grieve & Bonneau-Kaya, 2007). Furthermore, body-change messages convey that appearance can be manipulated, that it should be enhanced, and that engaging in body-change strategies will help men attain the lifestyle they desire (Ricciardelli, Clow, & White, 2010). This trend has been increasing over the past three

decades, such that the number of articles devoted to strengthening, toning, and building muscle has increased significantly (Petrie et al., 1996). The pressure on men to achieve the muscular media ideal is transmitted not only through images of unrealistically muscular bodies, but also via explicit messages encouraging men to engage in strategies consistent with achieving this ideal.

Cultivation of appearance ideals. As previously described, media serve as the sociocultural agent that disseminates images of the male media ideal and the message that such an ideal is attainable via engagement in body-change strategies. According to the Sociocultural Theory (Wertheim et al., 2004), media influence body image development by cultivating appearance ideals. Cultivation refers to a dynamic process between media exposure and the viewer and what the viewer absorbs from his exposures (Morgan, Shanahan, & Signorielli, 2009) and is measured by extent of media exposure/consumption. Appearance ideals are cultivated in media via consistent and pervasive messages regarding what is considered attractive and ideal. According to this theory, consistent and ubiquitous media portrayals of the mesomorphic male can influence men's appearance ideals. Specifically, over time the mesomorphic media ideal is deemed normal, desirable, and achievable by most men, whereas other body types are considered undesirable (Morrison et al., 2006). These ideals then influence men's feelings about their own body and drive to obtain the idealized physique through engagement in potentially unhealthy body-change strategies (Lantz, Rhea, & Mayhew, 2001).

Empirical research. The effects of the cultivation process are documented in studies

of men's body type preferences and their relationships to media exposure. Preference for a large and muscular body-type has been documented in boys as young as age six (Spitzer, Henderson, & Zivian, 1999), such that they reported a preference for the mesomorphic body type over the ectomorphic or endomorphic body types (Mishkind et al., 1986). Children also associate positive qualities (e.g., nice and smart) with the mesomorphic body type and negative qualities (e.g., sad and mean) with the endomorphic and ectomorphic body types (Cramer & Steinwert, 1998; Musher-Eizenman, Holub, Miller, Goldstein, & Edwards-Leeper, 2004).

Adult men also acknowledge media's portrayal of the ideal male appearance. Murray, Touyz, and Beumont (1996) found that 72% of men believed that society has an ideal body shape for men. Of those men, 74% reported that this ideal was muscular, whereas only 8% stated that it was slim. They also indicated that the ideal body is defined and cut (Ridgeway & Tylka, 2005). In studies of body preferences, results have shown that men prefer a lean and very muscular body over other types (Labre, 2005b; Ridgeway & Tylka, 2005), and that they associate a number of desirable and positive qualities with the male media ideal, primarily qualities that epitomize stereotypical masculinity, such as power, control, dominance, and aggression (Morrison et al., 2003). For example, Thompson and Tantleff (1992) found that men evaluated male figures with muscular chests as more assertive, athletic, sexually active, confident, and popular, whereas figures with less muscular chests were labelled as lonely and depressed. Findings from qualitative research also indicate that men think they would feel more masculine if they gained muscle and that they consider muscular men to be masculine (Grogan, Williams, &

Conner, 1996; Weinke, 1998). Indirect evidence for the desirability of the muscular ideal includes television programs from the late 1990s in which men of above-average weight were underrepresented in situation comedies. Fouts and Vaughan (2002) also found that the heavier the male character, the more negative were this character's references to his own body shape/weight. Lastly, the relationship between muscularity and attractiveness is not linear, such that greater muscularity does not imply greater perceived attractiveness for young men (Arbour & Ginis, 2006). Researchers also suggest that there is a ceiling on acceptable levels of muscularity, such that a moderate degree of muscularity is considered attractive, whereas extreme hypermuscularity characteristic of bodybuilders is considered less attractive and desirable (Arbour & Ginis, 2006).

Cultivation Theory (Morgan, Shanahan, & Signorielli, 2009) also has been empirically supported by findings from both correlational and experimental research that show the effect of exposure to the male media ideal on body dissatisfaction, as well as other psychological variables in older adolescent and adult males. For example, Barlett, Vowels, and Saucier (2008) conducted a meta-analysis of 15 correlational and 10 experimental studies. They found small but significant effect sizes when aggregating the correlational ($d = .19$) and experimental studies ($d = .22$), suggesting that men felt worse about their body after viewing images of the male media ideal compared to men who viewed images of non-ideal physiques or images of products. Blond (2008) conducted a review of 15 experimental studies and found similar results, with a larger effect size of .42. Blond (2008) noted that the negative effect of media was specific to men's body dissatisfaction, body esteem, and negative affect. Specifically, men who viewed images

of the male media ideal experienced greater body dissatisfaction, lower body esteem, and greater negative affect compared to men who viewed non-ideal physiques or images of products. Recently, Ferguson (2013) conducted a meta-analysis of 19 experimental, 24 correlational, and eight longitudinal studies and found more conservative effect sizes of .07, .07, and .04, respectively.

The aggregation of these studies, however, obscures the specific type of body image variables measured across them, which include global body dissatisfaction, self-ideal discrepancy, body part dissatisfaction, weight dissatisfaction, muscle and body fat dissatisfaction, and drive for muscularity. The aforementioned variables have been examined in the literature. A detailed account of studies is provided below.

Body dissatisfaction. In correlational studies, researchers have examined the relationship between media exposure and body image disturbance among older adolescent and adult males, focussing primarily on body dissatisfaction. The definition of media consumption across studies includes frequency of looking at and reading magazines, number of magazines purchased/viewed in the last month, television viewing hours per week, and lifetime consumption of television, movies, magazines, and music. In general, findings from correlational studies consistently have shown a significant positive relationship between media consumption and body dissatisfaction (Botta, 2003; Harrison & Cantor, 1997; Jonason, Kremer, & Sohn, 2009; Morry & Staska, 2001; van den Berg et al., 2007). More specifically, using self-report questionnaires of global body dissatisfaction, researchers have found that greater consumption of fitness (Jonason et al., 2009; Morry & Staska, 2001) and fashion magazines (Botta, 2003), as well as many

hours of television viewing (van den Berg et al., 2007) were associated with greater body dissatisfaction, whereas reading sports magazines was associated with lower dissatisfaction (Botta, 2003). Magazine consumption, however, was not associated with weight concern (Hatoum & Belle, 2004) or physique anxiety (Aubrey & Taylor 2009; Duggan & McCreary, 2004). Lastly, greater consumption of muscle/appearance magazines was associated with greater drive for muscularity in men (Duggan & McCreary, 2004; Giles & Close, 2008; Morrison, Morrison, & Hopkins, 2003), as well as greater endorsement of positive attributes associated with muscularity (Hatoum & Belle, 2004). In summary, these findings suggest that greater television viewing and magazine consumption, with the exception of sports magazines, is associated with higher levels of global body dissatisfaction and drive for muscularity.

Although correlational findings demonstrate that consumption of fitness, fashion, and appearance-related magazines and television viewing are associated with higher body dissatisfaction and drive for muscularity, such studies cannot ascertain the direction of causality between media consumption and body dissatisfaction. Therefore, alternative explanations cannot be ruled out. For example, men who are highly dissatisfied with their body may seek out appearance-focussed magazines or show an attentional bias toward idealized bodies (Cho & Lee, 2013; Knobloch-Westerwick & Romero, 2011).

Experimental studies provide a clearer answer as to whether or not exposure to images of the male media ideal cause men to evaluate their body negatively. Using an experimental design, researchers have typically examined the impact of acute exposure to images of the male media ideal via print ads, television ads, or music videos, or video

games on male body dissatisfaction measured via self-report questionnaires (Arbour & Ginis, 2006; Baird & Grieve, 2006; Diedrichs & Lee, 2010; Grogan et al., 1996; Halliwell, Dittmar, & Orsborn, 2007; Hargreaves & Tiggemann, 2009; Hobza, Walker, Yakushko, & Peugh, 2007; Krawiec & Jarry, 2008; Michaels, Parent, & Moradi, 2013; Mulgrew & Volcevski-Kostas, 2012; Nikkelen, Anschutz, Ha, & Engels, 2012; Sylvia, King, & Morse, 2014) and contour-drawn silhouette scales (Krawiec & Jarry, 2008; Leit, Gray, & Pope, 2002; Ogden & Munday, 1996). Taken together, findings from experimental studies suggest that acute exposure to images of the male media ideal has a negative impact on older adolescent and adult males, such that compared to men who view control images, men who view images of the male media ideal report greater global dissatisfaction (Hausenblas et al., 2003), greater state body and muscle tone dissatisfaction (Mulgrew & Volcevski-Kostas, 2012), and lower body esteem (Barlett & Harris, 2008; Grogan et al., 1996; Hobza & Rochlen, 2009; Sylvia et al., 2014). Findings from experimental studies have shown no significant impact of these images on body fat dissatisfaction (Krawiec & Jarry, 2008) or body anxiety (Halliwell et al., 2007; Kalodner, 1997).

Findings are mixed regarding the effect of media exposure on men's self-assessed physical attractiveness, body part dissatisfaction, and muscle dissatisfaction. More specifically, researchers have found that media exposure has a negative effect on self-assessed physical attractiveness (Hargreaves & Tiggemann, 2009; Hobza et al., 2007; Ogden & Munday, 1996), whereas others have found no effect (Gulas & McKeage, 2000). In terms of body part dissatisfaction, researchers have reported that

media exposure has a negative impact (Baird & Grieve, 2006; Lorenzen, Grieve, & Thomas, 2004), whereas others have found no effect (Arbour & Ginis, 2006; Diedrichs & Lee, 2010; Hargreaves & Tiggemann, 2009; Nikkelen et al., 2012). Lastly, researchers have found that media exposure has a negative effect on muscle satisfaction (Agliata & Tantleff-Dunn, 2004; Hargreaves & Tiggemann, 2009), whereas others have found no effect (Hobza & Rochlen, 2009; Johnson, McCreary, & Mills, 2007; Krawiec & Jarry, 2008).

Using the self-ideal discrepancy measure of body dissatisfaction, researchers have reported mixed results depending on the type of scale used. Using male contour drawings that varied in body fat, Skorek and Dunham (2012) found that compared to men who viewed images of the thin female ideal, men who viewed images of the male media ideal indicated that they were satisfied with their body, such that their current and ideal body ratings did not significantly differ from each other. Krawiec and Jarry (2008) found that, using Lynch's contour drawings (Lynch & Zellner, 1999) that varied in muscularity, yet confounded by levels of body fat, men were satisfied with their body after viewing images of muscular men compared to those who viewed "average" men. In contrast, using a silhouette scale that delineated body fat and muscularity, Leit et al. (2002) found that compared to men who viewed neutral ads, men who viewed ads of muscular men indicated no effect on their body fat self-ideal discrepancy, but a significant discrepancy on their muscularity self-ideal discrepancy, such that men reported that they were not muscular enough. Based on these studies, media exposure has no effect on body fat satisfaction but a negative impact on men's muscle satisfaction. However, further studies

are necessary to replicate these findings.

Body-change strategies. In addition to measuring men's body and muscle dissatisfaction, researchers have examined the impact of exposure to the media ideal on body-change strategies, such as binge eating, weight-lifting, and use of performance-enhancing substances (Botta, 2003; Cahill & Mussap, 2007; Hatoum & Belle, 2004). Findings from correlational studies show that the number of hours spent reading fashion and health/fitness magazines is positively related to self-reported supplement use to gain muscle (Botta, 2003; Hatoum & Belle, 2004) and eating pathology (Duggan & McCreary, 2004; Morry & Staska, 2001). McCabe and McGreevy (2011) found that media messages specific to losing weight and increasing muscle, significantly predicted self-reported engagement in strategies to lose weight and increase muscle mass. Using a quasi-experimental design, Cahill and Mussap (2007) found that among men who viewed images of the male media ideal, increased body dissatisfaction predicted self-reported level of engagement in strategies to increase muscle mass. Results from an experimental study conducted by Krawiec and Jarry (2008) showed that compared to men who viewed images of the average shirtless males, men who viewed images of muscular males chose a heavier dumbbell to perform bicep curls. This finding has yet to be replicated. In summary, it appears that exposure to images of the male ideal implicitly encourages or inspires men to engage in strategies consistent with achieving that ideal.

Self-esteem and affect. Additional psychological variables measured in response to exposure to the male media ideal include self-esteem and affect. Self-esteem has been

investigated only in experimental studies (Galioto & Crowther, 2013; Gulas & McKeage, 2000; Hobza & Rochlen, 2009; Hobza et al., 2007; Krawiec & Jarry, 2008; Skorek & Dunham, 2012). Results from numerous experimental studies consistently have shown that exposure to images of the male ideal has no effect on global state self-esteem, nor on the performance and social domains of self-esteem (Gulas & McKeage, 2000; Hobza & Rochlen, 2009; Hobza et al., 2007; Krawiec & Jarry, 2008; Skorek & Dunham, 2012). For the appearance domain of self-esteem, findings are mixed, with results showing that men report lower appearance state self-esteem (Galioto & Crowther, 2013) or experience no change in appearance state self-esteem after viewing images of the male media ideal (Hobza & Rochlen, 2009; Hobza et al., 2007). Findings from experimental studies also have shown no effect of media exposure on general anxiety (Agliata & Tantleff-Dunn, 2004; Hausenblas et al., 2003; Johnson, et al., 2007). Findings related to global negative affect and anger are mixed, with results showing that men report greater negative affect and anger (Mulgrew & Volcevski-Kostas, 2012) or experience no change in these variables after viewing images of the male media ideal (Agliata & Tantleff-Dunn, 2004; Hausenblas et al., 2003; Johnson et al., 2007; Krawiec & Jarry, 2008). Similarly, findings related to depression are mixed, with results showing that men become more depressed (Agliata & Tantleff-Dunn, 2004) or experience no change in depression (Hausenblas et al., 2003; Johnson et al., 2007).

In summary, findings from the above studies suggest that exposure to images of the male media ideal specifically affects men's muscle dissatisfaction when measured by self-ideal discrepancy, global body dissatisfaction, body esteem, as well as self-reported

engagement in body-change strategies. On the other hand, body fat, shape and size dissatisfaction, body anxiety, general anxiety, as well as global, performance, and social state self-esteem are unaffected. Lastly, conclusions regarding media's effect on self-assessed physical attractiveness, body part dissatisfaction, muscle dissatisfaction, appearance state self-esteem, global negative affect, depression, and anger remain uncertain due to mixed findings.

Internalization of the media ideal. Mass media transmit images of the male media ideal and through cultivation processes, these images are deemed to be normal and desirable. Over time, repetitive exposure to images of the male media ideal can influence men's body image. The third tenet of the Sociocultural Theory (Morrison, Kalin, & Morrison, 2004) states that media exert their effect on body image by increasing internalization of the media ideal. Internalization of this ideal refers to adopting the socially defined ideals presented in media as personal standards and cultivates striving toward these ideals (Jones, 2004). Internalization of the media ideal is measured by the extent to which men endorse and adopt the unrealistic media images as their own personal standard of appearance and attempt to look similar. Levine and Smolak (2006) suggest that internalization mediates the relationship between exposure to the media ideal and body satisfaction, such that media exposure causes greater internalization of the ideal, which then results in higher body dissatisfaction because the male media ideal is virtually unattainable for most men. In other words, cultivation processes, i.e., repeated exposures to images of the male media ideal, affect male body image via internalization of the male media ideal.

Empirical research. In studies of internalization of the male media ideal, results show a small positive relationship (i.e., $r = .16$ to $.30$) between internalization and body dissatisfaction in adolescent boys (Jones, 2004; Jones, Vigfusdottir, & Lee, 2004; Smolak, Levine, & Thompson, 2001). Results from a longitudinal study showed that internalization of the media ideal predicted body dissatisfaction, but did not mediate the relationship between exposure to appearance magazines and body dissatisfaction (Jones et al., 2004). To date, no experimental studies have been conducted with adolescents.

In college-aged men, internalization is associated with weight and shape concerns (Bardone-Cone et al., 2008; Warren, 2008), muscle dissatisfaction (Giles & Close, 2008; Grammas & Schwartz, 2009; Karazsia & Crowther, 2009), and body fat dissatisfaction (Grammas & Schwartz, 2009). Giles and Close (2008) found that internalization mediated the relationship between male magazine exposure and both attitudinal and behavioural drive for muscularity. Similarly, Morry and Staska (2001) reported that internalization mediates the relationship between monthly fitness magazine reading and body shape dissatisfaction. Tylka (2011) found that the relationship between perceived pressure from media to be muscular and men's engagement in muscularity enhancement and disordered eating behaviours was mediated by internalization of the media ideal.

In summary, existing research supports that adolescent boys and adult men who internalize the media ideal, report greater body dissatisfaction. Furthermore, internalization mediates the relationship between self-reported media consumption and several indices of body dissatisfaction in adult men.

Social comparison. Lastly, Sociocultural Theory suggests that in addition to

internalization of the male media ideal, engaging in comparison with images of the male media ideal negatively influences body image satisfaction.

Social Comparison Theory

According to Festinger's (1954) seminal paper on a theory of social comparison processes, individuals are driven to evaluate themselves and determine their rank on a particular dimension by making social comparisons. Upward comparison consists of seeking out comparisons to similar, yet superior others. Festinger also postulated that individuals compare their own opinions and abilities to those of others. Since Festinger's original formulation, social comparison theory has undergone a number of revisions (Kruglanski & Mayseless, 1990). Firstly, theoretical and empirical developments suggest that social comparisons can occur spontaneously rather than intentionally (Martin & Kennedy, 1993), with dissimilar others (Martin & Kennedy, 1993), and on dimensions beyond that of opinion or ability, such as physical appearance (Wheeler & Miyake, 1992). Furthermore, whereas Festinger (1954) assumed that there is a preference to engage in upward comparisons with superior others, Latane (1966) expanded the theory to include comparison with inferior comparison targets, known as downward comparison. Festinger (1954) also proposed that people engage in comparison for the purpose of self-evaluation. However, researchers have identified additional motives for comparison, such as self-improvement (Helgeson & Mickelson, 1995) and self-enhancement (Hakmiller, 1966; Thornton & Arrowood, 1966). More specifically, upward comparison to a superior other may be motivated by the wish for self-improvement. Alternatively, comparisons may serve the purposes of self-enhancement. Such a comparison may

involve making a downward comparison to an inferior target, thus enhancing the self.

As described above, motives of social comparison influence the likelihood of engaging in an upward or downward comparison, as well as the related consequences of comparison. Researchers suggest that the likelihood of engaging in social comparison depends on the similarity between self and other (Major, Testa, & Blysmá, 1991). As similarity in features, e.g., age, race, or gender, or circumstances between self and other increases, the other is deemed more relevant for the purpose of comparison and is therefore more likely to affect self-views. Lockwood and Kunda (1997) suggest that similarity judgments between self and other also are influenced by the self-relevance of the domain of comparison. They suggest that if the domain of comparison is highly important to the self, perceived similarity between oneself and the outstanding other increases, and the likelihood of engaging in comparison with the outstanding other on that domain is more likely. In contrast, if the domain of excellence is less important to the self, perceived similarity between self and other decreases, and therefore, the likelihood of engaging in comparison is less likely. The consequences of the comparison then are influenced by the perceived personal attainability of the level of excellence achieved by the outstanding other on the particular domain. Comparing to a superior other whose level of excellence on a self-relevant domain is considered personally attainable may result in feelings of inspiration. On the other hand, if the level of excellence of the superior other is perceived as personally unattainable, feelings of defeat may follow. Furthermore, perceived attainability of the outstanding other's level of excellence has motivational consequences. Persevering in a task or engaging in certain

behaviours is more likely in the presence of a belief that one's performance can improve (Huguet, Dumas, Monteil, & Genestoux, 2001; Pila, Stamiris, Castonguay, & Sabiston, 2014; Testa & Major, 1990).

Social comparison theory is helpful to understand men's appearance evaluations when confronted with images of the male media ideal. It is assumed that the male models depicted in images of the media ideal represent the outstanding other on the domain of physical appearance, and more specifically, muscularity. That men engage in upward comparison with these models is a reasonable assumption (Wheeler & Miyake, 1992). Furthermore, if muscularity is highly self-relevant, men are more likely to compare themselves to the models depicted in images of the media ideal than if muscularity is less self-relevant. Lastly, if men consider the physique of the male media ideal to be attainable, they likely will feel inspired to achieve a similar physique. Men also may feel motivated to behave in ways that are consistent with achieving that ideal, such as engaging in weight-lifting or supplement use. On the other hand, men who perceive such physiques as relevant but unattainable will feel deflated and evaluate their own physique negatively. These men may be less motivated to engage in behaviours consistent with achieving such a physique. To date, personal attainability beliefs specific to images of the male media ideal have not been measured in men.

Empirical research. Individual differences in social comparison tendency and their correlates have been examined in several studies (Bucchianeri, Serrano, Pastula, & Corning, 2014; Faith, Leone, & Allison, 1997; Karazsia & Crowther, 2009; McCreary & Saucier, 2009; Myers & Crowther, 2009; O'Brien, Hunter, Halberstadt, & Anderson,

2007; van den Berg et al., 2007; Wack & Tantleff-Dunn, 2008), as have the moderating effect of social comparison tendency (Galioto & Crowther, 2013; Hargreaves & Tiggemann, 2004; Humphreys & Paxton, 2004; Krawiec & Jarry, 2008). Researchers also have assessed men's extent of social comparison processes when confronted with images of the media ideal (Galioto & Crowther, 2013; Hargreaves & Tiggemann, 2009). Social comparison processes also have been manipulated via instructional sets to promote comparison to ideal media images and then determine its influence on men's processing of such images and subsequent self-evaluations (Hargreaves & Tiggemann, 2009; Humphreys & Paxton, 2004). Men's relevance ratings of the male media ideal also have been examined in one study (Strahan, Wilson, Cressman, & Buote, 2006). Lastly, although personal attainability beliefs specific to images of the male media ideal have not been measured, researchers have examined men's attainability beliefs about appearance in general and its relationship to body dissatisfaction (Franzoi et al., 2012; Knobbloch-Westerwick & Romero, 2011). These various lines of inquiry are summarized below.

Physical appearance comparison tendency. Physical appearance comparison tendency refers to an individual's tendency to compare their own appearance to the appearance of others (PACS; Thompson, Heinberg, & Tantleff, 1991). Researchers have examined the relationship between individual differences in appearance comparison tendencies and media consumption, as well as body dissatisfaction (Botta, 2003; Myers & Crowther, 2009; O'Brien et al., 2007; van den Berg et al., 2007; Wack & Tantleff-Dunn, 2008). Evidence from correlational studies suggests that men with a greater tendency to

engage in appearance comparisons report greater media consumption compared to men who are low on this tendency (Botta, 2003; van den Berg et al., 2007; Wack & Tantleff-Dunn, 2008). Furthermore, men who have a high tendency to engage in appearance comparisons are more dissatisfied with their appearance (O'Brien et al., 2007; Wack & Tantleff-Dunn, 2008), body shape (van den Berg et al., 2007), muscularity (Karazsia & Crowther, 2009), and report greater physique anxiety (McCreary & Saucier, 2009).

Researchers further hypothesized that the tendency to make physical appearance comparisons may explain why some men are more susceptible to the negative effects of media (Hargreaves & Tiggemann, 2004; Humphreys & Paxton, 2004; Krawiec & Jarry, 2008). However, results from studies have failed to confirm this hypothesis, finding no moderation effect of appearance comparison tendency (Hargreaves & Tiggemann, 2004; Humphreys & Paxton, 2004; Krawiec & Jarry, 2008) or mediation effect (Hargreaves & Tiggemann, 2009). These findings may reflect the use of the Physical Appearance Comparison Scale (PACS) to measure men's appearance comparison tendencies in the aforementioned studies. Similar to earlier measures of body dissatisfaction that were created using norms for the female population, the PACS was created to assess appearance comparison in women and as such, was not designed for use of male samples. Therefore, this measure may not accurately capture comparison dimensions salient to men, e.g., muscularity.

General social comparison tendency. Another type of social comparison tendency identified in the literature is general social comparison tendency, which refers to the frequency of engagement in comparisons regarding one's opinions and abilities (Gibbons

& Buunk, 1999). Findings from correlational studies have shown that compared to those who are low on general social comparison tendency, those who are high on this tendency display higher accessibility and awareness of the self (Stapel & Tesser, 2001), show greater interest in what others feel and think (Swap & Rubin, 1983), have a higher degree of negative affectivity and self-uncertainty (Butzer & Kuiper, 2006) and report higher levels of drive for muscularity (Bucchianeri et al., 2014). Furthermore, individuals who are high on general social comparison are more negatively affected by the social comparisons in which they engage than those who are low on this tendency (Buunk, Gibbons, & Visser, 2002). Therefore, it is reasonable to expect that men high on this tendency will likely engage in more comparisons with images of the male media ideal, and that they will be more negatively affected by these comparisons.

Krawiec and Jarry (2008) measured degree of general social comparison tendency and found that men who were low on general social comparison tendency, rather than high, were negatively impacted by images of the muscular ideal. The authors speculated that, perhaps higher levels of general social comparison tendency also means more experience at making social comparisons and a greater ability to make use of such comparisons to enhance self-evaluations. Thus, paradoxically, high general social comparison tendencies may protect men's self-evaluations from fluctuation when confronted with images of the male media ideal. These findings and their explanation have yet to be replicated and verified respectively.

State social comparison processes. Although measuring individual differences in social comparison tendency in men can help identify those who are more susceptible to

the negative effects of media exposure, it cannot be assumed that these men are engaging in social comparison when confronted with images of the male media ideal in the laboratory. To address this issue, men's social comparison processes, i.e., state social comparison, can be measured in the lab while they view images of the media ideal. To date, researchers have measured state comparison in only two experimental studies (Galioto & Crowther, 2013; Hargreaves & Tiggemann, 2009). More specifically, Hargreaves and Tiggemann (2009) measured the extent of acute physical appearance comparison, as well as the direction of comparison, i.e., upward vs. downward. They found that compared to men who viewed commercials of "normal, clothed men," men who viewed commercials depicting muscular males indicated a greater extent of appearance comparison. However, greater extent of appearance comparison did not influence men's self-evaluations in either condition. Furthermore, the direction of the comparison mattered, such that greater engagement in upward comparison was associated with feeling less strong, and less satisfied with weight and muscularity. However, this tendency did not interact with the type of images viewed (Hargreaves & Tiggemann, 2009). The authors concluded that direction of appearance comparison, rather than extent of acute appearance comparison, influence men's self-evaluations.

Similar to the aforementioned study, Galioto and Crowther (2013) measured the extent of acute comparison, as well as the direction of comparison in men who viewed images of the male media ideal or products. They found that men who viewed images of the male media ideal, greater extent of comparison, as well as greater engagement in upward comparison were associated with lower appearance state self-esteem. In

summary, findings from these two studies suggest that the direction of comparison seems to correspond and influence men's self-evaluations, whereas the effect of extent of state comparison on men's self-evaluations is unclear.

Lastly, researchers have attempted to manipulate social comparison via instructional set and have found that explicit comparison instructions do not influence men's self-evaluations after viewing images of the male media ideal (Hargreaves & Tiggemann, 2004; Hargreaves & Tiggemann, 2009).

In summary, findings from correlational research suggest that greater physical appearance trait and state social comparison, as well as general trait social comparison, are associated with greater body dissatisfaction. Findings from experimental studies, however, show that physical appearance trait comparison does not moderate the relationship between exposure to images of the media ideal and body dissatisfaction. Results from two studies suggest that the direction of comparison affects men's self-evaluations following viewing images of the male media ideal, whereas the effect of extent of acute comparisons on men's self-evaluations is unclear. Lastly, there is some preliminary evidence from one unpublished study suggesting that men who are low on general social comparison tendency may be more negatively affected by exposure to the male media ideal than are men high on this tendency (Krawiec & Jarry, 2008).

Relevance and attainability. As previously described, the likelihood of engaging in comparison depends on the self-relevance of the domain of comparison. The outcome of this comparison then depends on attainability beliefs associated with the domain of comparison, which is muscularity in the current study. If muscularity is highly self-

relevant and the level of muscularity of the superior other seems attainable, men may feel inspired, whereas if muscularity is highly self-relevant but that of the superior other is deemed unattainable, men may feel defeated. As described earlier, the majority of men report dissatisfaction with their level of muscularity and a desire to be more muscular and engage in body-change strategies to achieve same (Giovannelli et al., 2008; McCreary & Sasse, 2000; Ridgeway & Tylka, 2005; Tylka et al., 2005). As such, it is reasonable to assume that muscularity may be a highly self-relevant domain of comparison to many men. Strahan et al. (2006) examined men's relevance ratings of images of the male media ideal that were described as depicting a professional model or a peer, thereby manipulating the perceived similarity of the comparison target. The authors found that men rated the model in the images described as either a professional model or a peer as equally relevant for the purposes of comparison; however, men reported making more comparisons to the professional model than to the peer. The effects of similarity and extent of comparison on men's self-evaluations were not measured. However, findings from this study suggest that men consider the male media ideal as relevant for the purposes of comparison, independent of perceived similarity, and that men engage in comparison with these images. What characteristic of the male media ideal is relevant to men for the purposes of comparison remains unclear.

Men's attainability beliefs related to physical appearance have been examined as well (Franzoi et al., 2012). More specifically, Franzoi et al. (2012) measured men's beliefs regarding the likelihood that they could personally attain perfection in three body domains: body shape, facial features, and physical abilities. The authors found that men

who believed that perfection was personally attainable reported greater positive physical attractiveness and upper body strength esteem than did men who believed that perfection was unattainable. As such, men's attainability beliefs related to muscularity may explicate why comparisons to the male media ideal result in feelings of defeat or inspiration.

In addition, specific characteristics of the male media ideal may affect the degree to which the ideal physique is seen as attainable and consequently, may influence whether men feel inspired or defeated after such exposures. These specific characteristics of male media images are broadly referred to as body conceptualization (Franzoi, 1995).

Body Conceptualization

According to Franzoi (1995) the body can be conceptualized in terms of its aesthetic qualities, i.e., body-as-object, or in terms of functionality, i.e., body-as-process. More specifically, the body-as-object conceptualization refers to viewing the body as comprised of discrete parts that are evaluated based on their aesthetic qualities (Franzoi, 1995). In contrast, body-as-process refers to focussing on the body's function whose instrumentality is of greater consequence. For example, large muscles may be valued for their appearance, i.e., body-as-object, or for their greater provision of strength, i.e., body-as-process. Researchers suggest that body conceptualization of the male media ideal may influence men's body image (Farquhar & Wasylkiw, 2007; Mulgrew, Johnson, Lane, & Katsikitis, 2014). The focus of existing research has been on the effect of exposure to body-as-object images compared to images of products or nonmuscular body types. Researchers have explicitly manipulated body conceptualization and examined the

effects of exposure to body-as-object images compared to body-as-process images in adolescent boys (Farquhar & Wasylikiw, 2007) and adult men (Mulgrew et al., 2014). Farquhar and Wasylikiw (2007) found that compared to boys who viewed body-as-process images, boys who viewed body-as-object images reported lower social, performance, and appearance state self-esteem, as well as greater depression. However, in this study, the authors did not control for various confounding variables. For example, the images used in each condition differed in terms of muscularity and attractiveness. Therefore, it remains unclear whether body conceptualization or body type, or both, impacted these boys' self-esteem.

Mulgrew et al. (2014) conducted a similar study with adult men and controlled for the aforementioned confounding variables. They found that, contrary to predictions, men who viewed body-as-process images reported lower fitness satisfaction than did men who viewed the body-as-object images; there were no group differences in overall appearance satisfaction, level of confidence, muscle tone satisfaction, or negative affect. The authors interpreted their findings within a Social Comparison framework, suggesting that the models in the body-as-process images depicted a more relatable target of comparison, whereas the models in the body-as-object images appeared unnatural. As such, men may have been more likely to compare themselves to the relatable models depicted in the body-as-process condition than the models depicted in the body-as-object images resulting in men feeling less satisfied with their fitness. The authors, however, did not measure the relatability of the models depicted in each type of image or men's social comparison processes in response to viewing these images. As such, this explanation has

yet to be empirically supported.

Differences in body conceptualization of the male media ideal may affect men by portraying the male physique as more or less attainable. Compared to media images that depict the male media ideal in terms of body-as-object, body-as-process ads offer more information related to how to achieve this ideal, i.e., via some form of physical activity. Body-as-object ads offer little information on how to achieve this ideal, often depicting ads for cologne or alcohol. As such, body-as-process ads explicitly or implicitly suggest that the male body can be manipulated and changed via particular body-change strategies that are consistent with achieving the mesomorphic body type. Therefore, compared to body-as-object ads, body-as-process ads may be depicting a more attainable appearance ideal. Furthermore, if men perceive both types of ads as equally relevant, but perceive the body-as-process ideal to be more attainable, this may generate feelings of inspiration and motivation to achieve this ideal, resulting in less body dissatisfaction and greater engagement in body-change strategies. To date, the impact of body conceptualization on body-change strategies has not been examined.

Body Esteem

In addition to the body conceptualization of the male media ideal, men's satisfaction with their body function has been a neglected area of male body image research. To date, the focus of male body image research has been on men's dissatisfaction with the appearance of their body (Ferguson, 2013). Men's satisfaction with their body function has been examined in very few studies. Satisfaction with body function has been measured via self-report questionnaires, such as the Body Esteem Scale (BES; Franzoi &

Shields, 1984). In a study of body function satisfaction, Franzoi and Shields (1984) found that men are especially concerned with their upper body strength and physical condition, e.g., stamina, strength, and agility. Men also are more concerned with their body function than with their physical appearance and tend to make more favourable evaluations of their body functions (e.g., reflexes, strength, coordination), than of the appearance of their body parts (e.g., biceps, waist, face; Franzoi, 1994).

Examining body functionality among men is important given that researchers have found that it is associated with a number of negative psychological outcomes (McKinley, 2006; Tucker, 1983; Tylka, Bergeron, & Schwartz, 2005), to a greater extent than is body dissatisfaction (Reboussin et al., 2000). More specifically, greater body function dissatisfaction is associated with greater negative affect and depression (Reboussin et al., 2000), as well as lower self-esteem (Tucker, 1983) and higher eating pathology (McKinley, 2006) than is appearance dissatisfaction.

Body-Change Strategies

Another variable of interest relevant to men is body-change strategies, which has received increasing attention in the past decade (Galioto, Karazsia, & Crowther, 2012; Karazsia & Crowther, 2010; McCabe & McGreevy, 2011; Ricciardelli & McCabe, 2004, Tylka, 2011). Researchers have focussed on normative body-change behaviours, such as dieting and exercise and on more extreme body-change strategies considered to be health-risk behaviours (McCabe & Ricciardelli, 2005). Health-risk behaviours include disordered eating behaviour, excessive exercise, and the use of appearance- or performance-enhancing substances, such as diet pills, protein supplements, creatine,

amino acids, and anabolic steroids.

Body-change strategies have become a focus of study due to the increased awareness of the significant physical and psychological problems associated with these behaviours. For example, findings from studies have shown that the overuse of protein supplements is associated with kidney damage (Delimaris, 2013) and that the use of diet pills is associated with insomnia and heart arrhythmia (Yen & Ewald, 2012). Engagement in risky body-change behaviours also is associated with negative psychological outcomes, such as muscle dissatisfaction and muscle dysmorphia (Pope et al., 2000).

Engagement in body-change strategies has been documented in adolescent and adult males (Eisenberg, Wall, & Neumark-Sztainer, 2012). For example, Eisenberg et al. (2012) conducted a survey of 1307 adolescent males and found that 40% of those surveyed regularly exercised with the goal of increasing muscle mass, 38% used protein supplements, and 6% experimented with steroids. Similar prevalence rates of body-change behaviours were reported in studies of college-aged men (Froiland, Koszewski, Hingst, & Kopecky, 2004; McCabe, Butler, & Watt, 2007).

The role of sociocultural factors in men's body-change strategies also has been examined (Ricciardelli & McCabe, 2004). There is some evidence indicating that media exposure is associated with the desire to engage in body-change strategies (Botta, 2003; Duggan & McCreary, 2004; Hatoum & Belle, 2004; McCabe & McGreevy 2011; Morry & Staska, 2001), as well as with actual engagement in these strategies (Field et al., 2005; Cahill & Mussap, 2007; Krawiec & Jarry, 2008). Results from correlational studies show that greater exposure to images of the male media ideal is associated with a greater desire

to engage in body-change behaviours intended to increase muscle mass (Botta, 2003; Duggan & McCreary, 2004; Hatoum & Belle, 2004;; McCabe & McGreevy 2011; Morry & Staska, 2001). Specific types of media exposure, such as consumption of fashion or health/fitness magazines, are associated with greater use of appearance- and performance-enhancing substances, such as protein shakes, creatine, amino acids, growth hormones, and steroids (Field et al., 2005). Findings from one quasi-experimental study showed that among men who viewed images of the male media ideal, increased body dissatisfaction predicted self-reported engagement in strategies intended to increase muscle mass (Cahill & Mussap, 2007). Findings from an experimental study by Krawiec and Jarry (2008) showed that compared to men who viewed images of average shirtless males, men who viewed images of muscular shirtless males chose a heavier dumbbell to perform bicep curls. Therefore, there is some preliminary evidence to suggest that exposure to images of the male media ideal influence men's muscle-building behaviour.

Methodological Issues

The empirical research on the impact of media exposure in men is complicated by a number of methodological flaws found most often in experimental studies. One such flaw concerns the stimuli used as the experimental and control images. The images used in the experimental condition are said to represent the male media ideal. However, the characteristics of the images depicting the male ideal vary across studies. In older studies, the images labelled as the "male media ideal" typically depicted slender, metrosexual fashion models (Grogan et al., 1996; Gulas & McKeage, 2000; Kalodner, 1997; Ogden & Munday, 1996). In more recent studies the images used have been

muscular models (Agliata & Tantleff-Dunn, 2004; Arbour & Ginis, 2006; Baird & Grieve, 2006; Hargreaves & Tiggemann, 2009; Hobza & Rochlen, 2009; Krawiec & Jarry, 2008; Leit et al., 2002; Lorenzen et al., 2004). These images differ not only in body type, i.e., slender vs. muscular, but also in a number of other dimensions, such as attractiveness, body pose and use, and degree of sexual exploitation. Using images of metrosexual men is especially problematic given that qualitative research suggests that men judge male fashion models as too feminine or homosexual (Elliott & Elliott, 2005). Furthermore, men indicate no desire to emulate their appearance and reject any suggestion that these images affect their self-image or self-esteem (Elliott & Elliott, 2005). Therefore, such images are likely deemed irrelevant by men and perhaps for this reason, have no impact on their self-evaluations. In studies using images of male fashion models, exposure to such images has no impact on men's body images variables, such as their body satisfaction and self-rated attractiveness (Gulas & McKeage, 2000; Kalodner, 1997).

Frequently, in experimental studies there is significant variability in the type of control images used (Baird & Grieve, 2006; Diedrichs & Lee, 2010; Grogan et al., 1996). Some studies have used images of landscapes (Grogan et al., 1996), products (Baird & Grieve, 2006; Gulas & McKeage, 2000; Halliwell et al., 2007; Hausenblas et al., 2003; Hobza & Rochlen, 2009), over and underweight men (Diedrichs & Lee, 2010; Ogden & Munday, 1996), "hypermuscular" men (Arbour & Ginis, 2006), "nonmuscular" men (Agliata & Tantleff-Dunn, 2004; Hargreaves & Tiggemann, 2009), and "average" men (Krawiec & Jarry, 2008). Furthermore, control images often depict men who, compared to the

experimental images, differ in attractiveness, nudity and sexual exploitation (Arbour & Ginis, 2006; Diedrichs & Lee, 2010; Hargreaves & Tiggemann, 2009; Ogden & Munday, 1996). Given these methodological flaws, one cannot confidently conclude that men's self-evaluations are influenced primarily by body type rather than other variables, such as nudity and attractiveness, or some combination of these variables.

The Present Research

The current male body image literature is limited by methodological problems and lacks specificity regarding what characteristics of the male media ideal, such as body conceptualization, attainability and relevance influence men's self-evaluations following exposure. Furthermore, it is unclear whether state and trait social comparison moderate this relationship and what specific body image dimensions are affected.

The following two studies have been designed to attempt greater specificity related to the aforementioned three areas. The first goal of the present research was to examine whether exposure to images of the male media ideal that differ in body conceptualization and relevance affect men's self-evaluations. In Study 1, body conceptualization was manipulated by exposing men to images that either emphasized the appearance or the performance qualities of the male body. To date, findings from two studies suggest that body-conceptualization (body-as-process vs. body-as-object) influences adolescent males' state self-esteem and depression (Farquhar & Wasylkiw, 2007) and adult men's fitness satisfaction (Mulgrew et al., 2014). One must note that the adolescents felt better whereas the adult men felt worse after viewing body-as-process images compared to those who viewed body-as-object images. As such, the direction of the effect of exposure

to media images that differ in body conceptualization on men's self evaluations is unclear. Furthermore, according to Sociocultural Theory, one consequence of cultivation of the male media ideal is that men consider such images as attainable (Morrison et al., 2006). To date, the degree to which men perceive the male media ideal physique as a relevant domain of comparison or personally attainable has not been examined. In the current study, the effect of body conceptualization on men's body image evaluations, as well as their relevance and attainability judgments, were measured. Also, an effort was made to control confounding variables associated with media images used across experimental conditions by equating the images on variables such as nudity, attractiveness, and muscularity. In Study 2, relevance was manipulated to determine whether men who view media ideal images that are described in a way that makes them less relevant for the purposes of comparison are less affected than men who view images that are described in a way that does not affect their relevance. The manipulation of relevance and its rationale will be described in detail in Study 2.

State physique comparison and general social comparison tendency also were examined to determine whether men who engage in greater social comparison are more vulnerable to the effects of exposure to media images that differ in body conceptualization (Study 1) and relevance (Study 2) than are men who engage in less comparison with these images. More specifically, one purpose of these two studies was to measure the extent of physique comparison processes in which men engage when viewing the male media ideal. Similar to the studies conducted by Galioto and Crowther (2013) and Hargreaves and Tiggemann (2009), the extent and direction of state

comparison were measured. However, instead of measuring appearance comparison, physique comparison was measured which offers a more specific measure of comparison with the model's body rather than with the model's face. Trait social comparison also was examined, but as an exploratory factor.

These studies were designed to offer greater specificity in terms of identifying the aspects of men's self-evaluations that are affected by exposure to the male media ideal such as muscle dissatisfaction and body esteem. As described earlier, the empirical research on men's muscle dissatisfaction remains inconsistent and is complicated by the measurement of men's body image concerns. For example, researchers have measured muscle dissatisfaction using the Drive for Muscularity Scale (DMS; Duggan & McCreary, 2004; Johnson, McCreary, & Mills, 2007). This scale consists of two subscales, the Muscularity-Oriented Body Image Attitudes (MBI), and Muscle Development Behaviours (MB), which have been shown to be two distinct constructs. As such, the authors recommend that the two scales should be analysed separately, instead of analysing the aggregate score. However, researchers typically have used the aggregate score of the DMS, which does not delineate whether men's muscle dissatisfaction, behaviour, or both were affected. In the current studies, the Muscularity-Oriented Body Image Attitudes subscale (MBI) of the DMS only was used to measure muscle dissatisfaction. As previously mentioned, in addition to the muscle satisfaction variable that has been the primary focus of the literature, the current studies included a measure of men's evaluations related to their body function/condition, e.g., physical fitness, agility, which has been shown to be critical to their self-image (Franzoi,

1994). State negative affect also was examined as a criterion variable to investigate psychological state following exposure to the male media ideal.

Finally, in addition to using a self-report measure of muscle dissatisfaction, men's actual muscle-building behaviour was measured. Exposure to the male media ideal has been shown to be associated with self-reported engagement in strategies to build muscle (Cahill & Mussap, 2007; McCabe & McGreevy, 2011); however, studies of muscle-building behaviour rely primarily on self-report which is inherently limited given the risk of response distortions (Lanyon, 1997), extreme response styles (Newcomb, Huba, & Bentler, 1986), negative affectivity bias (Watson & Pennebaker, 1989), and social desirability bias (Edwards, 1990). By using behavioural measures of muscle-building, the present studies circumvented these limitations. Men's muscle-building behaviour was measured via number of bicep curls in Study 1 and via protein consumption in Study 2.

CHAPTER II

Study 1

Research Questions and Hypotheses

The following five questions were investigated in Study 1:

1. Which type of image depicting the male media ideal, i.e., "body-as-process" or "body-as-object," will be rated as a more relevant domain of comparison?
2. Which type of image depicting the male media ideal, i.e., "body-as-process" or "body-as-object," will be rated as more personally attainable?
3. What is the effect of viewing images of the male media ideal that differ in body

conceptualization on men's muscle dissatisfaction, physical condition esteem, negative affect, and weight-lifting behaviour?

4. Do differences in state physique comparison moderate men's reactions to viewing images of the male media ideal that differ in body conceptualization?

5. Do differences in trait social comparison tendency moderate men's reactions to viewing images of the male media ideal that differ in body conceptualization?

As previously mentioned, compared to body-as-process ads, body-as-object ads may depict a less attainable ideal and consequently, this difference in attainability may influence men's self-evaluations. Specifically, if men perceive both types of ads as equally relevant, but perceive the body-as-object ads as less attainable, they may experience feelings of defeat in the form of increased negative self-evaluations and psychological state, i.e., negative affect, as well as decreased motivation to achieve this ideal. As such, it is expected that following exposure to body-as-object images, men will report greater muscle dissatisfaction, lower physical condition esteem, greater negative affect, and engage in fewer muscle-building behaviours than will men who view body-as-process ads. Furthermore, it is expected that state physique comparison will moderate these outcomes, such that these effects will be more pronounced among men who engage in a greater state physique comparison.

Given these considerations, the following hypotheses were tested:

Hypothesis 1: Compared to body-as-process images, body-as-object images will be rated as less personally attainable.

Hypothesis 2: Compared to men who view body-as-process images, men who view

body-as-object images will report greater muscle dissatisfaction, lower physical condition esteem, greater negative affect, and engage in fewer biceps curls.

Hypothesis 3: State physique comparison will moderate the effect of exposure to these images such that men who compare themselves more extensively will be more negatively affected by exposure to body-as-object images than by exposure to body-as-process images. Specifically, among men who engage in greater state physique comparison, those who view the body-as-object images will report greater muscle dissatisfaction, lower physical condition esteem, greater negative affect, and engage in fewer bicep curls than those who view the body-as-process images. Men who engage in state physique comparison to a lesser extent will not be differentially affected by the type of images to which they will be exposed.

Given the paucity of research on the relevance of the media ideal physique as a domain of comparison, no hypothesis was formulated.

Exploratory Research

There is very little research on the moderating effect of general trait social comparison tendency on the relationship between exposure to images of the male ideal that differ in body conceptualization and men's muscle dissatisfaction, physical condition esteem, negative affect, and muscle-building behaviour. Therefore, this variable was examined in an exploratory manner and no hypotheses were formulated.

Method

Participants.

The sample consisted of 105 males between the ages 17 to 26, with a mean age of

20.69 ($SD = 1.85$). Ethnicity was as follows: Caucasian (72%), Middle Eastern (10%), East Asian (8%), African Canadian (6%), South Asian (4%), and two or more ethnic backgrounds (1%). In terms of years of university education, 21% were in their first year, 29% were in their second year, 25% were in their third year, 19% were in their fourth year, and 6% had attended university for more than four years.

Materials.

Images. Two types of advertisements were used as experimental stimuli, ads depicting the male mesomorphic ideal either emphasizing aesthetic, i.e., body-as-object, or instrumental qualities, i.e., body-as-process. A sample of thirty photographs were obtained from various on-line men's health and fitness magazines, such as Men's Health, Men's Fitness, Runner's World, and Sports Illustrated. Images from these sources were chosen because they are considered very popular men's magazines that most men encounter in their daily lives, such as at grocery and convenience stores. Furthermore, the male media ideal depicted in these specific magazines is consistent with the ideal perceived as most attractive to men, i.e., moderately muscular, lean and not hypermuscular (Arbour & Ginis, 2006; Labre, 2005b).

Content validity for the two sets of images (body-as-object vs. body-as-process) was established by having five male graduate students rate each image on four criteria as per Farquhar and Wasylkiw (2007) to classify each image as body-as-object or body-as-process. These criteria included:

1. "Level of activity" refers to the amount of activity demonstrated by the model (adapted from Duquin, 1989). Models engaging in high levels of activity would

demonstrate the physical abilities of the body, or body-as-process, whereas low levels of activity would focus on the still appearance of the body, or body-as-object. The activity level of the models was measured using a 7-point scale ranging from 1 (*not active*) to 7 (*extreme activity*).

2. “Level of pose” refers to how natural the male model appears in the advertisement. A highly posed model would be evaluated aesthetically, i.e., body-as-object, whereas a more naturally captured image of a model would focus less on appearance, i.e., body-as-process. Level of pose was measured using a 7-point scale ranging from 1 (*naturalistic*) to 7 (*posed*).

3. “Use of advertised item” refers to how well the model demonstrated the use of an advertised product. A model who is seen using a product would be promoting his abilities, whereas a model who is not seen using the advertised product in the ad is used as an aesthetic prop. The degree to which the advertised product was used by the model was measured using a 7-point scale ranging from 1 (*not at all*) to 7 (*very much so*).

4. “Eye gaze” refers to the direction of the model’s view. A model whose eye gaze cannot be determined, as a result of head turned, eyes covered and so on, suffers a loss of subjectivity that would allow the viewer to engage in a more evaluative stance when observing the model (body- as-object; adapted from Kolbe & Albanese, 1996). In contrast, a model who has direct eye gaze, i.e., looking forward toward the viewer of the ad, maintains subjectivity (body-as-process). The model’s eye gaze was measured by choosing one of the following three descriptors of eye gaze: direct, cannot be determined, or other, such as looking at an object or another individual in the ad.

The seven images that received the highest mean body-as-object ratings were used as stimuli in the body-as-object condition, whereas the seven images that were given the lowest mean body-as-object ratings were used as stimuli in the body-as-process condition. Interrater reliability was calculated for these 14 images and revealed high reliability among the students, with r s ranging from .82 to .98. To ensure condition equivalence, the five male graduate students also rated each of the 14 images on level of muscularity, attractiveness, and extent to which the model depicts the media ideal using the following three questions: “the model in this ad is muscular,” “the model in this ad is attractive” and “the model in this ad depicts the male media ideal.” These questions were answered using a 9-point scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). Independent t -tests indicated that there were no significant differences between the experimental conditions on muscularity, attractiveness, and the degree to which the model depicted the male media ideal (all p s > .54). Level of nudity was controlled for by choosing images of men who were shirtless and clothed only in knee length shorts.

Five additional ads that depicted only products, such as sporting goods, were intermixed within both sets of ads. These ads were void of human images and were taken from the internet. Therefore, participants viewed a total of 12 advertisements, seven depicting the male media ideal conceptualized as either body-as-object (Appendix A) or body-as-process (Appendix B), and five ads of products relevant to men intermixed within the seven images. The same five product ads were used in each condition. Twelve advertisements were shown to participants because previous research has demonstrated robust effects of media images using approximately this number of ads in

both female and male body image research (Agliata & Tantleff-Dunn, 2004; Arbour & Ginis, 2006; Groesz, Levine, & Murnen, 2002; Ip & Jarry, 2008; Leit et al., 2002).

Measures.

Predictor variables.

Consumer Response Questionnaire (CRQ). The CRQ is a 5-item measure commonly used in body image studies in which participants are asked to view images of the media ideal (Jarry & Kossert, 2007). The purpose of the CRQ is to increase the credibility of the cover story and ensure that participants are focussed on the presented advertisements (Mills, Polivy, Herman, & Tiggeman, 2002). The CRQ measures participants' opinions regarding the aesthetic dimensions, such as colourfulness, of an advertisement.

Participants rate their level of agreement using a 9-point scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). A higher score represents higher agreement.

The CRQ was revised for the current study. Ten questions were added to measure relevance, attainability, and social comparison, and assess content validity of the ads to determine whether the manipulation was successful. Participants answered 16 questions for each of the seven ads that depicted a male model, and 10 questions for each of the five ads of products only. A search of the social comparison literature yielded no validated measure of relevance and attainability. Therefore, questions were developed patterned after those used by Lockwood and Kunda (1997). Relevance was assessed with the question: "The model's physique in this ad is relevant to me for the purposes of comparison" while attainability was assessed with the question "I would be able to achieve a physique similar to that of the model in this ad" (Lockwood & Kunda, 1997).

Three questions measured the extent of state physique comparison and direction of the comparison with the models. Specifically, extent of social comparison was assessed with the question “I compare my own physique to the physique of the model in this ad” and answered using a 9-point scale ranging from 1 (*not at all*) to 9 (*very much*). Direction of social comparison was assessed with the following two questions, “In relation to myself, the model in the ad is...” followed by the anchors, 1 (*much less attractive than me*), 5 (*about the same attractiveness as me*), 9 (*much more attractive than me*); “In relation to myself, the model in the ad is...,” followed by the anchors 1 (*much less muscular than me*), 5 (*about the same muscularity as me*), 9 (*much more muscular than me*). As per Farquhar and Wasyliw (2007) the manipulation check assessed the degree to which the ad emphasized appearance and performance attributes of the model’s body with the question, “To what extent is this ad emphasizing the appearance qualities of the model’s body, i.e., low level of activity, highly posed, not using advertised product, and ambiguous eye gaze” or the performance qualities of the body, i.e., high level of activity, natural pose, using advertised product, and direct eye gaze.” This item was answered using a 9-point scale ranging from 1 (*body-as-process*) to 9 (*body-as-object*). The extent to which the model in the ad is muscular, attractive, and representative of the male media ideal was assessed to establish content validity. Participants rated their level of agreement using a 9-point scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). A sample item is: “The model in this ad is muscular” (Appendix C).

Iowa Netherlands Comparison Orientation Measure (INCOM). The INCOM is an 11-item measure of the tendency to make comparisons with others (Gibbons & Buunk,

1999). A sample item is: “If I want to find out how well I have done something, I compare what I have done with how others have done.” The items are answered on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores represent a greater tendency to make social comparisons (Appendix D).

The authors reported an internal consistency of .82 and a test-retest reliability over eight months of .72 in a sample of college students (Gibbons & Buunk, 1999).

Convergent validity was demonstrated, such that INCOM scores showed moderate positive correlations with other theoretically relevant measures (Gibbons & Buunk, 1999), such as Public Self Consciousness ($r = .49$; Fenigstein, Scheier, & Buss, 1975), Negative Affect ($r = .29$; Watson, Clark, & Tellegen, 1988), and Neuroticism ($r = .33$ (Eysenck & Eysenck, 1975). In the current study, Cronbach’s alpha was .88.

Criterion variables.

Drive for Muscularity Scale (DMS). The DMS is a 15-item self-report measure of attitudes toward muscularity and of behaviours designed to increase muscularity (McCreary & Sasse, 2000). In addition to yielding a total composite score, the DMS includes two subscales - Muscularity-Oriented Body Image Attitudes (MBI), and Muscle Development Behaviours (MB). The MBI subscale measures muscle dissatisfaction (e.g., “I think that my arms are not muscular enough”), whereas the MB subscale measures behaviours reflecting the pursuit of muscularity (e.g., “I drink weight gain or protein shakes”). Each item is scored on a 6-point scale from 1 (*always*) to 6 (*never*). Higher scores indicate greater drive for muscularity. For the purpose of this study, only the Muscularity-Oriented Body Image Attitudes (MBI) subscale was used (Appendix E).

The MBI subscale has shown good internal consistency in a sample of male high school and college students (Cronbach's alpha = .88; McCreary, et al., 2004). Seven to ten day test-retest reliability was reported as .84 (Cafri & Thompson, 2004a). Convergent validity of the MBI subscale also has been demonstrated (McCreary & Sasse, 2000), as it is highly correlated with other measures of muscle dissatisfaction, such as the Male Body Attitudes Scale (MBAS, $r = .84$; Bergeron & Tylka, 2007) and the Drive for Muscularity Attitudes Questionnaire (DMAQ; $r = .79$; Tod, Morrison, & Edwards, 2012). For the present study, internal consistency at baseline was .92, and at post-exposure was .88.

Body Esteem Scale (BES). The BES is a 35-item self-report measure of attitudes related to one's own body parts and body functions (Franzoi & Shields, 1984). It has three factor-analytically-derived measures for men, including the Physical Attractiveness subscale (PA) which measures feelings about facial features and some aspects of the physique, such as chin and buttocks. The Upper Body Strength subscale (UBS) assesses feelings about upper body parts, such as biceps and arms. The Physical Condition subscale (PC) measures feelings about energy level, strength, and agility. Participants indicate their feelings about their body parts and functions using a 5-point Likert scale ranging from 1 (*have strong negative feelings*) to 5 (*have strong positive feelings*). Higher scores indicate greater body esteem. For the purpose of this study, only the Physical Condition subscale was used (Appendix F).

The authors reported good internal consistency for the PC subscale in a sample of male college students, with an alpha coefficient of .86 (Franzoi & Shields, 1984). Three

month test-retest reliability also was good ($r = .83$; Franzoi, 1994). The PC subscale has acceptable convergent validity (Franzoi & Shields, 1984), showing moderate correlations with body competence measured by the Body Consciousness Questionnaire ($r = .60$; Fenigstein et al., 1975) and with trait self-esteem measured by the Rosenberg Self-Esteem Scale ($r = .45$; Rosenberg, 1965). Internal consistency was .88 at baseline and .89 at post-exposure in the current study.

Positive and Negative Affect Schedule – Extended Form (PANAS-X). The PANAS-X is a 60-item measure of negative and positive affect (Watson & Clark, 1994). In addition to the two higher order scales, Negative Affect (NA) and Positive Affect (PA), the PANAS-X measures 11 specific affects: Fear, Sadness, Guilt, Hostility, Shyness, Fatigue, Surprise, Joviality, Self-Assurance, Attentiveness, and Serenity. Respondents indicate how they feel “right now, that is, at the present moment” on a 5-point rating scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). Higher scores indicate greater affect. For the purpose of this study, only the Negative Affect scale was used (Appendix G).

Watson and Clark (1994) reported high internal consistency ranging from .82 and .87. Two month test-retest reliability ranged from .35 to .41, indicating a moderate level of stability and demonstrating that this measure is sensitive to acute changes in affect. Convergent validity has been demonstrated (Watson & Clark, 1994), such that the Negative Affect scale has been shown to highly correlate with other affect scales, such as Tellegen’s Set of Negative Affect Descriptors ($r = .91$; Zevon & Tellegen, 1982). In the present study, internal consistency was .87 at baseline and .83 at post-exposure.

Number of Bicep Curls. The number of bicep curls completed was measured.

Participants were instructed to engage in as many bicep curls as they could using a 20 lb dumbbell, using one arm, and while seated. The number of bicep curls was recorded as the number of bicep curls in which the participant completed until they decided to stop.

Covariates.

Beck Depression Inventory (BDI-II). The BDI-II is a 21-item self-report measure of the intensity of cognitive, affective, and neurovegetative symptoms of depression (Beck, Steer, & Brown, 1996). A sample item measuring Tiredness or Fatigue is “I am no more tired or fatigued than usual; I get more tired or fatigued more easily than usual; I am too tired or fatigued to do a lot of the things I used to do; I am too tired or fatigued to do most of the things I used to do.” Each item is scored on a 4-point scale ranging from 0 (*absence of symptom*) to 3 (*severe level of that symptom*). A higher score means more depression (Appendix H).

Beck et al. (1996) reported high internal consistency, with a coefficient alpha of .93 for college-aged males and females. Test-retest reliability for the BDI-II was .93 for a group of male and female psychiatric outpatients. Convergent validity also has been demonstrated such that the BDI-II highly correlates with other depression rating scales (Beck et al., 1996), such as the original BDI ($r = .93$; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Hamilton Rating Scale for Depression ($r = .71$; Hamilton, 1980). Cronbach’s alpha was .90 for the present study.

The BDI-II was examined as a potential covariate in all statistical analyses to ensure that the effects of media exposure on muscle dissatisfaction, physical condition esteem, and negative affect were independent of depressive symptoms.

Body Mass Index (BMI). Body mass index is a measure of weight scaled according to height. BMI was calculated using the following formula: body weight (kg) divided by height in metres squared.

BMI was measured in this study to serve as a potential covariate. BMI in men has been shown to have curvilinear relationship with body dissatisfaction, such that men with a BMI in the upper or lower ends have reported greater body dissatisfaction than did men with an average BMI (Drewnowski, Kurth, & Krahn, 1995).

Exercise Motivations Inventory-2 (EMI-2). The EMI-2 is a 51-item self-report measure of motives for exercise participation (Markland & Ingledew, 1997). The instrument consists of 14 subscales that represent five different types of motives including psychological motives such as stress management, revitalisation, enjoyment and challenge; interpersonal motives such as social recognition, affiliation, and competition; health motives, such as health pressures, ill-health avoidance, and positive health; body-related motives, including weight management and appearance; and lastly, fitness motives, including nimbleness, strength, and endurance. Participants are asked to respond to the statements “Personally, I exercise (or might exercise) ...” on a 6-point Likert type scale with anchors 0 (*not at all true for me*) to 5 (*very true for me*). A higher score means higher motivation. For the purposes of the present study, only the Weight Management and Appearance subscales were used (Appendix I)

Psychometric properties of the EMI-2 are satisfactory. Markland and Ingledew (1997) reported reliability coefficients of .92 for the Weight Management subscale and .86 for the Appearance subscale. Test-retest reliability was .88 for Weight Management and .64

for Appearance subscales over a four to five-week period (Markland & Hardy, 1993). These subscales also correlate significantly with other measures of motivation, demonstrating good convergent validity (Ingledeu & Markland, 2008). In the present study, internal consistency was .90 for the Weight Management subscale and .81 for the Appearance subscale.

The Appearance and Weight management subscale scores were tested as covariates because men who engage in exercise for appearance reasons have been found to report greater body dissatisfaction (Furnham, Badmin, & Sneade, 2002; Ingledeu & Sullivan, 2002) and negative affect (Maltby & Day, 2001) compared to men who exercise for other motives.

Rosenberg Self-Esteem Scale (RSES). The RSES is a 10-item self-report measure of global trait self-esteem (Rosenberg, 1965). Items such as “I feel that I have a number of good qualities” are rated on a 4-point scale from 1 (*strongly agree*) to 4 (*strongly disagree*). Total scores range from 10 to 40, with higher scores indicating higher levels of global self-esteem (Appendix J).

Rosenberg (1965) reported an internal consistency of .95 for men, as well as a two-week test-retest reliability of .80. Convergent validity has been established by its moderate correlations with other self-esteem inventories, such as the Coopersmith Self Esteem Inventory ($r = .66, p < .001$; Demo, 1985). Internal consistency was .90 for the present study.

Trait self-esteem was measured in this study to serve as a potential covariate. Trait self-esteem has been shown to have an inverse relationship with body dissatisfaction,

such that men with lower self-esteem report greater body dissatisfaction (Olivardia et al., 2004; Venkat & Ogden, 2002).

Measures to ensure equivalence between experimental groups.

The Eating Attitudes Test-26 (EAT-26). The EAT-26 is a 26-item self-report questionnaire designed to measure attitudes, behaviour, and experiences specific to eating disorders (Garner, Olmsted, Bohr, & Garfinkel, 1982). Respondents rate their agreement with items such as “Find myself preoccupied with food” on a 6-point scale ranging from 0 (*never*) to 3 (*always*). A higher score means higher eating pathology (Appendix K).

A modified version of the EAT-26 was used as per Furnham et al. (2002) to apply to men. This version includes four additional questions related to body dissatisfaction and desire to change body parts with which men tend to be most dissatisfied: “Would like to increase my upper body size, e.g., chest, biceps, shoulders”, “Would like to decrease my lower body size, e.g., thighs, bottom, hips,” “Would like to be bigger”, and “Would like to gain weight.”

The original version has good internal consistency of .91 (Garner et al., 1982) and the modified version had an internal consistency of .95 (Furnham et al., 2002). In the present study, internal consistency was .84. Eating pathology, which has been shown to be highly correlated with body dissatisfaction (Olivardia et al., 2004), was measured to ensure equivalence between groups.

Demographic questionnaire. The following demographics were collected from the participants: age, ethnicity, year in university, and university major. Exercise behaviour (hours/week), use of performance-enhancing substances (PES; times/month), as well as

media exposure/use, including television, magazine, comic book, video game, and internet exposure/use (hours/week) were measured (Appendix L).

Filler questionnaires.

Two filler questionnaires were administered to participants to increase the credibility of the cover story and reduce potential demand characteristics, i.e., participant's knowledge that their muscle dissatisfaction, physical condition esteem, negative affect, and muscle-building behaviour were measured in direct response to viewing images of the male media ideal (Mills, Polivy, Herman, & Tiggeman, 2002).

Revised Self-Monitoring Scale (SMS-R). The SMS-R is a 13-item self-report questionnaire that assesses personal changes in self-presentation to fit a social situation (Lennox & Wolfe, 1984). It consists of two subscales that assess sensitivity to the expressive behaviour of others and the ability to modify self-presentation. Questions are answered using a 6-point Likert scale ranging from 0 (*certainly, always false*) to 5 (*certainly, always true*). Higher scores represent higher self-presentation regulation (Appendix M).

Self-Consciousness Scale (SCS). The SCS is a 23-item self-report questionnaire designed to assess individual differences in the tendency to focus attention on the self (Fenigstein, Scheier, & Buss, 1975). The SCS consists of three subscales assessing private self-consciousness, public self-consciousness, and social anxiety. Respondents rate how much each statement applies to them using a Likert scale ranging from 0 (*extremely uncharacteristic of me*) to 4 (*extremely characteristic of me*). Higher scores indicate greater self-consciousness (Appendix N).

Design. The current study was a pre-post-test experimental design. The predictor variables included experimental condition (body-as-process vs. body-as-object) as well as state physique comparison and general social comparison tendency. The criterion variables included relevance, attainability, muscle dissatisfaction, physical condition esteem, negative affect, and number of biceps curls.

The study was a pre-post design to control for baseline levels of muscle dissatisfaction, physical condition esteem, and negative affect that may affect participants' responses to the media images. Many studies have used this experimental design to measure the impact of exposure to media images on men (Agliata & Tantleff-Dunn, 2004; Grogan et al., 1996; Hausenblas et al., 2003; Lorenzen et al., 2004; Ogden & Munday, 1996). However, the use of immediate pre-post design can introduce demand characteristics and potentially influence the findings, especially when using measures of body dissatisfaction that are not disguised (Mills et al., 2002) and when using Likert rating scales to assess outcome variables because participants may recall their pre-exposure responses (Thompson, 2004). These concerns were addressed by presenting Study 1 as two separate studies. In addition, an appropriate cover story was presented, outcome measures were obtained in an unobtrusive way, and a hypothesis guessing check was performed to ascertain that participants remained naive to the true purpose of the study. The aforementioned are described in the procedure section below.

A power analysis was conducted based on an expected effect size of 0.10 reported in previous research (Ferguson, 2013) and an alpha level of $p < .05$ to obtain statistical power at the recommended .80 level (Cohen, 1988). The analysis revealed that a

minimum sample size of 99 is required.

Table 1 outlines the variables used in Study 1, and their function in the statistical analyses.

Table 1

Measures Used in Study 1 and Their Function in the Statistical Analyses

Predictor Variables
State Physique Comparison measure in the Consumer Response Questionnaire
Iowa Netherlands Comparison Orientation Measure
Criterion Variables
Post-exposure Drive for Muscularity Scale: Muscularity-Oriented Body Image Attitudes Subscale
Post-exposure Body Esteem Scale: Physical Condition Subscale
Post-exposure Positive and Negative Affect Schedule – Extended Form: Negative Affect Subscale
Potential Covariates
Baseline Drive for Muscularity Scale: Muscularity-Oriented Body Image Attitudes Subscale
Baseline Body Esteem Scale: Physical Condition Subscale
Baseline Positive and Negative Affect Schedule – Extended Form: Negative Affect Subscale
Beck Depression Inventory-II
Body Mass Index
Exercise Motivations Inventory-2: Weight Management Subscale Appearance Subscale
Rosenberg Self-Esteem Scale
Measures to ensure equivalence between experimental groups
Eating Attitudes Test-26
Demographic Questionnaire
Fillers
Revised Self-Monitoring Scale
Self-Consciousness Scale

Procedure

One hundred and five male undergraduate students from the University of Windsor were recruited by means of an experiment sign up website for psychology students and received credits toward an eligible psychology course of their choice for taking part in Study 1. The study was not visible to students who were 16 years or younger, 30 years of age or older, athletes in training, on a diet, currently had or had ever been diagnosed with an eating disorder, or had ever participated in a study in the lab of the advisor of this student. Involvement in these studies was completely voluntary and participants were treated in accordance with standard ethical principles.

In order to minimize hypothesis guessing and demand characteristics Study 1 was described as two separate studies, combined to offer a convenient means of receiving all allowable experimental bonus marks in one sign up. Therefore, by consenting to participate in “Study One,” “Study Two” was made available to participants to sign up if they chose to do so. The advertisement for the study included a description of “Study One” and “Study Two” (Appendix O). Specifically, “Study One” was described as an on-line study investigating the relationship between various personality traits and exercise behaviour and as involving the completion of a few questionnaires related to same. “Study Two” was described as taking place in the lab and as investigating how personality traits, mood, and attitudes regarding appearance and advertising influence evaluations of advertisements. The description also stated that participants would view a series of male-directed advertisements depicting various products and that they would rate the ads on a range of dimensions, such as overall appeal, as well as complete

questionnaires assessing personality traits, attitudes, and interests.

Once participants signed up for “Study One” the experimenter emailed them the URL link and code to access “Study One” (on-line survey). The URL link directed the participants to the consent form explaining the purpose of the study and confidentiality, etc. (Appendix P). After participants provided their consent, they completed the baseline measures necessary for the experimental session. These included measures of muscle dissatisfaction (DMS), physical condition esteem (BES), negative affect (PANAS-X), social comparison tendency (INCOM), exercise motives (EMI-2), trait self-esteem (RSE), depression (BDI-II), eating behaviour (EAT-26), and demographics. The demographic questionnaire was always presented first, followed by the remainder of the questionnaires presented in randomized order. Once participants completed “Study One,” the experimenter emailed them information regarding “Study Two,” including available time slots that were scheduled ten or more days after they completed “Study One.” The mean number of days that elapsed between participants’ completion of “Study One” and “Study Two” was 23.4, ranging from 10 to 60 days.

Participants who had signed up for “Study Two” came to the lab to participate in an allegedly separate experimental study. They were seated alone at a table in a private room and tested individually in one and a half hour sessions. They were told that the purpose of the study was to investigate how personality traits, mood, and attitudes regarding appearance and advertising influence evaluations of advertisements. They were informed that they would view a series of 12 advertisements depicting various male-directed media shown individually on the computer screen and then rate them on a

range of dimensions, such as overall appeal. They then read and signed the consent form.

Participants were randomly assigned to one of two experimental conditions in accordance with a computer-generated list of numbers, 1 and 2, in randomized order. In the body-as-process condition, participants viewed seven body-as-process ads and five ads showing products only. In the body-as-object condition, participants viewed seven body-as-object and the identical five ads showing products only. The 12 advertisements were presented in a power point presentation in counterbalanced order.

To support the cover story, participants were asked to complete the bogus “Consumer Response Questionnaire” (Jarry & Kossert, 2007) while viewing the ads. They were told that they had 20 minutes to view all of the ads and complete the questions for each ad. Should they complete the ad task before the 20 minutes have expired, they could go back and re-examine any or all of the ads, but without changing their ratings. Following this explanation, the experimenter left the room.

After exactly 20 minutes, the experimenter returned and administered additional on-line questionnaires presented to each participant in a randomized order, including measures of muscle dissatisfaction (DMS), physical condition esteem (BES), and negative affect (PANAS-X). Filler questionnaires, the Self-Consciousness Scale (Fenigstein et al., 1975) and the Revised Self-Monitoring Scale (Lennox & Wolfe, 1984) also were administered. Participants were instructed to ring a bell once they finished completing these questionnaires.

Upon hearing the bell, the experimenter returned and asked the participant if they would be willing to provide some information for another student, ostensibly conducting

a separate study. Participants were told that the student was assessing individual strength measured by how many biceps curls people can do. All agreed to participate in this alleged separate study. Participants were escorted by the experimenter down the hall to another lab where a confederate greeted them and explained that they would be given a 20 lb dumbbell to do the biceps curls. They were instructed to do as many biceps curls as they could for as long as they could, using one arm, while seated. The experimenter explained that she would remain in the room to count how many they do. In order to decrease demand characteristics and reactivity to the female experimenter, she made herself as plain as possible and wore no makeup, had her hair in a ponytail, and wore loose-fitting clothing. This confederate was blind to the condition in which participants were being tested.

After the participant finished engaging in the biceps curls the confederate escorted them back to the original lab room. The original experimenter explained that for her study she required their actual height and weight information. An additional consent form was given to the participant to read and sign to agree to being measured (Appendix Q). All agreed to have their height and weight measured. Participants were asked to remove their shoes before stepping on a high precision digital scale. Their actual weight was calculated as the recorded weight minus 1 kg for clothing.

To ascertain the credibility of the cover story, debriefing began by asking participants what they thought the study was about. Their answers were noted. Participants then were fully debriefed and the experimenter explained the purpose of deception and emphasized the importance of not divulging the true purpose of this study to other

potential participants. Finally, they were thanked for their participation and excused.

Results

Approach to data analyses. All analyses were performed using SPSS for Windows, Version 20.0. Reliability and descriptive analyses were performed on all variables. A one-way analysis of variance (ANOVA) was used to ensure that randomization had been successful and that participants did not significantly differ on any of the covariates or predictor variables between experimental conditions. Finally, the remainder of the hypotheses were tested using a series of hierarchical linear regressions, as will be described below.

Missing data analysis. There were 39 missing values distributed randomly across the participant's scores that were replaced with the participant's own mean score on the subscale to which the missing value belonged (Tabachnick & Fidell, 2007).

Assumption testing and reliability analyses. Descriptive analyses were performed on each covariate, predictor, and criterion variable to check for outliers and univariate normality. Although having normally distributed predictors is not an assumption of multiple regression, according to Tabachnick and Fidell (2007), "the solution is degraded if variables are not normally distributed" (p. 139). Specifically, non-normally distributed variables can cause heteroscedasticity, thus violating one of the assumptions of multiple regression. Univariate normality was assessed with the Kolmogorov-Smirnov test and inspection of the histogram (Tabachnick & Fidell, 2007). Outliers were identified via inspection of the histograms and standardized residual scores greater than 3.29 (Tabachnick & Fidell, 2007). Body mass index, depression, eating pathology, weight

management exercise motives, and physical condition esteem scores were significantly non-normally distributed and had 15 outliers in total. Outliers were Winsorized, whereby they were replaced with the nearest, non-outlying value in the variable to which they belonged (Tabachnick & Fidell, 2007). After outliers were reduced the Kolmogorov-Smirnov tests were no longer significant ($ps > .10$), i.e., the data were normally distributed.

Next, the assumptions of regression were tested, specifically, linearity, normally distributed errors, no perfect multicollinearity, homoscedasticity, and independence of errors. Multivariate outliers were assessed through examining Mahalanobis distances, resulting in four multivariate outliers being identified (D^2 of $p < 0.001$). After removal of the multivariate outliers, the assumptions of regression were all met. Removal of these outliers also altered the results of the regression, indicating that they were in fact influential cases, so they were excluded from the final regression model (Tabachnick & Fidell, 2007). Thus, the final number of cases used in the regression analyses was 101. Lastly, internal reliability coefficients were calculated for each measure. Table 2 displays the reliability coefficients, as well as the overall means, standard deviations, and ranges for all of the measures. The reliability analyses yielded coefficients ranging from 0.81 to 0.92. Correlations between each covariate, predictor, and criterion variable are presented in Table 3.

Table 2

Study 1: Descriptive Statistics for Participant Characteristics and Study Variables by Image Type

Variable	Body-as-Process (n = 52)		Body-as-Object (n =53)		Range	Cronbach's Alpha
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Body mass index	24.33	3.87	24.18	4.16	17 - 24	-
Physical activity: Hrs/week	4.68	3.45	4.35	3.91	0 - 11	-
Media use: Hrs/week						
Television	6.31	5.83	5.70	5.81	0 - 17	-
Internet	16.55	12.12	17.50	16.57	0 - 33	-
Social networking	5.30	4.20	5.81	4.27	0 - 18	-
Video games	8.30	5.74	7.47	6.27	0 - 18	-
Comic books	0.07	0.32	0.10	0.35	0 - 1	-
Magazines: Min/week						-
Fitness/Health	17.18	13.28	18.22	15.39	0 - 40	-
Sports	19.17	4.91	18.24	5.02	0 - 30	-
Lifestyle/Fashion	1.37	1.14	4.15	3.98	0 - 15	-
Electronics	23.76	10.52	24.24	15.23	0 - 40	-
Automobile	7.63	3.42	7.27	5.95	0 - 35	-
Music	15.48	5.47	16.82	5.23	0 - 30	-
Performance-enhancing substance use: Times/month						-
Stimulants	1.76	1.78	1.22	1.46	0 - 6	-
Creatine	0.65	2.00	0.49	1.56	0 - 5	-
Protein	5.02	3.84	4.11	2.08	0 - 10	-
Vitamins	8.09	7.56	9.29	6.76	0 - 30	-

Variable	Body-as-Process (n = 52)		Body-as-Object (n =53)		Range	Cronbach's Alpha
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Relevance	5.39	1.67	5.37	1.90	1 - 9	-
Attainability	6.39	1.56	4.55	1.74	1 - 9	-
Depression	7.48	6.95	9.11	7.46	17 - 36	.90
Trait self-esteem	21.89	5.20	21.45	5.52	10 - 27	.90
Eating pathology	7.52	3.49	6.47	4.19	9 - 30	.84
Exercise motives						
Weight management	9.74	6.06	8.24	6.96	0 - 20	.90
Appearance	12.59	4.57	11.15	4.96	0 - 20	.81
Social Comparison						
State	6.79	2.21	6.44	1.97	1 - 9	-
Trait	38.30	7.66	38.20	6.81	22 - 55	.88
Muscle dissatisfaction						
Baseline	25.87	8.84	23.04	7.71	8 - 42	.92
Post-exposure	24.72	7.03	23.73	6.70	8 - 42	.88
Physical condition esteem						
Baseline	41.72	7.87	42.44	9.68	21 - 62	.88
Post-exposure	42.28	7.26	41.96	8.88	21 - 60	.89
Negative affect						
Baseline	15.41	5.58	14.09	5.12	10 - 29	.87
Post-exposure	14.39	5.14	15.09	5.10	10 - 28	.83
Number of bicep curls	27.80	8.71	21.75	9.42	5 - 44	-

Table 3 Study 1: Summary of Intercorrelations between Covariates, Predictors, and Criterion Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Body mass index	-															
2. Depression	.11	-														
3. Trait self-esteem	.14	-.72**	-													
4. Weight mgmt exercise motives	.48**	-.05	.15	-												
5. Appearance exercise motives	.11	.07	.02	.48**	-											
6. State comparison	.14	.08	-.23*	.34**	.37**	-										
7. Trait comparison	.08	.13	-.26*	.20*	.22*	.23*	-									
8. Relevance	.17	-.05	-.11	.24*	.32**	.31**	.17**	-								
9. Attainability	.26**	-.13	-.14	.26**	.28**	.36**	.08	.48**	-							
10. Pre muscle dissatisfaction	-.11	.13	-.35**	.07	.47**	.25**	.34**	.34**	-.31**	-						
11. Post muscle dissatisfaction	-.18*	.10	-.31**	.12	.48**	.28**	.29**	.44**	-.31**	.81**	-					
12. Pre physical condition esteem	-.17*	-.17	.11	-.12	.19*	.18*	-.09	.10	.16	.04	-.02	-				
13. Post physical condition e esteem	-.18*	-.17	.10	-.11	.18*	.14	-.11	.08	.14	.06	-.01	.85**	-			
14. Pre Negative Affect	-.12	.64**	-.54**	-.03	.26**	-.01	.13	.11	-.12	.28**	.17*	-.07	-.05	-		
15. Post Negative Affect	-.06	.39**	-.27**	.10	.12	-.06	.04	.04	-.17	.18*	.16	-.14	-.15	.64*	-	
16. No. of bicep curls	.22*	-.23*	.22*	.22*	.12	.14	.10	.01	.15	.24*	.21**	.17*	.19*	-.09	.17*	-

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

Participant equivalence between experimental conditions. To ensure that randomization had been effective, a one-way ANOVA was conducted on participant characteristics, potential covariates, and predictor variables. There were no significant differences between participants in the body-as-object and body-as-process conditions in these variables ($ps > .17$; see Table 2 for descriptive statistics).

Credibility of the cover story. Upon completion of the study and prior to debriefing, the credibility of the cover story was assessed through post-experimental questions. First, participants were asked what they thought the study was about. Participants' responses revealed that they did not know the true purpose of the study and furthermore, the majority of participants recited the cover story to the experimenter. Next, they were informed of the true purpose of the study and asked if they had any suspicions about the study hypotheses and when those suspicions arose. None of the participants reported that they knew or guessed the specific hypotheses of the study. Participants then were asked whether they had any suspicion that the study was an investigation of male body image. A total of 27 participants (body-as-process = 10, body-as-object = 17) reported that they suspected the study was about male body image and suspected same while completing the post-manipulation body image satisfaction questionnaires. As such, a dichotomous variable was computed (suspicion of body image versus nonsuspicion of body image) to test for any effect that this suspicion might have had on the results. This variable was not significantly correlated with any of the other study variables ($ps > .72$).

Participants also were asked whether they suspected that "Study One" and "Study Two" were related. Eight participants reported suspicions that the two studies were related. A dichotomous variable was computed (suspicion of relationship between "Study One" and "Study Two" or not) to test for any effect that this knowledge might have had on the results. This variable was not significantly correlated with any variables

($ps > .42$). Lastly, participants were asked whether they suspected that the bicep curl task was related to the current study. Twelve participants reported suspecting that the bicep curl task was related to the study. Again, a dichotomous variable was computed (knowledge of relationship between “Study Two” and bicep curl task or not) to test for any effect that this knowledge might have had on the results. This variable was not significantly correlated with any variables ($ps > .68$). Given that suspicion was unrelated to any of the study variables, the above mentioned cases were retained in the analyses.

Participants’ appraisals of the experimental images

Equivalence of the experimental images. A one-way ANOVA was conducted to test whether there were any significant differences between the experimental conditions in participants’ appraisal of the model’s attractiveness, muscularity, as well as the extent to which the model was representative of the male media ideal. There were no significant differences between experimental conditions in these variables ($ps > .42$; see Table 4 for descriptive statistics).

Manipulation check.

Body conceptualization. Body conceptualization was analysed using a one-way ANOVA by experimental condition (body-as-object ads vs. body-as-process ads) for the degree to which the images were rated as characteristic of body-as-object or body-as-process. There was a significant effect of experimental condition for the extent to which the ad met body-as-object criteria, $F_{(1,103)} = 244.72$, $p < .001$, such that the body-as-object ads ($M = 7.29$, $SD = 1.31$) were rated as more characteristic of body-as-object than were the body-as-process ads ($M = 3.21$, $SD = 1.29$). Based on the above finding, the manipulation was considered successful making it appropriate to proceed with hypotheses testing.

Table 4

Study 1: Means and Standard Deviations for Participant's Appraisals of the Models Depicted in the Body-as-Process and Body-as-Object Conditions

Variable	Body-as-Process (n = 52)		Body-as-Object (n =53)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Attractiveness	7.57	0.87	7.72	1.05
Muscularity	7.25	0.81	7.43	0.82
Representative of male media ideal	7.45	1.57	7.79	1.44
Body-as-object	3.21	1.29	7.29	1.31

Main analyses. A hierarchical multiple regression analysis was conducted to examine whether relevance varied as a function of experimental condition and state physique comparison, controlling for the potential covariates BMI, depression, trait self-esteem, weight management exercise motives, and appearance exercise motives. In accordance with Tabachnick and Fidell's (2007) guidelines, each predictor variable was zero-centered prior to performing the regression analysis. In the first step, potential covariates were entered. Covariates that did not contribute significantly to the model were removed, and each regression was conducted again including only the significant covariates (Field, 2005). In the second step, the predictors state physique comparison and the dummy-coded experimental condition (body-as-process = 0, body-as-object = 1) were entered. In the third and final step, the two-way interaction between experimental condition and state physique comparison was entered. Significant interactions were explored by calculating two regression equations, one for each level of state physique comparison. Relevance was regressed on experimental condition, while controlling for significant covariates (Aiken & West, 1991). Next, as recommended by Aiken and West, relevance values were calculated for each regression equation using conditional values for each experimental condition. These predicted values were plotted for each level of state physique comparison. Simple slopes analysis was then performed following the procedures outlined by Aiken and West (1991), i.e., the slope of the separate regression lines were computed to test whether the relationship between state physique comparison and relevance differed from zero for each experimental condition. These analyses were repeated for each of the remaining criterion variables, i.e., attainability, muscle

dissatisfaction, physical condition esteem, negative affect, number of bicep curls. Table 5 displays the means and standard deviations of the criterion variables stratified by each predictor (image type and state physique comparison).

Table 5

Study 1: Means and Standard Deviations of the Criterion Variables According to State Physique Comparison and Image Type

Variable	Low State Physique Comparison		High State Physique Comparison	
	Body-as-Process	Body-as-Object	Body-as-Process	Body-as-Object
<i>N</i>	19	30	27	25
Relevance	5.53 (1.83)	5.21 (1.22)	5.45(1.72)	5.33 (1.69)
Attainability	5.98 (1.90)	4.33 (1.74)	6.63 (0.93)	4.82 (1.73)
Muscle dissatisfaction	25.01 (8.52)	23.61 (7.04)	23.11 (5.79)	25.51 (6.02)
Physical condition esteem	38.95 (6.96)	41.67 (8.45)	43.67 (8.01)	43.32 (10.48)
Negative affect	15.21 (5.42)	12.29 (5.23)	12.96 (4.97)	15.63 (5.48)
Number of bicep curls	27.52 (8.98)	20.23 (9.96)	28.21 (8.55)	23.56 (8.56)

Relevance. In this regression, predictors of relevance were examined (see Table 6). None of the potential covariates were significant and therefore, none were retained in the final regression model. Experimental condition and state physique comparison did not contribute significantly to the model, $\Delta F_{(2,98)} = 0.63, p = .55$, and only accounted for 0.1% of the variance in relevance. Similarly, adding the interaction term did not contribute significantly to the model, $\Delta F_{(1,97)} = 0.82, p = .37$, and only accounted for an additional 0.2% of the variance.

Table 6

Study 1: Effect of Image Type and State Physique Comparison on Relevance (N=101)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.22	5.33	-	24.18	.00
	Condition	0.30	0.09	0.03	0.30	.76
	State comparison	0.27	0.30	0.18	1.11	.27
II.	Constant	0.22	5.34	-	24.18	.00
	Condition	0.30	0.09	0.03	0.30	.77
	State comparison	0.29	0.31	0.19	1.07	.22
	Condition X State comparison	1.09	-0.99	-0.11	-0.91	.37

Attainability. It was hypothesized that body-as-object images would be rated as less personally attainable than body-as-process images.

In this regression, predictors of attainability were examined (see Table 7). None of the potential covariates were significant. Experimental condition and state physique comparison contributed significantly to the model, $\Delta F_{(2,98)} = 26.27, p < .001$, and accounted for 33.6% of the variance in attainability. As predicted, body-as-object ads were rated as less personally attainable than were body-as-process ads. The squared partial correlation between experimental condition and attainability was .25, which is defined by Cohen (1988) as a medium effect size. State physique comparison did not significantly predict attainability ratings, $p = .23$. Adding the interaction term did not contribute significantly to the model, $\Delta F_{(1,97)} = 0.01, p = .91$, and only accounted for an additional 0.1% of the variance.

Table 7

Study 1: Effect of Image Type and State Physique Comparison on Attainability (N=101)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.23	6.36	-	27.95	.00
	Condition	0.31	-1.78	-0.47	-5.75	.00
	State comparison	0.10	0.10	0.09	1.01	.23
II.	Constant	0.23	6.36	-	27.79	.00
	Condition	0.31	-1.78	-0.47	-5.72	.00
	State comparison	0.11	0.10	0.10	0.91	.29
	Condition X State comparison	0.10	-0.01	-0.01	-0.11	.91

Muscle dissatisfaction. It was hypothesized that men who viewed the body-as-object images would report greater muscle dissatisfaction than would men who viewed the body-as-process images. State physique comparison was expected to moderate this effect such that among men who engaged in greater state physique comparison, those who viewed the body-as-object images would report greater muscle dissatisfaction compared to those who viewed the body-as-process images. Men who engaged in less state physique comparison were expected to be unaffected by the type of images that they viewed.

In this regression, predictors of muscle dissatisfaction were examined (see Table 8). With only the significant covariates baseline muscle dissatisfaction and trait self-esteem, the model was significant, $F_{(2,98)} = 199.16, p < .001$, and accounted for 69.1% of the variance. Contrary to predictions, the addition of experimental condition and state physique comparison in Step 2 did not contribute to the model, $\Delta F_{(2,96)} = 1.68, p = .19$, and only added 1.8% to the variance. The addition of the interaction term in Step 3 accounted for an additional 8.1% of the variance, $\Delta F_{(1,95)} = 7.34, p = .01$. Tests of the simple slopes indicated that, as predicted, among men who engaged in greater state physique comparison, those who viewed the body-as-object images reported greater muscle dissatisfaction compared to those who viewed the body-as-process images, $\beta = .24, t(96) = 2.55, p = .03$. Among men who engaged in less state physique comparison, there were no differences in muscle dissatisfaction between conditions, $\beta = -.13, t(96) = -1.22, p = .21$ (see Figure 1). The squared partial correlation between the interaction term and muscle dissatisfaction was .07, a small effect size.

Table 8

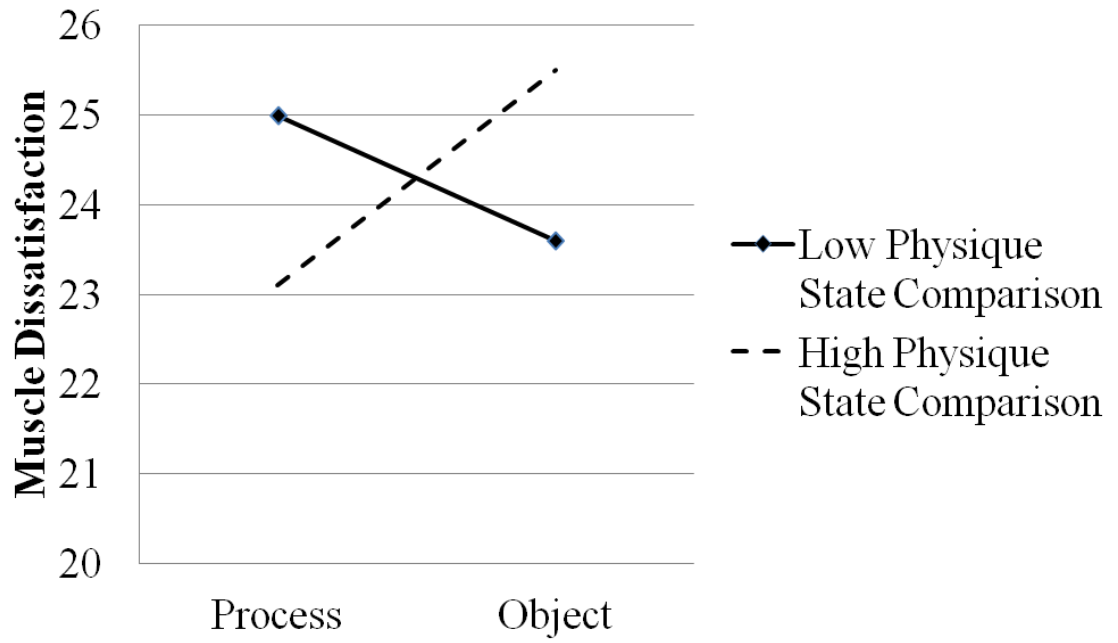
*Study 1: Effect of Image Type and State Physique Comparison on Muscle Dissatisfaction**(N=101)*

		<i>SE b</i>	<i>B</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.40	24.18	-	60.46	.00
	Baseline muscle dissatisfaction	0.05	0.67	0.81	13.79	.00
	Trait self-esteem	0.12	-0.25	-0.22	-2.45	.04
II.	Constant	0.60	23.67	-	39.86	.00
	Baseline muscle dissatisfaction	0.05	0.66	0.80	13.09	.00
	Trait self-esteem	0.12	-0.27	-0.21	-2.45	.04
	Condition	0.81	0.94	0.07	1.16	.25
	State comparison	0.14	0.19	0.08	1.38	.17
III.	Constant	0.58	23.69	-	39.76	.00
	Baseline muscle dissatisfaction	0.05	0.66	0.80	13.06	.00
	Trait self-esteem	0.11	-0.26	-0.22	-2.45	.04
	Condition	0.81	0.94	0.07	1.15	.25
	State comparison	0.19	0.29	0.13	1.51	.14
	Condition X State comparison	0.22	-0.59	-0.21	-2.71	.01

Figure 1

Study 1: Muscle Dissatisfaction as a Function of Image Type and State Physique

Comparison



Physical condition esteem. It was hypothesized that men who viewed the body-as-object images would report lower physical condition esteem than would men who viewed the body-as-process images. State physique comparison was expected to moderate this effect such that among men who engaged in greater state physique comparison, those who viewed the body-as-object images would report lower physical condition esteem compared to those who viewed the body-as-process images. Men who engaged in less state physique comparison were expected to be unaffected by the type of images.

In this regression, predictors of physical condition esteem were examined (see Table 9). With only the significant covariate baseline physical condition esteem, the model was significant, $F_{(1,99)} = 259.01, p < .001$, and accounted for 72.3% of the variance. Contrary to predictions, the addition of experimental condition and state physique comparison did not contribute significantly to the model, $\Delta F_{(2,97)} = 0.05, p = .95$, and only accounted for an additional 0.1% of the variance. Similarly, adding the interaction term did not contribute significantly to the model, $\Delta F_{(1,96)} = 0.33, p = .57$, and only accounted for an additional 0.1% of the variance.

Table 9

*Study 1: Effect of Image Type and State Physique Comparison on Physical Condition**Esteem (N=101)*

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.44	41.86	-	94.77	.00
	Baseline physical condition esteem	0.05	0.83	0.85	16.09	.00
II.	Constant	0.66	41.80	-	63.19	.00
	Baseline physical condition esteem	0.05	0.83	0.85	16.09	.00
	Condition	0.90	-0.10	-0.01	-0.12	.91
	State comparison	0.15	-0.04	-0.02	-0.29	.77
III.	Constant	0.66	41.78	-	62.89	.00
	Baseline physical condition esteem	0.05	0.83	0.85	16.52	.00
	Condition	0.90	-0.11	-0.01	-0.12	.91
	State comparison	0.21	-0.13	-0.05	-0.61	.55
	Condition X State comparison	0.30	0.17	0.05	0.57	.57

Negative affect. It was hypothesized that men who viewed the body-as-object images would report greater negative affect than would men who viewed the body-as-process images. State physique comparison was expected to moderate this effect such that among men who engaged in greater state physique comparison, those who viewed the body-as-object images would report greater negative affect compared to those who viewed the body-as-process images. No differences were expected among men who engaged in less state physique comparison.

In this regression, predictors of negative affect were examined (see Table 10). With only the significant covariates baseline negative affect and trait self-esteem, the model was significant, $F_{(2,98)} = 65.25, p < .001$, and accounted for 47.2% of the variance. Contrary to predictions, the addition of experimental condition and state physique comparison in Step 2 did not contribute to the model, $\Delta F_{(2,96)} = 0.73, p = .96$, and only accounted for 0.1% to the variance. The addition of the interaction term in Step 3 accounted for an additional 7.0% of the variance, $\Delta F_{(1,95)} = 7.78, p = .01$. Tests of the simple slopes indicated that, as predicted, among men who engaged in greater state physique comparison, those who viewed the body-as-object images reported greater negative affect compared to those who viewed the body-as-process images, $\beta = .23, t(96) = 2.55, p = .04$. Lastly, among men who engaged in less state physique comparison, there were no differences in muscle dissatisfaction between conditions, $\beta = -.21, t(96) = -1.98, p = .06$ (see Figure 2). The squared partial correlation between the interaction term and negative affect was .07, a small effect size.

Table 10

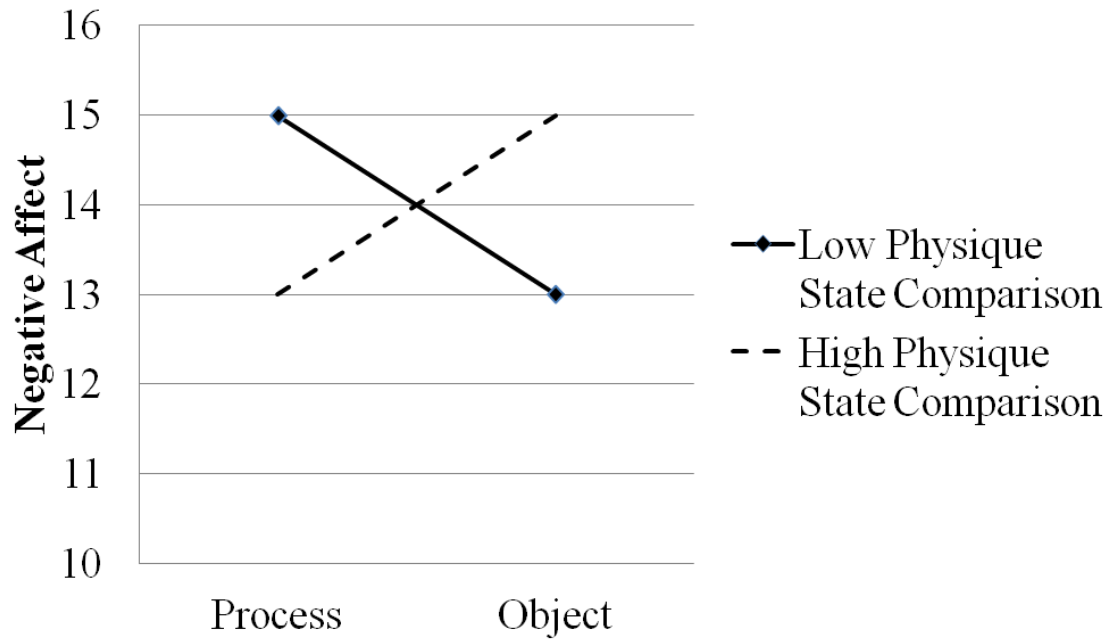
Study 1: Effect of Image Type and State Physique Comparison on Negative Affect

(N=101)

		<i>SE b</i>	<i>B</i>	β	<i>T</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.40	14.23	-	35.46	.00
	Baseline negative affect	0.08	0.63	0.64	7.89	.00
	Trait self-esteem	0.09	-0.20	-0.33	-2.22	.03
II.	Constant	0.60	14.28	-	23.75	.00
	Baseline negative affect	0.08	0.63	0.64	7.89	.00
	Trait self-esteem	0.09	-0.21	-0.33	-2.33	.03
	Condition	0.82	0.10	0.01	0.12	.91
	State comparison	0.14	-0.01	-0.01	-0.07	.99
III.	Constant	0.59	14.22	-	24.10	.00
	Baseline negative affect	0.08	0.66	0.67	8.03	.00
	Trait self-esteem	0.08	-0.21	-0.35	-2.54	.02
	Condition	0.80	0.08	0.01	0.10	.93
	State comparison	0.19	-0.35	-0.20	-1.86	.06
	Condition X State comparison	0.28	0.76	0.31	2.79	.01

Figure 2

Study 1: Negative Affect as a Function of Image Type and State Physique Comparison



Number of bicep curls. It was hypothesized that men in the body-as-object condition would engage in fewer bicep curls than would men in the body-as-process condition. State physique comparison was expected to moderate this effect such that among men who engaged in greater state physique comparison, those who viewed the body-as-object images would engage in fewer bicep curls compared to those who viewed the body-as-process images. No significant differences in number of bicep curls were expected among men who engaged in less state physique comparison.

In this regression, predictors of number of bicep curls were examined (see Table 11). With only the significant covariate BMI, the model was significant, $F_{(1,99)} = 6.41, p = .01$, and accounted for 6.1% of the variance. The addition of experimental condition and state physique comparison contributed significantly to the model, $\Delta F_{(2,97)} = 6.03, p < .001$, and accounted for an additional 10.4% of the variance. As predicted, men who viewed the body-as-object images engaged in fewer bicep curls than did men who viewed the body-as-process images. The squared partial correlation between experimental condition and number of bicep curls was .10, a small effect size. Contrary to predictions, the addition of the interaction term did not contribute significantly to the model, $\Delta F_{(1,96)} = 0.01, p = .93$, and only accounted for an additional 0.1% of the variance.

Table 11

Study 1: Effect of Image Type and State Physique Comparison on Number of Bicep Curls

(N=101)

		<i>SE b</i>	<i>B</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	1.82	20.55	-	11.31	.00
	BMI	0.21	0.54	0.25	2.53	.01
II.	Constant	2.02	24.08	-	11.93	.00
	BMI	0.21	0.49	0.22	2.37	.02
	Condition	1.78	-5.77	-0.30	-3.25	.00
	State comparison	0.30	0.31	0.10	1.06	.29
III.	Constant	2.03	24.07	-	11.83	.00
	BMI	0.21	0.49	0.22	2.35	.02
	Condition	1.80	-5.77	-0.31	-3.23	.00
	State comparison	0.42	0.34	0.11	0.81	.42
	Condition X State comparison	0.60	-0.05	-0.01	-0.09	.93

Exploratory Analyses

The analyses described above were repeated to test whether general social comparison tendency moderated the relationship between experimental condition and relevance, attainability, muscle dissatisfaction, physical condition esteem, negative affect, and muscle-building behaviour. Table 11 displays the means and standard deviations of the criterion variables stratified by each predictor variable (image type and general social comparison tendency).

Table 12

Study 1: Means and Standard Deviations of Criterion Variables According to General Social Comparison Tendency and Image Type

Variable	Low General Social Comparison		High General Social Comparison	
	Body-as-Process	Body-as-Object	Body-as-Process	Body-as-Object
<i>n</i>	22	28	24	27
Relevance	4.70 (1.73)	5.02 (2.04)	6.03 (1.35)	5.73 (1.73)
Attainability	5.84 (1.91)	4.10 (1.58)	6.90 (0.92)	5.01 (1.90)
Muscle dissatisfaction	22.91 (5.88)	22.46 (6.25)	23.05 (7.01)	25.29 (7.12)
Physical condition esteem	42.05 (7.19)	43.14 (8.58)	41.42 (8.59)	40.74 (9.18)
Negative affect	13.03 (5.37)	15.11 (5.83)	15.35 (5.53)	12.87 (4.37)
Number of bicep curls	26.86 (8.71)	20.50 (9.46)	28.67 (8.81)	23.04 (9.38)

Relevance. In this regression, predictors of relevance were examined (see Table 13). None of the potential covariates were significant. Experimental condition and general social comparison tendency did not contribute significantly to the model, $\Delta F_{(2,98)} = 0.81$, $p = .65$, and only accounted for 0.7% of the variance. Similarly, adding the interaction term did not contribute significantly to the model, $\Delta F_{(1,97)} = 0.34$, $p = .56$, and only accounted for an additional 0.3% of the variance.

Table 13

Study 1: Effect of Image Type and General Social Comparison Tendency on Relevance

(N=101)

		<i>SE b</i>	<i>b</i>	β	<i>T</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.26	5.39	-	21.01	.00
	Condition	0.30	0.09	0.03	0.32	.76
	General comparison tendency	0.24	0.11	0.03	0.43	.64
II.	Constant	0.26	5.39	-	20.94	.00
	Condition	0.30	0.09	0.03	0.31	.75
	General comparison tendency	0.25	0.11	0.04	0.46	.61
	Condition X General comparison tendency	0.05	0.03	0.08	0.58	.56

Attainability. In this regression, predictors of attainability were examined (see Table 14). None of the potential covariates were significant. Experimental condition and general social comparison tendency contributed significantly to the model, $\Delta F_{(2,98)} = 21.82, p < .001$, and accounted for 31.4% of the variance. As predicted, body-as-object ads were rated as less personally attainable than body-as-process ads. The squared partial correlation between experimental condition and attainability was .25, which is defined by Cohen (1988) as a medium effect size. General social comparison tendency did not significantly predict attainability ratings, $p = .49$. Adding the interaction term did not contribute significantly to the model, $\Delta F_{(1,97)} = 0.76, p = .48$, and only accounted for an additional 0.4% of the variance.

Table 14

Study 1: Effect of Image Type and General Social Comparison Tendency on Attainability

(*N=101*)

		<i>SE b</i>	<i>b</i>	β	<i>T</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.25	6.39	-	26.12	.00
	Condition	0.33	-1.84	-0.49	-5.55	.00
	General comparison tendency	0.02	0.02	0.08	0.87	.49
II.	Constant	0.25	6.39	-	26.14	.00
	Condition	0.33	-1.84	-0.47	-5.56	.00
	General comparison tendency	0.03	0.02	0.10	0.78	.36
	Condition X General comparison tendency	0.05	-0.05	0.01	0.87	.48

Muscle dissatisfaction. In this regression, predictors of muscle dissatisfaction were examined (see Table 15). With the significant covariates baseline muscle dissatisfaction and trait self-esteem, the model was significant, $F_{(2,98)} = 199.16, p < .001$, and accounted for 69.1% of the variance. The addition of experimental condition and general social comparison tendency in Step 2 did not contribute to the model, $\Delta F_{(2,96)} = 0.68, p = .51$, and only accounted for 1.3% to the variance. The addition of the interaction term in Step 3 contributed significantly to the model, $\Delta F_{(1,95)} = 5.15, p = .02$, and accounted for an additional 9.1% of the variance. Tests of the simple slopes indicated that among men higher in general social comparison tendency, those who viewed the body-as-object images reported greater muscle dissatisfaction compared to those who viewed the body-as-process images, $\beta = .25, t(96) = 2.61, p = .01$. Among men lower in general social comparison tendency, there were no differences in muscle dissatisfaction between experimental conditions, $\beta = -.10, t(96) = -0.82, p = .51$ (see Figure 3). The squared partial correlation between the interaction term and muscle dissatisfaction was .07, a small effect size.

Table 15

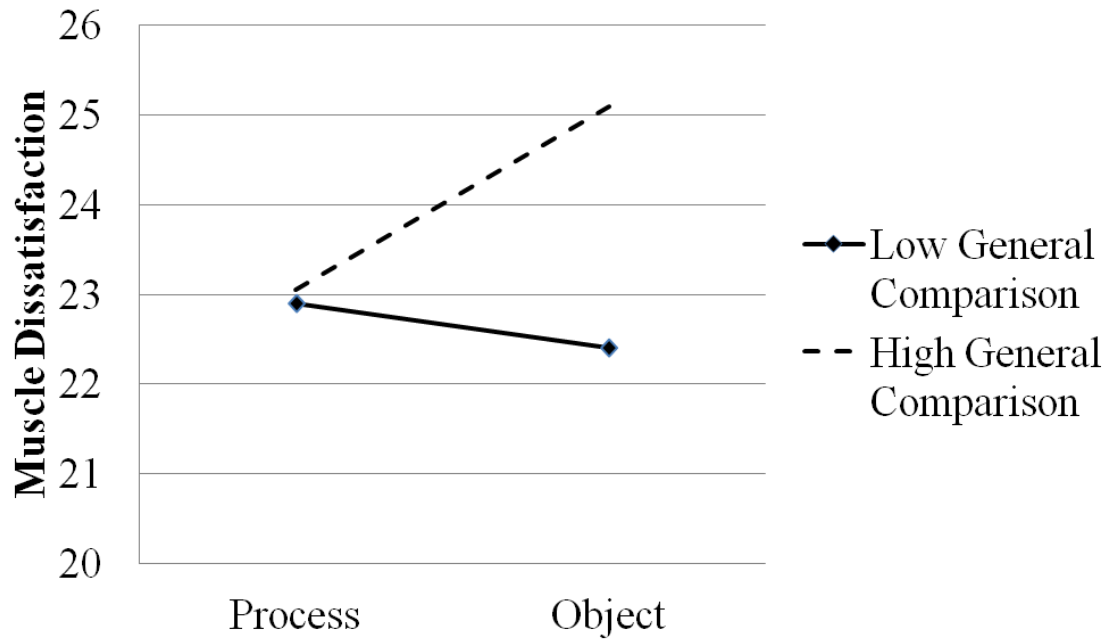
Study 1: Effect of Image Type and General Social Comparison Tendency on Muscle Dissatisfaction (N=101)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.40	24.18	-	60.46	.00
	Baseline muscle dissatisfaction	0.05	0.67	0.81	13.77	.00
	Trait self-esteem	0.12	-0.25	-0.22	-2.45	.04
II.	Constant	0.60	23.68	-	39.48	.00
	Baseline muscle dissatisfaction	0.05	0.67	0.82	12.82	.00
	Trait self-esteem	0.12	-0.25	-0.21	-2.40	.04
	Condition	0.82	0.99	0.07	1.11	.27
	General comparison tendency	0.06	0.02	0.02	0.25	.81
III.	Constant	0.60	23.66	-	39.51	.00
	Baseline muscle dissatisfaction	0.05	0.69	0.84	12.74	.00
	Trait self-esteem	0.09	-0.22	-0.21	-2.41	.04
	Condition	0.82	0.96	0.08	1.17	.25
	General comparison tendency	0.08	0.08	0.08	0.97	.34
	Condition X General comparison tendency	0.18	-0.37	-0.21	-2.27	.02

Figure 3

Study 1: Muscle Dissatisfaction as a Function of Image Type and General Social

Comparison Tendency



Physical condition esteem. In this regression, predictors of physical condition esteem were examined (see Table 16). With only the significant covariate baseline physical condition esteem, the model was significant, $F_{(1,99)} = 259.01$, $p < .001$, and accounted for 72.3% of the variance in physical condition esteem. The addition of experimental condition and general social comparison tendency did not contribute significantly to the model, $\Delta F_{(2,97)} = 0.21$, $p = .82$, and only accounted for an additional 0.2% of the variance in physical condition esteem. Similarly, adding the interaction term did not contribute to the model, $\Delta F_{(1,96)} = 0.002$, $p = .97$, and only accounted for an additional 0.01% of the variance.

Table 16

Study 1: Effect of Image Type and General Social Comparison Tendency on Physical Condition Esteem (N=101)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.44	41.86	-	94.77	.00
	Baseline physical condition esteem	0.05	0.83	0.85	16.09	.00
II.	Constant	0.66	41.79	-	63.34	.00
	Baseline physical condition esteem	0.05	0.84	0.85	15.84	.00
	Condition	0.89	-0.12	-0.01	-0.13	.90
	General comparison tendency	0.06	-0.04	-0.03	-0.63	.53
III.	Constant	0.66	41.89	-	63.02	.00
	Baseline physical condition esteem	0.05	0.83	0.85	15.66	.00
	Condition	0.90	-0.12	-0.01	-0.13	.90
	General comparison tendency	0.09	-0.04	-0.04	-0.46	.65
	Condition X General comparison tendency	0.13	0.01	0.01	0.04	.97

Negative affect. In this regression, predictors of negative affect were examined (see Table 17). With only the significant covariates baseline negative affect and trait self-esteem, the model was significant, $F_{(2,98)} = 65.25, p < .001$, and accounted for 47.2% of the variance. The addition of experimental condition and general social comparison tendency in Step 2 did not contribute significantly to the model, $\Delta F_{(2,97)} = 0.15, p = .88$, and only accounted for an additional 0.1% of the variance in negative affect. Similarly, adding the interaction term in Step 3 did not contribute significantly to the model, $\Delta F_{(1,96)} = 0.02, p = .90$, and only accounted for an additional 0.01% of the variance.

Table 17

Study 1: Effect of Image Type and General Social Comparison Tendency on Negative Affect (N=101)

		<i>SE b</i>	<i>B</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.40	14.23	-	35.46	.00
	Baseline negative affect	0.08	0.63	0.64	8.31	.00
	Trait self-esteem	0.09	-0.20	-0.33	-2.12	.03
II.	Constant	0.60	14.28	-	23.81	.00
	Baseline negative affect	0.08	0.64	0.65	8.24	.00
	Trait self-esteem	0.10	-0.21	-0.34	-2.16	.03
	Condition	0.81	0.10	0.01	0.12	.90
	General comparison tendency	0.06	-0.03	-0.04	-0.57	.57
III.	Constant	0.60	14.28	-	23.69	.00
	Baseline negative affect	0.08	0.64	0.64	8.13	.00
	Trait self-esteem	0.09	-0.19	-0.29	-1.99	.04
	Condition	0.82	0.10	0.01	0.12	.90
	General comparison tendency	0.08	-0.03	-0.03	-0.30	.77
	Condition X General comparison tendency	0.12	-0.01	-0.01	-0.13	.90

Number of bicep curls. In this regression, predictors of number of bicep curls were examined (see Table 18). With only the significant covariate BMI, the model was significant, $F_{(1,99)} = 6.41, p = .01$, and accounted for 6.1% of the variance. The addition of experimental condition and general social comparison tendency contributed significantly to the model, $\Delta F_{(2,97)} = 5.82, p < .001$, and accounted for an additional 10.1% of the variance. Specifically, men in the body-as-object condition engaged in fewer bicep curls than did men in the body-as-process condition. The squared partial correlation between experimental condition and number of bicep curls was .10, a small effect size. The addition of the interaction term did not contribute significantly to the model, $\Delta F_{(1,96)} = 0.04, p = .83$, and only accounted for an additional 0.01% of the variance.

See Table 19 and Table 20 for a summary of the hypotheses, statistical procedures, and results for Study 1.

Table 18

Study 1: Effect of Image Type and General Social Comparison Tendency on Number of Bicep Curls (N=101)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	1.82	20.55	-	11.31	.00
	BMI	0.21	0.54	0.25	2.53	.01
II.	Constant	2.02	24.05	-	11.90	.00
	BMI	0.20	0.50	0.23	2.43	.02
	Condition	1.78	-5.86	-0.31	-3.30	.00
	General comparison tendency	0.12	0.11	0.08	0.86	.39
III.	Constant	2.01	24.03	-	11.82	.00
	BMI	0.21	0.50	0.23	2.43	.02
	Condition	1.79	-5.86	-0.31	-3.28	.00
	General comparison tendency	0.18	0.08	0.06	0.45	.66
	Condition X General comparison tendency	0.25	0.05	0.03	0.21	.83

Table 19

Study 1: Summary of Hypotheses, Statistical Procedures, and Results

Hypothesis	Statistical Procedures – ANOVA and Hierarchical Regression			Results
	Dependent or Criterion Variable	Significant Covariates	Independent or Predictor Variable	
None	Relevance = Regression #1		Experimental Condition	Body-as-object and body-as-process images did not differ in relevance ratings.
1. Body-as-object would be rated as less personally attainable than body-as-process images.	Personal Attainability = Regression #2		Experimental Condition	Hypothesis supported: body-as-object images were rated as less personally attainable than were the body-as-process images.
2. Men in the body as object condition would report greater muscle dissatisfaction, lower physical condition esteem, greater negative affect, and engage in fewer bicep curls than would men in the body as process condition.	Muscle Dissatisfaction = Regression #3	Baseline Muscle Dissatisfaction Trait Self-Esteem	Experimental Condition	Hypothesis not supported: men in the body-as-object condition did not report greater muscle dissatisfaction than did men in the body-as-process condition.
	Physical Condition Esteem = Regression #4	Baseline Physical Condition Esteem	Experimental Condition	Hypothesis not supported: men in the body-as-object condition did not report lower physical condition esteem than did men in the body-as-process condition.
	Negative Affect = Regression #5	Baseline Negative Affect Trait Self-Esteem	Experimental Condition	Hypothesis not supported: men in the body-as-object condition did not report greater negative affect than did men in the body-as-process condition.

Statistical Procedures – ANOVA and Hierarchical Regression				
Hypothesis	Dependent or Criterion Variable	Significant Covariates	Independent or Predictor Variable	Results
	Number of Bicep Curls = Regression #6	Body Mass Index	Experimental Condition	Hypothesis supported: men in the body-as-object condition engaged in fewer bicep curls than did those in the body-as-process condition.
3. Among men who engaged in greater state physique comparison, those in the body-as-object condition would report greater muscle dissatisfaction, lower physical condition, greater negative affect, and engage in fewer bicep curls. Among men who engaged in less state physique comparison, there would be no significant differences in muscle dissatisfaction, physical condition esteem, negative affect, and number of bicep curls between experimental conditions.	Muscle Dissatisfaction = Regression #3	Baseline Muscle Dissatisfaction Trait Self-Esteem	Experimental Condition X State Physique Comparison	Hypothesis supported: among men who engaged in greater state physique comparison, those in the body-as-object condition reported greater muscle dissatisfaction than did those in the body-as-process condition. Among men who engaged in less state physique comparison, experimental condition did not differentially influence muscle dissatisfaction.
	Physical Condition Esteem = Regression #4	Baseline Physical Condition Esteem	Experimental Condition X State Physique Comparison	Hypothesis partially supported: among men who engaged in greater state physique comparison, those in the body-as-object condition did not report lower physical condition esteem than did those in the body-as-process condition. Among men who engaged in less state physique comparison, experimental condition did not differentially influence physical condition esteem.

Statistical Procedures – ANOVA and Hierarchical Regression				
Hypothesis	Dependent or Criterion Variable	Significant Covariates	Independent or Predictor Variable	Results
	Negative Affect = Regression #5	Baseline Negative Affect Trait Self-Esteem	Experimental Condition X Negative Affect	Hypothesis supported: among men who engaged in greater state physique comparison, those in the body-as-object condition reported greater negative affect than did those in the body-as-process condition. Among men who engaged in less state physique comparison, experimental condition did not differentially influence negative affect.
	Number of Bicep Curls = Regression #6	Body Mass Index	Experimental Condition X Number of Bicep Curls	Hypothesis partially supported: among men who engaged in greater state physique comparison, those in the body-as-object condition did not engage in fewer bicep curls than did those in the body-as-process condition. Among men who engaged in less state physique comparison, experimental condition did not differentially influence number of bicep curls.

Table 20

Study 1: Summary of Exploratory Comparisons, Statistical Procedures, and Results

Exploratory Comparison	Exploratory Analyses - Hierarchical Regression			Results
	Criterion Variable	Significant Covariates	Predictor Variable	
1. Among men high in general social comparison tendency, would men in the body-as-object condition differ from those in the body-as-process condition in muscle dissatisfaction, physical condition esteem, negative affect, and number of bicep curls?	Muscle Dissatisfaction = Regression #9	Baseline Muscle Dissatisfaction Trait Self-Esteem	Experimental Condition X General Social Comparison Tendency	Men high in general social comparison tendency reported greater muscle dissatisfaction in the body-as-object condition than in the body-as-process condition.
	Physical Condition Esteem = Regression #10	Baseline Physical Condition Esteem	Experimental Condition X General Social Comparison Tendency	Among men high in general social comparison tendency, experimental condition did not differentially influence physical condition esteem.
	Negative Affect = Regression #11	Baseline Negative Affect Trait Self-Esteem	Experimental Condition X General Social Comparison Tendency	Among men high in general social comparison tendency, experimental condition did not differentially influence negative affect.
	Number of Bicep Curls = Regression #12	Body Mass Index	Experimental Condition X General Social Comparison Tendency	Among men high in general social comparison tendency, experimental condition did not influence number of bicep curls.

Exploratory Analyses - Hierarchical Regression				
Exploratory Comparison	Criterion Variable	Significant Covariates	Predictor Variable	Results
2. Among men low general social comparison tendency, would men in the body-as-object condition differ from those in the body-as-process condition in muscle dissatisfaction, physical condition esteem, negative affect, and number of bicep curls?	Muscle Dissatisfaction = Regression #9	Baseline Muscle Dissatisfaction Trait Self-Esteem	Experimental Condition X General Social Comparison Tendency	Among men low in general social comparison tendency, experimental condition did not differentially influence muscle dissatisfaction.
	Physical Condition Esteem = Regression #10	Baseline Physical Condition Esteem	Experimental Condition X General Social Comparison Tendency	Among men low in general social comparison tendency, experimental condition did not differentially influence physical condition esteem.
	Negative Affect = Regression #11	Baseline Negative Affect Trait Self-Esteem	Experimental Condition X General Social Comparison Tendency	Among men low in general social comparison tendency, experimental condition did not differentially influence negative affect.
	Number of Bicep Curls = Regression #12	Body Mass Index	Experimental Condition X General Social Comparison Tendency	Among men low in general social comparison tendency, experimental condition did not differentially influence number of bicep curls.

Discussion

Relevance. The results indicated that the models' physique did not significantly differ in relevance between the body-as-object and body-as-process conditions. This finding can be explained by the domain of comparison measured in this study. Men were asked to indicate the degree to which the model's physique in the ad was relevant to them for the purposes of comparison. Thus, men were asked to focus on the model's physique and to determine its relevance as a domain of comparison. As reported earlier, the models depicted in the body-as-process and body-as-object images did not significantly differ in muscularity ratings. It is possible that similar levels of muscularity between conditions resulted in the models' physique being considered equally relevant for the purposes of comparison. Differences in body conceptualization that may have influenced relevance ratings were likely overshadowed by the level of muscularity depicted in each set of images. As described earlier, there is substantial empirical evidence showing that muscularity is the most important dimension of body image for men and as such, muscularity may be more likely to influence the relevance of a model's physique for the purposes of comparison than characteristics associated with body conceptualization, such as activity level or eye gaze.

Men's relevance ratings of the male media ideal had been measured in only one study before this one (Strahan et al., 2006). The authors found that following exposure to images of the male media ideal described as depicting either a professional model or a peer, professional models were rated as relevant as were peers for the purposes of comparison. However, Strahan et al. (2006) did not measure domain of comparison.

Instead, the authors asked men “how relevant do you think this person is to compare yourself with.” As such, it is unclear what characteristic of the male media ideal was relevant to these participants for the purposes of comparison. In other words, men have been responding to the description of the model, professional model or peer, or perhaps to the model’s level of muscularity. In contrast to the aforementioned study, in the current study, domain of comparison was specified as physique, thus allowing one to conclude what characteristic associated with the male media ideal is relevant to men, i.e., the model’s physique.

Attainability. As predicted, the media ideal physique in the body-as-process images was rated as more personally attainable than was the media ideal physique depicted in the body-as-object images. These findings are consistent with Lockwood and Kunda’s (1997) research on the impact of engaging in comparison with outstanding others. As mentioned above, Lockwood and Kunda (1997) describe factors that influence the degree to which a superior other’s level of success is deemed personally attainable. A superior other’s success will be deemed personally attainable when this person depicts success in a relevant domain, demonstrates ways of achieving that success, and when one believes they can improve in that domain, i.e., that they eventually could achieve that level of performance. In the current study, the models depicted in the body-as-process and body-as-object images displayed success in the domain of physique, and as reported above, men considered both physiques equally relevant for the purposes of comparison. However, the models differed in the degree to which they demonstrated how to achieve the muscular physique that they displayed. Images that emphasized the functional

qualities of the body provided relatively more information on how to achieve the ideal physique, i.e., engaging in exercise. Images that emphasized the aesthetic qualities of the male body offered little or no information regarding how to attain this ideal body. Thus, although both images depicted similar levels of excellence in the domain of physical appearance, the body-as-process images illustrated how to achieve it whereas body-as-object images did not. As such, men assigned to the body-as-process condition may have more easily envisioned their future selves engaging in exercise and achieving a similar physique to that of the model than did men assigned to the body-as-object condition.

One may argue that the difference in attainability ratings between experimental conditions reflects that the men were responding to differences in activity level between the body-as-process and body-as-object images. The body-as-process images depicted the model engaging in a sport or body-change strategy whereas the body-as-object images depicted the model in a static pose. Thus, it is possible that men were rating the attainability of engaging in the activity depicted in the image and thus, perhaps they more easily envisioned themselves engaging in a sport or body-change strategy than not. This explanation, however, is unlikely given the manner in which attainability beliefs were measured. Men were asked “I would be able to achieve a physique similar to that of the model in this ad.” Attainability of the model’s physique, not attainability of his level of activity, was measured. Therefore, given how the question of attainability was formulated, it is reasonable to assume that men rated the physique of the model rather than the activity as achievable.

This is the first study to measure men's attainability beliefs of the male media ideal physique. In previous studies, attainability judgments of a superior other's level of success in nonappearance domains was measured, such as intelligence (Dweck & Leggett, 1988), and school major or occupation (Buunk & Van der Laan, 2002; Buunk, Peiro, & Griffioen, 2007; Lockwood & Kunda, 1997). The findings of the current study add to the existing literature by demonstrating that the male media ideal is perceived as more or less attainable depending on how the body is conceptualized.

It is logical to assume that the levels of muscularity depicted by images of the male media ideal are out of reach for most men. The results of the current study, however, suggest that men may misjudge the actual attainability of the models' physique for themselves, especially when the model depicts strategies to achieve this ideal. Therefore, compared to body-as-object images, body-as-process images may convey the implicit message that the male body can be altered to resemble the male media ideal. The implications of these findings, i.e., whether differences in body conceptualization and related attainability beliefs affect men's self-evaluations and behaviour were examined with the next hypothesis discussed below.

Muscle dissatisfaction, physical condition esteem, negative affect, and number of bicep curls. Contrary to predictions, there were no differences in muscle dissatisfaction, physical condition esteem, and negative affect between men in the body-as-process and body-as-object conditions. However, as predicted, men in the body-as-object condition engaged in fewer bicep curls than did those in the body-as-process condition.

The absence of an effect of body conceptualization on muscle dissatisfaction, physical

condition esteem, and negative affect is inconsistent with the pattern of findings reported by Farquhar and Wasylkiw (2007). These authors found that adolescent boys who viewed body-as-object images reported lower social, performance, and appearance state self-esteem, and greater depression than those who viewed body-as-process images. The results of the current study, however, are similar to those reported by Mulgrew et al. (2014), who found that differences in body conceptualization had no effect on adult men's muscle tone satisfaction and negative affect. These inconsistent findings perhaps reflects developmental factors associated with the age of each sample, $M = 12.51$ in Farquhar et al. (2007); $M = 29.51$ in Mulgrew et al. (2014), and $M = 20.69$ in the current study. Compared to college-aged men, boys in early adolescence may feel better after viewing body-as-process images than after viewing body-as-object images because they have yet to experience puberty-related changes, such as enhanced muscularity (Hargreaves & Tiggemann, 2006). The expectation of enhanced muscularity along with the message that that their level of muscularity can be enhanced via body-change strategies may result in more positive self-evaluations among early adolescent boys than in college-aged men, who have experienced puberty-related changes to their physique without necessarily experiencing a desired increase in muscle mass. Another possible explanation for the difference in results between these studies is the visual stimuli used to manipulate body conceptualization. Farquhar and Wasylkiw (2007) manipulated body conceptualization by showing images of the male media ideal that emphasized the aesthetic qualities of the male body, body-as-object, or the functional qualities of the male body, body-as-process. In addition, participants who viewed the body-as-object

images viewed text slogans that emphasized the appearance qualities of the body, e.g., “The ultimate abs diet.” Participants who viewed the body-as-process images, on the other hand, saw text slogans that emphasized the performance qualities of the body, e.g., “The ultimate energy diet.” In the current study and in the study by Mulgrew et al. (2014), participants also viewed body-as-object or body-as-process images but these images were void of slogans emphasizing the appearance or function of the body. It is possible that this manipulation of body conceptualization may not have been explicit enough to produce changes in self-appraisal variables.

In terms of number of bicep curls, differences were observed depending on the type of images viewed. As predicted, men who viewed the body-as-object images engaged in fewer bicep curls than did those who viewed the body- as-process images. As reported above, men deemed body-as-process images more personally attainable than body-as-object images. Wheeler et al. (1997) suggest that comparison targets can be used as proxies for oneself in estimating future performance and that increasing one’s perception of the likelihood of success in a relevant domain subsequently leads to greater effort and better performance in that domain (Seta, 1982). Consistent with Wheeler et al.’s (1997) proxy model, researchers have found that comparison with a superior, attainable other in a specific domain improves subsequent performance in that domain (Blanton, Buunk, Gibbons, & Kuyper, 1999; Huguet, Dumas, Monteil, & Genestoux, 2001; van de Ven, Zeelenberg, & Pieters, 2011). Applied to the current findings, this suggests that compared to men who viewed body-as-object images, men who viewed the body-as-process images may have been more likely to use these models as proxies for success in

enhancing their muscularity because the models demonstrated how to do same. As such, men who viewed the body-as-process may have estimated greater future success in improving their level of muscularity than those who viewed the body-as-object images. This greater estimation of success may subsequently have been exhibited behaviourally when men were given the opportunity to improve in the domain of muscularity by engaging in bicep curls.

Moderating effect of state physique comparison. As predicted, among men who engaged in greater state physique comparison, those in the body-as-object condition reported greater muscle dissatisfaction and negative affect than did those in the body-as-process condition. Among men who engaged in less state physique comparison, differences in body conceptualization did not affect their self-evaluations, affect, and muscle-building behaviour. Again, these findings can be explicated by Social Comparison Theory. According to Social Comparison Theory, the outcome of engaging in an upward comparison on a self-relevant domain depends on attainability (Lockwood & Kunda, 1997). If the superior other's success is deemed unattainable, the comparison will have a negative effect on self-evaluations. Conversely, if the superior other's success is deemed more attainable, the comparison will have a less detrimental effect or possibly a self-enhancing effect on self-evaluations. Compared to body-as-object images, body-as-process images illustrate how men can enhance their muscularity thereby making future success in the domain of muscularity more tangible. Believing that they can enhance their muscularity and achieve the ideal physique portrayed in media may decrease men's current level of muscle dissatisfaction, as well as negative affect.

The results of the current study suggest that differences in attainability affect only men who compare themselves more extensively to images of the male media ideal. For men who compare themselves less extensively, attainability judgments do not influence their self-evaluations, affect, or behaviour. This interpretation of the findings is further supported by the results that showed no difference in attainability ratings between men high or low in state physique comparison.

Contrary to predictions, differences in body conceptualization had no effect on physical condition esteem for men who compared themselves either more or less extensively. It is possible that the experimental images were relevant to men for the purposes of evaluating their muscularity, and less relevant or irrelevant for the purposes of evaluating their physical abilities, such as agility, strength, and stamina. Instead, men may use other, more diagnostic targets of comparison to evaluate their physical condition, such as same aged peers (Karazsia & Crowther, 2009).

Similarly, differences in body conceptualization had no effect on number of bicep curls for men who compared themselves either more or less extensively. An internally consistent explanation for this null result comes from the findings for attainability. As reported above, the models' physique in the body-as-process images was rated more personally attainable than the models' physique in the body-as-object images, regardless of the extent to which the men engaged in state physique comparison. Men's behavioural response then is exactly consistent with their appraisal of attainability for each type of image, such that they engaged in a greater number of bicep curls after viewing images depicting a more attainable physique than they did after viewing images depicting a less

attainable physique.

For men who engaged in less state physique comparison differences in body conceptualization and related attainability beliefs between images of the male ideal do not affect their self-evaluations, affect, and muscle-building behaviour. A certain level of engagement or comparison with images of the male media ideal may be necessary for men to be affected by exposure to these images. According to Social Comparison Theory, attainability judgments only are relevant in the context of engaging in comparison (Lockwood & Kunda, 1997). Therefore, for men who report low levels of comparison or no comparison with images of the male media ideal, the degree of attainability associated with the superior target may be irrelevant.

In only two studies, researchers have measured extent of state comparison in men who were exposed to images of the male media ideal (Galioto & Crowther, 2013; Hargreaves & Tiggemann, 2009). The results from these studies were mixed. Specifically, Hargreaves and Tiggemann (2009) found no effect of state appearance comparison whereas Galioto and Crowther (2013) found that greater extent of comparison, as well as greater engagement in upward comparison were associated with lower appearance state self-esteem. These studies, however, measured men's reactions in response to exposure to images of the male media ideal compared to exposure to images of "normal, clothed men" or slender models. Unlike the experimental stimuli used in the current study, the images used in these two studies varied in terms of muscularity, attractiveness, and level of nudity, making it impossible to determine what characteristic of the male media ideal affected men who compared themselves extensively in Galioto and Crowther's (2013)

study. In the current study, these variables were controlled, as was the degree to which the model was representative of the media ideal, thereby decreasing the range of possible differences between images to only differences in body conceptualization. Therefore, the results of the current study indicate what characteristics associated with the male media ideal are relevant to men who compare themselves more extensively and affect their muscle satisfaction and negative affect.

The primary focus of male body image research has been the impact of exposure to media images on men's body image. Findings from these studies show that after exposure to the male media ideal, men are more dissatisfied with their body than they are after viewing images of average physiques or of products (Grogan et al., 1996; Hausenblas et al., 2003; Agliata & Tantleff-Dunn, 2004; Lorenzen et al., 2004; Arbour & Ginis, 2006). In a recent meta-analysis, Ferguson (2013) examined the effect of exposure to images of the male media ideal on men's body dissatisfaction using 19 experimental studies. The effect size of these studies was a conservative effect size of .07 and in line with the results of the current study. This suggests that men's reactions to exposure to images of the media ideal depend on a number of factors. However, unlike the current study, state or trait social comparison were not examined in the studies included in the meta-analyses, nor were factors associated with images of the media ideal that may influence men's responses to these images. Researchers suggest or assume that men engage in social comparison with the images of the muscular males and that, as a result of comparative self-evaluation, they typically experience greater body dissatisfaction (Arbour & Ginis, 2006; Bartlett, Vowels, & Saucier, 2008; Hobza, Walker, Yakushko, &

Peugh, 2007). However, the results of the current study show that not all men compare themselves to the same extent. Furthermore, for men who compare themselves more extensively with the male media ideal, the outcome of such comparisons depends on body conceptualization and attainability. In response to viewing the body-as-process images, which were rated as more attainable than the body-as-object images, men may entertain the possibility that they can improve their appearance because the ideal that they viewed is considered more attainable. Furthermore, if they view such improvements in their appearance as attainable, this may leave them feeling less dissatisfied with their own level of muscularity than viewing images that portray the male media ideal as less attainable. In contrast, for men who engage in comparison less extensively, body conceptualization and attainability judgments do not matter.

Exploratory analyses – Moderating effect of general social comparison tendency.

The results indicated that among men with a high tendency toward making general social comparisons, those in the body-as-object condition reported greater muscle dissatisfaction than did those in the body-as-process condition. Experimental condition, however, did not differentially influence their negative affect, physical condition esteem, or muscle-building behaviour. Among men with a lower tendency toward making general social comparisons, experimental condition had no effect on muscle dissatisfaction, physical condition esteem, negative affect, and muscle-building behaviour.

Findings from research on the psychological and behavioural correlates of men with a high tendency toward making general social comparisons support these results.

Specifically, Buunk and Gibbons (2006) have found that men who more extensively engage in general comparisons seek out more comparisons, spend more time engaging in comparison, and experience heightened reactions in response to making these comparisons relative to men low on this tendency. Furthermore, men with a high tendency toward making general social comparisons exhibit low self-esteem, as well as a relatively strong dependency on other people for their self-evaluations. As such, this group of men may be more vulnerable to experiencing fluctuations in their muscle satisfaction and mood following exposure to superior comparison targets that vary in body conceptualization and attainability. Conversely, people who engage in less general social comparison exhibit more stable self-concepts, higher self-esteem, and lower self-consciousness (Buunk & Dijkstra, 2014; Gibbons & Buunk, 1999). Furthermore, these individuals are less interested in social comparison information (Buunk & Gibbons 2006), but if asked to choose a comparison target, show a preference towards highly similar comparison targets (Michinov & Michinov, 2001). It is possible then, that individuals low in general social comparison are not interested in evaluating themselves in general and in comparison to the male media ideal who may be deemed highly dissimilar to them. Men with a low tendency toward making general comparisons also exhibit less activation of the self and higher self-esteem, perhaps reducing the likelihood of activation of their muscle-related self-discrepancies in response to viewing images of the male media ideal. Another possible interpretation of these findings is that, similar to men who engaged in less state physique comparison, men low in general social comparisons engaged in low levels or no comparison with the images of the male media

ideal, leaving them unaffected by exposure to images that differed in body conceptualization and attainability.

Summary and Preparation for Study 2

In summary, the results of the current study indicate that men consider the media ideal physique conceptualized in terms of its appearance or functional qualities as equally relevant for the purposes of comparison, however, the media ideal physique conceptualized in terms of its functional qualities is considered more personally attainable than the media ideal physique conceptualized in terms of its aesthetic qualities. Differences in body conceptualization also influenced men's muscle-building behaviour, such that those who viewed body-as-process images engaged in more bicep curls than those who viewed body-as-object images. It is possible that models who demonstrate strategies to achieve a muscular physique increase men's estimation of their future success in enhancing their own level of muscularity and inspire and motivate these men to put forth more effort in a muscle-building task than do models who emphasize their body's appearance. Differences in body conceptualization and related attainability judgements only affected men who engaged in either state or trait comparison more extensively. This interpretation of the findings is supported by results that show that men high or low in state or trait comparison did not differ in their relevance or attainability ratings.

Another important component of Social Comparison Theory that may influence the effect of exposure to images of the male media ideal is relevance, specifically, the relevance of the male media ideal physique for the purposes of comparison. Engaging in

comparison with images of the media ideal is more likely to occur if the domain of comparison is deemed highly relevant for the purposes of comparison and as such, will more likely impact self-views. In contrast, engaging in comparison with the media ideal is less likely if the domain of comparison is deemed irrelevant or less relevant for the purposes of comparison and as such, will have little to no impact on self-views. The goal of the following second study was to examine whether describing the male media ideal in a way that reduces its relevance for the purposes of comparison influences men's muscle dissatisfaction, negative affect, physical condition esteem, and muscle-building behaviour. Similar to Study 1, men high or low in state and trait social comparison were identified to determine which group may be more vulnerable to the effects of exposure to images of the media ideal that were described in a way that reduced its relevance.

CHAPTER III

Study 2

Overview

Another area of investigation related to men's social comparison processes when exposed to images of the male media ideal is what factor(s) influence whether or not comparison will occur. According to Social Comparison Theory, the likelihood that one will engage in comparison depends on the perceived self-relevance of the domain of comparison (Lockwood & Kunda, 1997), which in the current study is muscularity. The greater the perceived self-relevance of the domain of comparison, the greater the likelihood that one will engage in comparison and consequently be affected by the comparison. As such, differences in the perceived self-relevance of the muscular

physique characterized by the male media ideal may affect men's comparison processes, as well as their self-evaluations and muscle-building behaviour. In the current study, the degree of relevance of the male media ideal physique was manipulated, expecting that less self-relevant images would trigger less comparison than would more relevant images. The literature on female body image suggests that knowledge of the digital alterations made to media images may influence perceived self-relevance.

Digitally altered media. Digitally altered, "photoshopped," or retouched photographs are common in print media, especially in appearance- and health-focussed magazines and advertisements targeting women (Kee & Farid, 2011; Reaves, Bush Hitchon, Park & Woong Yun, 2009). Digital alterations result in models who are tall and thin, have bright eyes and white teeth, and are free of wrinkles, visible cellulite, or blemishes. In other words, images of fashion models are retouched to align with the cultural standards of beauty, which for women include being youthful and thin. Over the past decade magazine editors have been widely criticized for the digital alterations made to media images that consequently depict impossibly thin, tall, and wrinkle- and blemish-free models and promote an unattainable standard of beauty (Kee & Farid, 2011). These artificially rendered images are highly idealized and impossible to attain via natural or healthy means. Furthermore, in a meta-analysis of 77 experimental and correlational studies, Grabe, Ward, and Hyde (2008) found that exposure to thin-ideal media images is linked to increased body dissatisfaction, increased investment in appearance, and increased endorsement of disturbed eating behaviours.

Attention to and criticism of digitally altered media has primarily focussed on images

of female models that are made to be thinner. More recently, digital alterations have been documented in media images of men (Levine & Smolak, 2006). Specifically, photographs of men are retouched to closer approximate the male media ideal. “Photoshopped” images of men have been criticized for portraying idealized and unattainable levels of muscularity that can only be achieved via engagement in unhealthy body-change strategies, such as steroid use. Furthermore, exposure to images of the male media ideal has been found to be associated with body dissatisfaction, desire to engage in muscle-building behaviour, as well as actual engagement in these behaviours (Barlett & Harris, 2008; Blond, 2008; Ferguson, 2013; Krawiec & Jarry, 2008).

Media literacy interventions. In an attempt to reduce or mitigate the negative impact of exposure to images of the media ideal, media literacy programs have been developed, albeit, predominately for women (Ogden & Sherwood, 2008; Yamamiya & Thompson, 2008). The fundamental belief of media literacy programs is that individuals are active processors of media messages and therefore have the power to resist and even change their perception of these messages (Levine, Piran, & Stoddard, 1999). Education on digitally altered media is expected to increase media skepticism, as well as reduce engagement in social comparison and body dissatisfaction (Ogden & Sherwood, 2008; Yamamiya & Thompson, 2008). Therefore, the goal of media literacy programs is to disrupt the comparison processes that are thought to lead to body image disturbances. The effect of knowledge of the digital alterations made to media images on social comparison processes and related outcomes, such as body satisfaction and body-change strategies can be explained by Social Comparison Theory.

Social Comparison Theory and Digitally Altered Media

According to Social Comparison Theory, the likelihood of engaging in an upward comparison with a superior target depends on the self-relevance of the domain of comparison. Lockwood and Kunda (1997) suggest that self-relevance is influenced by similarity judgments between the self and other. As similarity in features, e.g., age, race, or gender, or circumstances between self and other increases, the other is deemed more relevant for the purpose of comparison and the likelihood of engaging in comparison with the superior other increases (Lockwood & Kunda, 1997). Knowledge of digital alterations made to media images may influence judgments of similarity and perceived self-relevance. As described above, participants in media literacy programs are informed that media images are digitally altered, not “real,” and depict a level of success in the domain of appearance/muscularity that is impossible to achieve without engaging in extreme body-change strategies, such as restrictive eating and steroid use. Therefore, knowledge of the digital alterations made to media images, i.e., the model was made to appear thinner or more muscular, may result in judgments of the media ideal physique as less similar to the self as well as less self-relevant in terms of domain of comparison and as such, decrease the likelihood of engaging in comparison with the male media ideal. By disrupting these social comparison processes, individuals may be less vulnerable to body dissatisfaction and the desire to engage in body-change strategies to achieve a similar body type.

Empirical research. Empirical evidence on the effect of media literacy interventions on body image and social comparison processes comes from literature on female body

image. Researchers have attempted to disrupt social comparison processes and thereby reduce female body dissatisfaction by incorporating media literacy interventions before (Halliwell, Easun, & Harcourt, 2011; Posavac, Posavac, & Weigel, 2001; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005), after (Ogden & Sherwood, 2008), or while women view images of the thin ideal (Ata, Thompson, & Small, 2013; Harrison & Hefner, 2014; Martijn et al., 2013; Slater, Tiggemann, Firth, & Hawkins, 2012; Tiggemann, Slater, Bury, Hawkins, & Firth, 2013). Researchers have attempted to portray fashion models as inappropriate targets for comparison by showing videos that display the alterations that go into creating a media image (Halliwell et al., 2011), and by providing information that the model's beauty is artificial, i.e., enhanced through a variety of techniques not available to women in everyday life (Ogden & Sherwood, 2008; Posavac et al., 2001; Yamamiya et al., 2005). Other researchers have attempted to portray fashion models as inappropriate targets of comparison by pairing images of thin models with "fake" words such as artificial and phony, and curvy models with "real" words such as natural and true (Martijn et al., 2013), and by including disclaimer and warning labels that indicate that the image has been digitally altered (Ata et al., 2013; Harrison & Hefner, 2014; Slater et al., 2012; Tiggemann et al., 2013). These studies will be reviewed below.

Empirical support for the disruption of social comparison processes comes from findings of experimental studies that have demonstrated the effectiveness of media literacy interventions (Halliwell et al., 2011; Ogden & Sherwood, 2008; Posavac et al., 2001; Quigg & Want, 2011; Yamamiya et al., 2005). For example, Ogden and Sherwood

(2008) examined the effect of incorporating an airbrushing educational intervention after participants viewed a set of pictures of either thin or overweight women. The authors found that incorporating the airbrushing educational intervention after participants viewed the thin ideal images eliminated the negative effect on body satisfaction that occurred among those who did not receive the intervention video after viewing these images. Social comparison processes, however, were not measured. In an adolescent sample, Halliwell et al. (2011) found that incorporating a video clip displaying the alterations made to a media image prior to having participants view images of the thin ideal prevented the negative effects on body satisfaction and body esteem that occurred among those who did not receive the intervention. The authors concluded that the intervention video prevented the girls from making damaging social comparisons with the models; however, social comparison processes were not measured to support this conclusion.

Researchers also have examined the effectiveness of adding disclaimer labels and warning labels to images of fashion models (Ata et al., 2013; Bissell, 2006; Slater et al., 2012; Tiggemann et al., 2013) and non-models (Harrison & Hefner, 2014). These labels indicate that the image has been digitally altered, the exact nature of such alterations, or that attempting to look as thin as the model is dangerous to one's health. Findings from these studies have been mixed, such that some studies have shown that the addition of disclaimer labels or warning labels reduces body dissatisfaction (Slater et al., 2012), has no effect on body dissatisfaction (Ata et al., 2013; Bissell, 2006; Tiggemann et al., 2013), or increases body dissatisfaction (Harrison & Hefner, 2014). For example, Slater et al.

(2012) investigated the impact of adding warning labels to fashion magazine images on body dissatisfaction. They randomly assigned 102 college-aged women to view magazine fashion spreads with either no warning labels, generic warning labels that stated that the image had been digitally altered, or specific warning labels that stated the way in which the image had been digitally altered. The authors found that compared to participants who viewed images with no warning label, those who viewed images with a generic or specific warning label reported lower levels of body dissatisfaction. There were no significant differences in body dissatisfaction, however, between the generic and specific warning label conditions. Social comparison was not measured in this study.

Tiggemann et al. (2013) investigated the effect of adding a generic warning label, i.e., “Warning: This image has been digitally altered,” or a specific warning label, i.e., “Warning: This image has been digitally altered to smooth skin tone and slim arms and legs,” to images of the thin ideal on body dissatisfaction. There were no significant differences in body dissatisfaction between the unlabelled and warning label conditions, nor between the generic and specific warning label conditions. Social comparison processes were measured in this study and will be described below. Lastly, in an adolescent sample, Harrison and Hefner (2014) found that participants who viewed images of non-models that were described as “refined...using a computer photo retouching program” reported higher objectified body consciousness and lower physical self-esteem than did participants exposed to no images, retouched images without a label, or unretouched images. The authors did not include a measure of social comparison. In summary, based on these few studies the addition of disclaimer and/or warning labels to

images of models and non-models has been shown to be beneficial, ineffective, or even harmful. The use of generic versus specific warning or disclaimer labels, however, has no differential effect on body dissatisfaction.

In addition to investigating the effect of disclaimer-labelled media images on body dissatisfaction, researchers also have measured social comparison processes, such as perceived similarity to and relevance of images of the thin ideal, as well as trait appearance comparison (Ata et al., 2013; Bissell, 2006; Tiggemann et al., 2013). For example, Bissell (2006) randomly assigned 124 college-aged women to one of three conditions: exposure to thin-ideal images, exposure to the same images plus a visual literacy intervention, or no exposure. The visual literacy intervention consisted of a definition of digital retouching and tagged images of swimsuit models with the following disclaimer: “The image below has been digitally manipulated to enhance the model’s appearance” (p. 6). The author found that body dissatisfaction did not significantly differ between groups. Bissell (2006) also measured perceived similarity to the model, as well as desire to be similar to the model and hypothesized that women who viewed the thin ideal images with the disclaimer label would report less similarity to the model and less desire to be similar to the model than would those who viewed the same images without the disclaimer label. Contrary to predictions, there were no significant differences in perceived similarity between groups. Furthermore, compared to those in the thin-ideal condition, women who viewed the same images with the disclaimer label reported a greater desire to look like the model shown. Lastly, women who viewed the thin ideal images with the disclaimer rated the models as more attractive and thinner than did those

who viewed the same images without the disclaimer. In a more recent study, Tiggemann et al. (2013) found that compared to women who viewed unlabelled images, those who viewed images with a generic or specific warning label rated these images as more self-relevant for the purposes of comparison and reported greater state appearance social comparison. Self-relevance ratings and state appearance comparison did not significantly differ depending on the type of warning label, i.e., general or specific. Among women high in trait appearance comparison, those in the specific warning label condition reported greater body dissatisfaction than those in the generic warning label or unlabelled conditions. In contrast, Ata et al. (2013) found that trait appearance comparison did not moderate the effect of exposure to warning-labelled media images on body dissatisfaction. Overall, it is unclear how, compared to unlabelled images of the thin ideal, adding generic or specific disclaimer or warning labels to these images influences body dissatisfaction and social comparisons processes, especially among those who are high in trait appearance comparison. There is some preliminary evidence that suggests that having knowledge of the specific digital alterations made to media images increases the wish to look similar to the model, as well as the attractiveness and thinness ratings of the model (Bissell, 2006). The addition of a generic or specific warning label also increases the relevance of the model as a target of comparison (Tiggemann et al., 2013). In one study, researchers found that compared to women who viewed unlabelled images, those who viewed thin ideal images with a generic or specific warning label experienced a decrease in body dissatisfaction (Slater et al., 2012). Others have found that women report similar levels of body dissatisfaction after viewing thin ideal images with or

without a disclaimer label (Ata et al., 2013; Bissell, 2006; Tiggemann et al., 2013), whereas in one study, researchers found that viewing images of non-models with a disclaimer label resulted in increased body dissatisfaction compared to viewing the same images without a disclaimer label (Harrison & Hefner, 2014). Type of warning label, i.e., generic versus specific, has no differential effect on women's body dissatisfaction (Slater et al., 2012; Tiggemann et al., 2013). Lastly, as described above, the moderation effect of trait appearance comparison on the relationship between warning-labelled images and body dissatisfaction is unclear. The paradoxical effect of increased desirability of media images and increased body dissatisfaction in response to knowledge of the digital alterations made to media images has been labelled by researchers as a "boomerang effect." The underlying mechanisms of this effect have yet to be examined and understood.

The effect of having knowledge of the digital alterations made to media images has not been examined in men. According to Social Comparison Theory, perceiving the physique characterized by the media ideal as a more self-relevant domain of comparison should result in greater engagement in comparison with this ideal, with greater negative consequences. In contrast, if the media ideal physique is perceived as less self-relevant for the purposes of comparison, men should be less likely to engage in comparison, and consequently, be less affected by exposure to this ideal. It is hypothesized that the degree to which the media ideal physique is perceived as self-relevant for the purposes of the comparison will depend on having knowledge of the digital alterations said to have been made to media images. Despite the mixed evidence for women, Social Comparison

Theory still suggests that a domain of comparison is deemed more self-relevant the greater the similarity or correspondence in features or circumstances between the self and other. Having knowledge of the digital alterations said to have been made to images of the male ideal implies that the model's appearance is not "real," and thereby may reduce the perceived similarity between the self and other. As such, compared to media images without disclaimer labels, images with disclaimer labels may be rated as less self-relevant, trigger less comparison, and result in lower muscle dissatisfaction and motivation to engage in muscle-building behaviour. The aim of the current study was to examine how knowledge of digital alterations said to have been made to images of the male ideal, specifically enhanced muscularity, influences men's self-evaluations, body-change strategies, and perceived self-relevance ratings of the media ideal.

The second purpose of this study 2 was to investigate the effect of having knowledge of digital alterations said to have been made to media images on another form of muscle-building behaviour, namely protein consumption. Protein, in the form of powders, shakes, and bars, is the most popular muscle-enhancing supplement used by men who exercise. It is primarily used as a means to increase muscle mass and improve athletic performance (Burke et al., 2001). Although consumption of protein supplements within the recommended daily allowance is not inherently dangerous, measuring men's protein consumption in response to viewing images of the male media ideal may elucidate the media's influence on men's muscle-building behaviour.

Rationale for Study 2

To date, researchers have compared the effect of exposure to images of the thin ideal

that include no information on digital alteration to images of the thin ideal that incorporate knowledge of digital alteration in form of video/print media literacy, generic disclaimer or warning labels, or specific disclaimer or warning labels on women's body dissatisfaction (Ata et al., 2013; Bissell, 2006; Halliwell et al., 2011; Harrison & Hefner, 2014; Martijn et al., 2013; Ogden & Sherwood, 2008; Posavac, Posavac, & Weigel, 2001; Slater et al., 2012; Tiggemann et al., 2013; Yamamiya et al., 2005). As such, researchers focussed on the effect of adding digital alteration information to images of the thin ideal on women's body dissatisfaction. The goal of the current study was to extend and improve upon these studies by examining how knowledge of digital alterations said to have been made to images of the male media ideal, i.e. enhanced muscularity, influences men's self-relevance ratings of the media ideal and consequently, their self-evaluations and body-change strategies. As such, participants were exposed to images of the male media ideal that were described as digitally altered in terms of muscularity or colour. Specifically, in the "muscularity disclaimer" condition, the images were described as digitally altered in terms of enhanced muscularity, i.e., "their muscles were made to appear larger," whereas in the "colour disclaimer" condition, the identical set of images were described as digitally altered in terms of colour, i.e., "the colours were intensified." To control for any unforeseen effect of claiming "alteration" for one set images but not the other, digital alterations were said to have been made to the images. The only difference between groups was the nature of the alteration which was expected to influence the self-relevance of the media ideal physique as a domain of comparison. The exact nature of the digital alteration said to have been made to the images was specified

to reduce the range of possible imagined alterations made to media images described as “digitally altered,” and to focus on the aspects of digital alteration that are important to men, i.e., muscularity. Based on Social Comparison Theory, it was expected that the muscularity disclaimer would decrease the self-relevance of the model’s physique as a domain of comparison because their physique was artificial and as such, represented an unrealistic level of muscularity. The colour disclaimer, however, would not affect the self-relevance of the model’s physique and therefore, represented the control condition. It was expected that compared to men in the colour disclaimer condition, those in the muscularity disclaimer condition would be less negatively affected such that they would report lower muscle dissatisfaction, lower negative affect, greater physical condition esteem, and consume less protein. The relevance of digitally altered media has been examined in one study conducted by Tiggemann et al. (2013). They found that women who viewed thin ideal images with a generic or specific disclaimer label rated the models as more self-relevant targets of comparison than did women who viewed the same images without a disclaimer label (Tiggemann, et al., 2013). In addition, findings from two studies showed that including disclaimer labels resulted in an increased desire to look similar to the model (Bissell, 2006), as well as increased body dissatisfaction (Harrison & Hefner, 2014). These outcomes are described as a “boomerang effect” (Harrison & Hefner, 2014). For men, it remains an empirical question whether having knowledge of the muscularity-related digital alterations said to have been made to images of the media ideal will influence self-relevance ratings.

Although personal attainability judgments of the media ideal were not the focus of the

current study, these judgments also were measured. As described in Study 1, attainability judgments influence the outcome of a social comparison, and may offer information as to why men are more negatively or positively affected by knowledge of the type of digital alteration said to have been made to the media images.

Similar to Study 1, state and trait social comparison were investigated in an attempt to identify the subset of men who may be vulnerable to the effects of knowledge of digital alterations said to have been made to media images. Men's muscle dissatisfaction and physical condition esteem also were measured in response to having knowledge of digital alterations said to have been made to media images. State negative affect was examined as a criterion variable to investigate psychological state following exposure these images. Lastly, as previously mentioned, muscle-building behaviour was measured in the form of protein consumption.

Research Questions and Hypotheses

The following five questions were investigated in Study 2:

1. What is the effect of a muscularity disclaimer on the self-relevance of the male media ideal physique as a domain of comparison?
2. What is the effect of a muscularity disclaimer on the personal attainability of the male media ideal physique?
3. What is the effect of viewing images of the media ideal with a muscularity disclaimer on men's muscle dissatisfaction, physical condition esteem, negative affect, and protein consumption?
4. Do differences in state physique comparison moderate men's reactions to viewing

images of the media ideal with a muscularity disclaimer?

5. Do differences in trait social comparison tendency moderate men's reactions to viewing images of the media ideal with a muscularity disclaimer?

Hypothesis 1: The male media ideal physique will be rated as less self-relevant in the muscularity disclaimer condition than in the colour disclaimer condition.

Hypothesis 2: The male media ideal physique will be rated as less personally attainable in the muscularity disclaimer condition than in the colour disclaimer condition.

Hypothesis 3: Compared to men in the colour disclaimer condition, men in the muscularity disclaimer condition will report lower muscle dissatisfaction, greater physical condition esteem, lower negative affect, and consume less protein.

Hypothesis 4: State physique comparison will moderate the effect of disclaimer type such that among men who engage in greater state physique comparison, those in the muscularity disclaimer condition will report lower muscle dissatisfaction, greater physical condition esteem, lower negative affect, and consume less protein compared to those in the colour disclaimer condition. Among men who engage in less state physique comparison, there will be no significant differences in muscle dissatisfaction, physical condition esteem, negative affect, and protein consumption between experimental conditions.

Exploratory Research

There is no research on the moderating effect of general trait social comparison tendency on the relationship between type of disclaimer and men's muscle dissatisfaction, physical condition esteem, negative affect, and protein consumption.

Therefore, this variable was examined in an exploratory manner and no hypotheses were formulated.

Method

Participants. The sample consisted of 104 males between the ages 18 to 29, with a mean age of 21.95 ($SD = 1.85$). Ethnicity was as follows: Caucasian (65%), East Asian (18%), African Canadian (7%), Middle Eastern (6%), South Asian (2%), Central Asian (1%), Hispanic (1%), Native Canadian (1%), and two or more ethnic backgrounds (1%). In terms of years of university education, 24% were in their first year, 26% were in their second year, 23% were in their third year, 21% were in their fourth year, and 6% had attended university for more than four years.

Materials.

Images. Twelve advertisements depicting the male mesomorphic ideal were used as experimental stimuli. These 12 ads were identical to the ads used in the body-as-object condition in Study 1. Seven of these ads depicted the male mesomorphic ideal and the remaining five ads depicted products only, such as sporting equipment, which were intermixed between the male media ideal ads.

Food stimulus. A chocolate-flavoured soy milk was used as the food stimulus. The chocolate milk was poured into three identical 532 ml red plastic cups five minutes prior to the participant's arrival. Each cup was filled with 500 ml, i.e., two servings, of the chocolate milk and was presented with its own label, either A, B, or C, and its nutritional information which was taken from the packaging. Each label had identical nutritional information with the exception of the protein content, such that the protein content

associated with each cup was either 5g, 15g, or 25g per serving (Appendix R). The labels associated with each milkshake were presented in randomized order for each participant. After the participant completed the taste test, the remaining liquid in each cup was measured and this amount was subtracted from 500 ml to determine millilitres consumed.

Measures. The measures used were all identical to those used in Study 1, with the exception of the muscle-building behaviour, i.e., protein consumption was measured. Two additional measures also were added to the current study, i.e., the Taste Test Questionnaire and Hunger Rating Scale, and are described below.

Criterion variable.

Protein consumption (g/ml). The amount of grams of protein per millilitre was calculated as the total grams of protein consumed in grams divided by the total amount of the beverages consumed in millilitres. First, grams of protein per ml for one serving (250ml) of each beverage was calculated, i.e., g/ml for beverage A was $5\text{g}/250\text{ml} = 0.02$; g/ml for beverage B was $15\text{g}/250\text{ml} = 0.06\text{g/ml}$; g/ml for beverage C was $25\text{g}/250\text{ml} = 0.1$. Total protein consumption in grams then was calculated as the sum of the total ml consumed of each beverage multiplied by grams of protein per ml, i.e., total ml consumed of beverage A * 0.02g/ml + total ml consumed of beverage B * 0.06 g/ml + total ml consumed of beverage C * 0.1 g/ml. Lastly, total protein consumption in grams was divided by total millilitres consumed of beverages A, B, and C to calculate grams of protein per millilitre.

Measures to enhance credibility of the cover story.

Taste Test Questionnaire. The taste test questionnaire was adapted from Guerrieri et

al. (2007) and used to increase the credibility of the cover story and ensure participants consume each protein milkshake. The measure asks participants to rate each milkshake on creaminess, sweetness, palatability, and fragranciness using a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*very much*). Participants also indicate the degree to which they would drink the milkshake again, as well as buy it. Lastly, participants are asked to indicate which of the three milkshakes has a slightly different taste compared to the other two when rating the third and last milkshake (Appendix S).

Hunger Rating Scale. The Hunger Rating Scale is a visual analogue scale that measures how participants are feeling at this moment on a number of dimensions, including hunger, thirst, fullness, and nausea (Scoboria, Mazzoni, & Jarry, 2008). They are asked to indicate same by “putting a vertical line through the appropriate part of the continuum scale.” The continuum scale is anchored on the left-hand side with “not at all” and on the right-hand side with “extremely” (Appendix T).

Design. Similar to Study 1, the current study was a pre-post test experimental design. The predictor variables included experimental condition (colour disclaimer vs. muscularity disclaimer) and state physique comparison and general social comparison tendency. The criterion variables included relevance, attainability, muscle dissatisfaction, physical condition esteem, negative affect, and protein consumption (g/ml).

A power analysis was conducted based on a conservative effect size of 0.10 and an alpha level of $p < .05$ to obtain statistical power at the recommended .80 level (Cohen, 1988). The analysis revealed that a minimum sample size of 99 is required.

Table 21 outlines the variables used in Study 2, and their function in the statistical analyses.

Table 21

Variables Used in Study 2 and Their Function in the Statistical Analyses

Predictor Variables
State Physique Comparison measure in the Consumer Response Questionnaire
Iowa Netherlands Comparison Orientation Measure
Criterion Variables
Post-exposure Drive for Muscularity Scale: Muscularity-Oriented Body Image Attitudes Subscale
Post-exposure Body Esteem Scale: Physical Condition Subscale
Post-exposure Positive and Negative Affect Schedule – Extended Form: Negative Affect Subscale
Potential Covariates
Baseline Drive for Muscularity Scale: Muscularity-Oriented Body Image Attitudes Subscale
Baseline Body Esteem Scale: Physical Condition Subscale
Baseline Positive and Negative Affect Schedule – Extended Form: Negative Affect Subscale
Beck Depression Inventory-II
Body Mass Index
Exercise Motivations Inventory-2: Weight Management Subscale Appearance Subscale
Rosenberg Self-Esteem Scale
Measures to ensure equivalence between experimental groups
Eating Attitudes Test-26
Demographic Questionnaire
Fillers
Revised Self-Monitoring Scale
Self-Consciousness Scale

Procedure

The procedure was identical to that used in Study 1, with a few important differences, including the type of advertisements viewed, the manipulation of relevance, and the behavioural measure. These differences are described below.

Similar to Study 1, Study 2 was presented as two separate studies. Participants completed on-line questionnaires for “Study One” (Appendix U). Ten or more days after completing these measures participants came into the lab and completed “Study Two.” The mean number of days that elapsed between participants’ completion of “Study One” and “Study Two” was 18.4, ranging from 10 to 51 days.

Upon arriving to the lab, participants were told the alleged purpose of the study and read and signed the consent form (Appendix V). Twelve advertisements were presented in counterbalanced order in a power point presentation. All of the participants viewed the same 12 advertisements (seven media ideal ads and five product ads), however, the digital alteration said to have been made to the images was manipulated. Specifically, participants were randomly assigned to one of two conditions (colour disclaimer vs. muscularity disclaimer) in accordance with a computer-generated list of numbers, 1 and 2, in randomized order. In the colour disclaimer condition, the experimenter verbally described the ads as digitally altered via Photoshop, such that the colours of the ad were intensified. Then participants viewed the aforementioned disclaimer message on the computer screen. In the muscularity disclaimer condition, the experimenter verbally described the ads as digitally altered via Photoshop, such that the model’s muscles were made to appear larger. Then participants viewed the aforementioned disclaimer message

on the computer screen. Thereafter, the procedure was identical to that of Study 1, except for the behavioural task, which is described below.

Following completion of the advertisement rating task and questionnaires, the experimenter returned and asked the participant if he would be willing to provide some information for another student conducting a separate study. Participants were told that the student was conducting a marketing taste test study and was interested in their opinion regarding a new milkshake. All but two of the participants agreed to take part in this separate study. Participants who agreed were escorted by the experimenter down the hall to another lab. Participants were seated individually at a table and the confederate described the purpose of the study. The confederate explained that prior to launching a new milkshake to the public, a marketing firm was conducting a taste test in which people were to taste three new and different milkshakes and rate them on a number of dimensions. Participants then were asked to complete the Hunger Rating Scale. Next, the confederate presented the participant with three “different” chocolate milkshakes labelled as A, B, or C, a cup of water, and the Taste Test Questionnaire.

Participants were given instructions for the taste test before being left alone to complete this phase of the experiment, as per Aubie and Jarry (2009). They were instructed to begin by taking a sip of water to cleanse their palate and then taste milkshake A. They were told to drink as much of this milkshake as necessary to complete their ratings and that once they were satisfied with their ratings of milkshake A, they were to take another sip of water and proceed to milkshake B following the same protocol as they had for milkshake A. Participants were told that once they move on to

tasting milkshake B, they were not to go back and change their ratings of milkshake A. After rating milkshake B, they were to take another sip of water and continue on to milkshake C. Participants were told that they had 10 minutes to complete their ratings using the Taste Test Questionnaire (Guerrieri et al., 2007).

After this explanation, the confederate left the room while informing participants on the way out that she would return in approximately ten minutes. She also told them that once they have completed their ratings, they should feel free to help themselves to as much of the milkshakes as they would like, as left over milkshakes will be discarded anyway. After exactly ten minutes, the confederate returned and removed the milkshakes and thanked participants for taking part in the study. The confederate then escorted them back to the original lab to receive documentation indicating that they completed both studies. Similar to Study 1, upon consent, the participant's height and weight were measured (Appendix W). All but two of the participants agreed. Debriefing procedures were identical to those described in Study 1.

Results

Approach to data analyses. All analyses were performed using SPSS for Windows, Version 20.0. Reliability and descriptive analyses were performed on all variables and a one-way analysis of variance (ANOVA) was used to ensure that randomization had been successful and that participants did not significantly differ on any of the covariates or predictor variables between experimental conditions. Finally, the remainder of the hypotheses were tested using a series of hierarchical linear regressions, as will be described below.

Missing data analysis. There were 56 missing values distributed randomly across the participants' scores that were replaced with the participant's own mean score on the subscale to which the missing value belonged (Tabachnick & Fidell, 2007). For the two participants who did not consent to have their height and body weight measured, a dichotomous variable was computed (missing BMI or not) to control for any effect that this might have had on the results. This variable was not significantly correlated with any variables ($ps > .94$). Given the high correlation between self-reported and objectively measured height and body weight in the current study ($r = .87, p < .001$), self-reported height and weight were used to calculate BMI for these two participants.

Assumption testing and reliability analyses. Descriptive analyses were performed on each covariate, criterion, and predictor variable to check for outliers and univariate normality. Univariate normality was assessed with the Kolmogorov-Smirnov test and inspection of the histograms. Outliers were identified via inspection of the histograms and if standardized residual scores were greater than 3.29 (Tabachnick & Fidell, 2007). Body mass index, depression, eating pathology, trait social comparison tendency, baseline and post physical condition esteem, and post muscle dissatisfaction scores were significantly non-normally distributed and had 15 outliers in total. Univariate outliers were Winsorized, whereby they were replaced with the nearest, non-outlying value in the variable to which they belonged (Tabachnick & Fidell, 2007). After outliers were reduced the Kolmogorov-Smirnov tests were no longer significant ($ps > .08$), i.e., the data were normally distributed.

Next, the assumptions of regression were tested, specifically, linearity, normally

distributed errors, no perfect multicollinearity, homoscedasticity, and independence of errors. Multivariate outliers were assessed through examining Mahalanobis distances, resulting in two multivariate outliers being identified (D^2 of $p < 0.001$) and removed from the regression analyses. After removal of the multivariate outliers, the assumptions of regression all were met. Removal of these outliers also altered the results of the regression, indicating that they were in fact influential cases, so they were excluded from the final regression model (Tabachnick & Fidell, 2007). Thus, the final number of cases used in the regression analyses was 102. Lastly, internal reliability coefficients were calculated for each measure. Table 22 displays the reliability coefficients, as well as the overall means, standard deviations, and ranges for all of the measures. The reliability analyses yielded coefficients ranging from 0.64 to 0.91. Correlations between each covariate, predictor, and criterion variable are presented in Table 23.

Table 22

Study 2: Descriptive Statistics for Participant Characteristics and Study Variables by Disclaimer Type

Variable	Colour Disclaimer (n = 52)		Muscularity Disclaimer (n =52)		Range	Cronbach's Alpha
	M	SD	M	SD		
Body mass index	24.52	3.69	24.38	3.85	17 - 30	-
Physical activity: Hrs/week	5.17	3.87	4.44	3.43	0 - 15	-
Media use: Hrs/week						-
Television	5.82	5.21	5.97	4.96	0 - 24	-
Internet	19.38	15.76	21.02	17.02	2 - 100	-
Social networking	5.40	4.26	6.75	5.14	0 - 33	-
Video games	6.19	4.03	6.07	3.68	0 - 23	-
Comic books	0.06	0.09	0.07	0.10	0 - 2	-
Magazines: Min/week						-
Fitness/Health	18.08	5.20	19.98	5.63	0 - 70	-
Sports	31.01	8.98	31.79	10.59	0 - 45	-
Lifestyle/Fashion	13.67	8.60	12.00	7.84	0 - 30	-
Electronics	28.76	9.19	30.14	12.72	0 - 40	-
Automobile	8.17	2.55	10.78	3.64	0 - 20	-
Music	15.42	6.27	15.00	7.38	0 - 40	-
Performance-enhancing substance use:						-
Times/month						-
Stimulants	2.84	1.01	1.71	1.38	0 - 4	-
Creatine	1.68	0.24	0.90	0.31	0 - 4	-
Protein	4.47	1.51	5.53	2.29	0 - 30	-
Vitamins	10.96	5.25	9.37	4.33	0 - 30	-
Relevance	5.47	1.79	6.49	1.90	1 - 9	-
Attainability	5.98	1.77	4.04	1.92	1 - 9	-

Variable	Colour Disclaimer (n = 52)		Muscularity Disclaimer (n =52)		Range	Cronbach's Alpha
	M	SD	M	SD		
Depression	8.94	7.53	10.76	6.94	0 - 31	.90
Trait self-esteem	21.37	5.00	19.75	5.62	5 - 30	.89
Eating pathology	6.80	4.51	8.00	4.90	0 - 19	.64
Exercise motivations						
Weight management	8.98	6.23	9.75	6.19	0 - 20	.88
Appearance	11.35	4.82	13.12	3.25	0 - 20	.79
Social comparison						
State	5.83	1.21	7.17	1.20	1 - 9	-
Trait	37.41	6.67	39.04	5.95	23 - 55	.82
Muscle dissatisfaction						
Baseline	25.11	9.31	25.12	7.81	7 - 42	.90
Post-exposure	24.00	7.32	26.93	6.58	9 - 38	.89
Physical condition esteem						
Baseline	40.65	8.21	41.38	10.49	14 - 59	.91
Post-exposure	41.29	9.19	40.64	10.64	14 - 54	.90
Negative affect						
Baseline	10.41	5.32	12.09	5.12	10 - 32	.84
Post-exposure	11.92	4.80	14.79	5.55	11 - 30	.81
Protein consumption (g/ml)	0.05	0.01	0.07	0.01	0.04 – 0.09	-

Table 23

Study 2: Summary of Intercorrelations between Covariates, Criterion, and Predictor Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Body Mass Index	-															
2. Depression	.13	-														
3. Trait self-esteem	-.04	-.67**	-													
4. Weight mgmt exercise motives	.57**	.14	-.05	-												
5. Appearance exercise motives	.24*	.11	-.10	.54**	-											
6. State comparison	.07	.18	-.31**	.29**	.39**	-										
7. Trait comparison	.04	.17	-.28**	.19	.36**	.41**	-									
8. Relevance	.07	.15	-.22*	.16	.17	.29**	.11									
9. Attainability	.12	.16	-.21*	.22*	.20*	.29**	.12	.47**								
10. Pre Muscle Dissatisfaction	-.16	.14	-.25**	-.06	.36**	.32**	.40**	.09	-.10	-						
11. Post Muscle Dissatisfaction	-.20*	.28**	-.34**	-.01	-.36**	.40**	.35**	.22*	-.27**	.80**	-					
12. Pre Physical Condition Esteem	-.35**	.15	.07	-.13	.12	.27**	-.26**	-.22*	.20*	.07	-.13	-				
13. Post Physical Condition Esteem	-.23*	.04	.05	-.16	.18	.14	-.10	-.16	.10	.03	-.04	.72**	-			
14. Pre Negative Affect	-.01	.29**	-.27**	.01	.21*	.05	.08	.15	-.15	.22*	.16	-.21	-.15	-		
15. Post Negative Affect	-.04	.34**	-.21*	.05	.23*	.14	.08	.11	-.20*	.19	.19	-.18	-.11	.66**	-	
16. Protein consumption (g/ml)	.19	-.01	-.05	.21	.08	.18	-.07	.04	-.15	.22*	.24*	.14	.11	.17	.18	-

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

Participant equivalence between experimental conditions. To determine equivalence of subject variables between experimental conditions, a one-way ANOVA was conducted on participant characteristics, covariate, and predictor variables. There were no significant differences between participants in the colour disclaimer and muscularity disclaimer conditions in these variables ($ps > .11$; see Table 22) with the exception of appearance exercise motivation. Specifically, participants in the muscularity disclaimer condition reported greater appearance exercise motivations ($M = 13.12, SD = 3.25$) than did those in the colour disclaimer condition ($M = 11.35, SD = 4.82$), $F_{(1,102)} = 4.74, p = .03$. Appearance exercise motivation was significantly correlated with the criterion variables and as such, was tested a covariate. Similar to Study 1, BMI, depression, trait self-esteem, and weight management exercise motivation also were tested as covariates.

Credibility of the cover story. Upon completion of the study and prior to debriefing, the credibility of the cover story was assessed through post-experimental questions. First, participants were asked what they thought the study was about. Participants' responses revealed that they did not know the true purpose of the study and furthermore, the majority of participants recited the cover story to the experimenter. Next, they were informed of the true purpose of the study and asked if they had any suspicions about the study hypotheses and when those suspicions arose. None of the participants reported that they knew or guessed the specific hypotheses of the study. Next, participants were asked whether they had any suspicion that the study was an investigation of male body image. A total of 22 participants (colour disclaimer = 9, muscularity disclaimer = 13) reported

that they suspected that the study was about male body image and suspected same while completing the post-manipulation questionnaires, specifically those asking about body image satisfaction. As such, a dichotomous variable was computed (knowledge of body image or not) to control for any effect that this knowledge might have had on the results. This variable was not significantly correlated with any of the other study variables ($ps > .81$).

Participants also were asked whether they suspected that “Study One” and “Study Two” were related. Six participants (colour disclaimer = 2, muscularity disclaimer = 4) reported suspicion that the two studies were related. A dichotomous variable was computed (suspicion of relationship between “Study One” and “Study Two” or not) to control for any effect that this knowledge might have had on the results. This variable was not significantly correlated with any variables ($ps > .86$). Finally, participants were asked whether they suspected that the marketing taste test was related to the current study. Eight participants reported suspecting that the taste test was related to the study. Again, a dichotomous variable was computed (knowledge of relationship between “Study Two” and taste test or not) to control for any effect that this knowledge might have had on the results. This variable was not significantly correlated with any variables ($ps > .77$). Given that suspicion was unrelated to any of the study variables, the above mentioned cases were retained in the analyses.

Participants’ appraisal of the experimental and control images

Equivalence of the experimental and control images. A one-way ANOVA was conducted to test whether there were any significant differences between the

experimental conditions in participants' appraisal of the model's attractiveness, muscularity, as well as the extent to which the model was representative of the male media ideal. The results showed no significant difference in muscularity ($p = .92$) and attractiveness ($p = .17$) between conditions. However, there was a significant difference between experimental conditions in the extent to which the model was seen as representative of the male media ideal, $F_{(1,102)} = 5.07, p = .03$. The models in the muscularity disclaimer condition were rated as more representative of the male media ideal ($M = 6.88, SD = 1.81$) than were those in the colour disclaimer condition ($M = 5.08, SD = 1.80$). Representativeness of the male media ideal was not significantly related to any of the criterion variables and therefore, was not included as a covariate. Table 24 displays the means and standard deviations of participants' appraisals of the experimental images.

Table 24

Study 2: Means and Standard Deviations for Participant's Appraisals of the Models Depicted in the Colour Disclaimer and Muscularity Disclaimer Conditions

Variable	Colour Disclaimer (n = 52)		Muscularity Disclaimer (n = 52)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Attractiveness	6.73	1.25	7.06	1.20
Muscularity	7.67	0.97	7.69	0.88
Representative of male media ideal	5.08	1.80	6.88	1.81

Main analyses. The analyses for the current study were identical to those used in Study 1. Specifically, a hierarchical multiple regression analysis was conducted to examine whether relevance varied as a function of experimental condition and state physique comparison, controlling for the potential covariates BMI, depression, trait self-esteem, weight management exercise motivations, and appearance exercise motivations. Each predictor variable was zero-centered prior to performing the regression analysis (Tabachnick & Fidell, 2007). In the first step, potential covariates were entered. Covariates that did not contribute significantly to the model were removed, and each regression was conducted again including only the significant covariates (Field, 2005). In the second step, the predictors state physique comparison and the dummy-coded experimental condition (colour disclaimer = 0, muscularity disclaimer = 1) were entered. In the third and final step, the two-way interaction between experimental condition and state physique comparison was entered. Significant interactions were explored by calculating two regression equations, one for each level of state physique comparison. Relevance was regressed on experimental condition, while controlling for significant covariates (Aiken & West, 1991). Next, as recommended by Aiken and West, the relevance values were calculated for each regression equation using conditional values for each experimental condition. These predicted values were plotted for each level of state physique comparison. Simple slopes analysis was then performed following the procedures outlined by Aiken and West (1991). These analyses were repeated for each of the remaining criterion variables, i.e., attainability, muscle dissatisfaction, physical condition esteem, negative affect, and protein consumption (g/ml). Table 25 displays the

means and standard deviations of the criterion variables stratified by each predictor
(disclaimer type and state physique comparison).

Table 25

Study 2: Means and Standard Deviations of the Criterion Variables as a Function of Disclaimer Type and State Physique Comparison

Variables	Low State Physique Comparison		High State Physique Comparison	
	Colour Disclaimer	Muscularity Disclaimer	Colour Disclaimer	Muscularity Disclaimer
<i>N</i>	28	22	23	29
Relevance	5.19 (1.80)	6.11 (1.91)	5.75 (1.82)	6.87 (1.77)
Attainability	5.59 (1.68)	3.86 (1.90)	6.28 (1.81)	4.22 (1.25)
Muscle dissatisfaction	21.57 (7.77)	25.82 (7.04)	26.44 (6.87)	28.03 (6.12)
Physical condition esteem	41.89 (10.17)	41.50 (11.81)	40.69 (8.21)	39.79 (9.89)
Negative affect	11.65 (5.46)	14.62 (5.50)	12.19 (4.13)	14.95 (5.61)
Amount of protein consumed (g/ml)	0.04 (0.01)	0.06 (0.01)	0.05 (0.01)	0.07 (0.01)

Relevance. It was hypothesized that the models' physique would be rated as less relevant in the muscularity disclaimer condition than in the colour disclaimer condition.

In this regression, predictors of relevance were examined (see Table 26). None of the potential covariates were significant and therefore, none were retained in the final regression model. Experimental condition and state physique comparison contributed significantly to the model, $\Delta F_{(2,99)} = 5.81, p = .01$, and only accounted for 8.9% of the variance in relevance. Contrary to predictions, the models' physique was rated as more self-relevant in the muscularity disclaimer condition than in the colour disclaimer condition. The squared partial correlation between experimental condition and relevance was .09, a small effect size. State physique comparison did not significantly predict relevance ratings, $p = .41$. Adding the interaction term did not contribute significantly to the model, $\Delta F_{(1,98)} = 0.82, p = .77$, and only accounted for an additional 0.2% of the variance.

Table 26

Study 1: Effect of Disclaimer Type and State Physique Comparison on Relevance

(*N*=102)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.22	5.98	-	27.18	.00
	Condition	0.37	1.12	0.27	2.99	.01
	State comparison	0.10	0.09	0.11	0.90	.41
II.	Constant	0.22	5.98	-	27.18	.00
	Condition	0.36	1.10	0.27	3.01	.01
	State comparison	0.10	0.09	0.10	0.88	.44
	Condition X State comparison	0.11	0.11	0.14	0.91	.77

Attainability. It was hypothesized that the models' physique would be rated as less personally attainable in the muscularity disclaimer condition than in the colour disclaimer condition.

In this regression, predictors of attainability were examined (see Table 27). None of the potential covariates were significant. Experimental condition and state physique comparison contributed significantly to the model, $\Delta F_{(2,99)} = 26.51, p < .001$, and accounted for 33.6% of the variance in attainability. As predicted, the models' physique was rated as less personally attainable in the muscularity disclaimer condition than in the colour disclaimer condition. The squared partial correlation between experimental condition and attainability was .23, a medium effect size. Attainability ratings did not depend on extent to state physique comparison, $p = .25$. Adding the interaction term did not contribute significantly to the model, $\Delta F_{(1,98)} = 0.56, p = .54$, and only accounted for an additional 0.1% of the variance.

Table 27

Study 1: Effect of Disclaimer Type and State Physique Comparison on Attainability

(*N*=102)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.24	4.31	-	17.58	.00
	Condition	0.36	-1.40	-0.34	-3.90	.00
	State comparison	0.11	0.12	0.10	0.99	.25
II.	Constant	0.25	4.44	-	17.70	.00
	Condition	0.34	-1.41	-0.36	-3.99	.00
	State comparison	0.12	0.11	0.11	1.09	.22
	Condition X State comparison	0.08	-0.06	-0.02	-0.75	.54

Muscle dissatisfaction. It was hypothesized that men in the muscularity disclaimer condition would report lower muscle dissatisfaction than would men in the colour disclaimer condition. State physique comparison was expected to moderate this effect such that among men who engaged in greater state physique comparison, those in the muscularity disclaimer condition were expected to report lower muscle dissatisfaction compared to those in the colour disclaimer condition. Men who engaged in less state physique comparison were expected to be unaffected by the type of images that they viewed.

In this regression, predictors of muscle dissatisfaction were examined (see Table 28). With only the significant covariates baseline muscle dissatisfaction and trait self-esteem, the model was significant, $F_{(2,99)} = 98.44, p < .001$, and accounted for 70.8% of the variance. Experimental condition and state physique comparison together added 5.1% to the variance, $\Delta F_{(2,97)} = 8.06, p < .001$. However, the effect of condition was in the opposite direction to what was predicted, such that men in the muscularity disclaimer condition reported greater muscle dissatisfaction than did those in the colour disclaimer condition. The squared partial correlation between experimental condition and muscle dissatisfaction was .11, a small effect size. The addition of the interaction term in Step 3 accounted for an additional 3.8% of the variance, $\Delta F_{(2,95)} = 5.80, p = .02$. Tests of the simple slopes indicated that, contrary to predictions, among men who engaged in greater state physique comparison, those in the muscularity disclaimer condition reported greater muscle dissatisfaction compared to those in the colour disclaimer condition, $\beta = .19, t(97) = 2.09, p = .04$. Similarly, among men who engaged in less state physique comparison,

those in the muscularity disclaimer condition reported greater muscle dissatisfaction compared to those in the colour disclaimer condition, $\beta = .23$, $t(97) = 3.12$, $p < .001$ (see Figure 4). The squared partial correlation between the interaction term and muscle dissatisfaction was .06, a small effect size.

Table 28

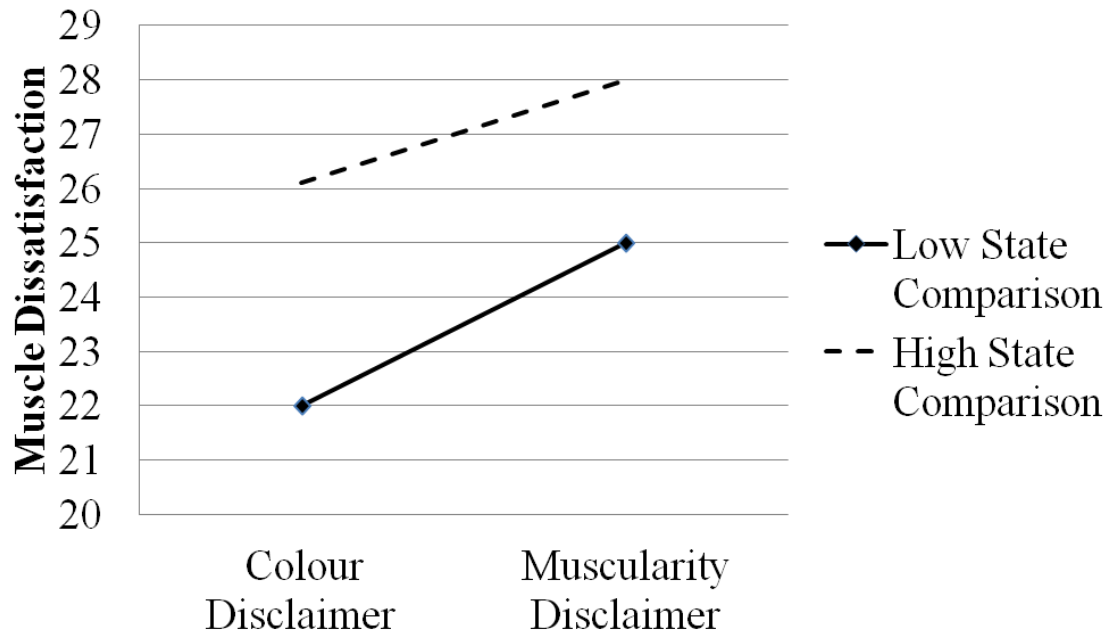
*Study 2: Effect of Disclaimer Type and State Physique Comparison on Muscle**Dissatisfaction (N=102)*

		<i>SE b</i>	<i>B</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.43	25.09	-	58.38	.00
	Baseline muscle dissatisfaction	0.05	0.66	0.77	12.74	.00
	Trait self-esteem	0.09	-0.21	-0.15	-2.45	.01
II.	Constant	0.59	23.73	-	39.98	.00
	Baseline muscle dissatisfaction	0.05	0.65	0.75	12.63	.00
	Trait self-esteem	0.09	-0.17	-0.13	-1.99	.04
	Condition	0.87	2.76	0.18	3.18	.00
	State comparison	0.11	0.14	0.07	1.31	.10
III.	Constant	0.60	24.02	-	40.13	.00
	Baseline muscle dissatisfaction	0.05	0.65	0.75	13.01	.00
	Trait self-esteem	0.08	-0.16	-0.10	-1.82	.05
	Condition	0.85	2.81	0.18	3.29	.00
	State comparison	0.14	0.35	0.21	2.58	.02
	Condition X State comparison	0.20	-0.47	-0.17	-2.41	.02

Figure 4

Study 2: Muscle Dissatisfaction as a Function of Disclaimer Type and State Physique

Comparison



Physical condition esteem. It was hypothesized that men in the muscularity disclaimer condition would report greater physical condition esteem than would men in the colour disclaimer condition. State physique comparison was expected to moderate this effect such that among men who engaged in greater state physique comparison, those in the muscularity disclaimer condition were expected to report greater physical condition esteem compared to those in the colour disclaimer condition. Men who engaged in less state physique comparison were expected to be unaffected by the type of images.

In this regression, predictors of physical condition esteem were examined (see Table 29). With only the significant covariate baseline physical condition esteem, the model was significant, $F_{(1,100)} = 138.06, p < .001$, and accounted for 58.0% of the variance. Contrary to predictions, the addition of experimental condition and state physique comparison in Step 2 did not contribute significantly to the model, $\Delta F_{(2,98)} = .45, p = .51$, and only accounted for an additional 1.9% of the variance. Similarly, adding the interaction term in Step 3 did not contribute significantly to the model, $\Delta F_{(1,97)} = 0.34, p = .58$, and only accounted for an additional 1.7% of the variance.

Table 29

Study 2: Effect of Disclaimer Type and State Physique Comparison on Physical Condition Esteem (N=102)

		<i>SE b</i>	<i>B</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.75	41.07	-	54.59	.00
	Baseline physical condition esteem	0.07	0.77	0.76	11.75	.00
II.	Constant	0.93	43.60	-	44.96	.00
	Baseline physical condition esteem	0.06	0.80	0.79	12.50	.00
	Condition	0.46	-0.86	-0.11	-1.72	.31
	State comparison	0.16	0.08	0.03	0.47	.64
II.	Constant	0.96	43.72	-	44.09	.00
	Baseline physical condition esteem	0.07	0.80	0.78	12.29	.00
	Condition	0.49	-0.83	-0.10	-1.68	.32
	State comparison	0.22	0.16	0.07	0.73	.47
	Condition X State comparison	0.32	-0.18	-0.05	-0.58	.58

Negative affect. Men in the muscularity disclaimer condition were expected to report lower negative affect than would men in the colour disclaimer condition. State physique comparison was expected to moderate this effect such that among men who engaged in greater state physique comparison, those in the muscularity disclaimer condition would report lower negative affect compared to those in the colour disclaimer condition. No differences were expected among men who engaged in less state physique comparison.

In this regression, predictors of negative affect were examined (see Table 30). With only the significant covariates baseline negative affect and trait self-esteem, the model was significant, $F_{(2,99)} = 68.87, p < .001$, and accounted for 48.3% of the variance. Experimental condition and state physique comparison together added 5.5% to the variance already accounted for by the covariates, $\Delta F_{(2,97)} = 6.18, p = .03$. Contrary to predictions, men in the muscularity disclaimer condition reported greater negative affect than did those in the colour disclaimer condition. The squared partial correlation between experimental condition and negative affect was .05, a small effect size. Lastly, contrary to predictions, the addition of the interaction term in Step 3 did not contribute significantly to the model, $\Delta F_{(2,95)} = 2.19, p = .08$, and only accounted for an additional 2.1% of the variance.

Table 30

Study 2: Effect of Disclaimer Type and State Physique Comparison on Negative Affect

(*N*=102)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.41	13.30	-	32.44	.00
	Baseline negative affect	0.08	0.66	0.66	8.70	.00
	Trait self-esteem	0.10	-0.21	-0.19	-1.97	.04
II.	Constant	0.35	12.31	-	34.51	.00
	Baseline negative affect	0.08	0.64	0.63	8.43	.00
	Trait self-esteem	0.10	-0.21	-0.19	-1.91	.04
	Condition	0.66	1.86	0.20	2.79	.03
	State comparison	0.10	0.07	0.05	0.67	.51
III.	Constant	0.35	12.12	-	33.97	.00
	Baseline negative affect	0.08	0.66	0.66	8.61	.00
	Trait self-esteem	0.10	-0.19	-0.20	-1.95	.03
	Condition	0.65	1.78	0.19	2.71	.03
	State comparison	0.13	-0.11	-0.09	-0.85	.40
	Condition X State comparison	0.25	0.39	0.20	1.48	.08

Protein consumption (g/ml). It was hypothesized that men in the muscularity disclaimer condition would consume less grams of protein per millilitre than would men in the colour disclaimer condition. State physique comparison was expected to moderate this effect such that among men who engaged in greater state physique comparison, those in the muscularity disclaimer condition would consume less grams of protein per millilitre compared to those in the colour disclaimer condition. No significant differences in grams of protein per millilitre consumed were expected among men who engaged in less state physique comparison.

In this regression, predictors of protein consumption (g/ml) were examined (see Table 31). None of the potential covariates were significant. As predicted, the addition of experimental condition and state physique comparison contributed significantly to the model, $\Delta F_{(2,99)} = 5.32, p = .03$, and accounted for 9.2% of the variance. However, unexpectedly, men in the muscularity disclaimer condition consumed more grams of protein per millilitre than did men in the colour disclaimer condition. The squared partial correlation between experimental condition and protein consumption (g/ml) was .07, a small effect size. Contrary to predictions, the addition of the interaction term did not contribute significantly to the model, $\Delta F_{(1,98)} = 0.25, p = .62$, and only accounted for an additional 0.2% of the variance.

Table 31

Study 2: Effect of Disclaimer Type and State Physique Comparison on Grams of Protein per Millilitre Consumed (N=102)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.001	0.06	-	42.62	-
	Condition	0.002	0.006	0.22	2.35	.03
	State comparison	0.00	0.00	0.16	1.65	.10
II.	Constant	0.001	0.06	-	41.47	.00
	Condition	0.002	0.006	0.23	2.35	.03
	State comparison	0.00	0.001	0.22	1.55	.13
	Condition X State comparison	0.00	0.00	-0.07	-0.50	.62

Exploratory Analyses

The analyses described above were repeated to test whether general social comparison tendency moderated the relationship between disclaimer type and relevance, attainability, muscle dissatisfaction, physical condition esteem, negative affect, and protein consumption (g/ml). Table 32 displays the means and standard deviations of the criterion variables stratified by each predictor variable (disclaimer type and general social comparison tendency).

Table 32

Study 2: Means and Standard Deviations of Criterion Variables as Function of Disclaimer Type and General Social

Comparison Tendency

Variables	Low General Social Comparison		High General Social Comparison	
	Colour Disclaimer	Muscularity Disclaimer	Colour Disclaimer	Muscularity Disclaimer
<i>n</i>	31	22	20	29
Relevance	5.34 (1.88)	6.36 (1.96)	5.60 (1.91)	6.62 (1.78)
Attainability	5.92 (1.89)	3.53 (1.99)	6.04 (1.62)	4.55 (1.52)
Muscle dissatisfaction	20.48 (7.17)	26.14 (6.42)	27.15 (7.03)	27.79 (6.68)
Physical condition esteem	39.74 (10.37)	41.27 (12.94)	41.80(9.64)	39.69 (8.74)
Negative affect	12.35 (5.18)	13.72 (5.82)	13.55 (4.87)	13.79 (5.35)
Amount of protein consumed (g/ml)	44.93 (17.41)	56.96 (16.16)	39.55 (14.31)	51.66 (15.53)

Relevance. In this regression, predictors of relevance were examined (see Table 33). None of the potential covariates were significant. Experimental condition and general social comparison tendency contributed significantly to the model, $\Delta F_{(2,99)} = 5.79, p = .01$, and only accounted for 8.9% of the variance. Contrary to predictions, the models' physique was rated as more self-relevant in the muscularity disclaimer condition than in the colour disclaimer condition. The squared partial correlation between experimental condition and relevance was .09, a small effect size. General social comparison tendency did not significantly predict relevance ratings, $p = .44$. Adding the interaction term did not contribute significantly to the model, $\Delta F_{(1,98)} = 0.92, p = .39$, and only accounted for an additional 0.1% of the variance.

Table 33

Study 1: Effect of Disclaimer Type and General Social Comparison Tendency on Relevance (N=102)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.22	5.98	-	27.18	.00
	Condition	0.37	1.13	0.27	2.99	.01
	General comparison tendency	0.03	0.03	0.09	0.97	.44
II.	Constant	0.22	5.98	-	27.18	.00
	Condition	0.36	1.09	0.27	3.01	.01
	General comparison tendency	0.03	0.03	0.09	0.96	.44
	Condition X General comparison tendency	0.11	0.10	0.12	0.96	.39

Attainability. In this regression, predictors of attainability were examined (see Table 34). None of the potential covariates were significant. Experimental condition and general social comparison tendency contributed significantly to the model, $\Delta F_{(2,99)} = 24.21, p < .001$, and accounted for 32.3% of the variance. As predicted, the models' physique was rated as less personally attainable in the muscularity disclaimer condition than in the colour disclaimer condition. The squared partial correlation between experimental condition and attainability was .23, a small effect size. General social comparison tendency did not significantly predict attainability ratings, $p = .62$. Adding the interaction term did not contribute significantly to the model, $\Delta F_{(1,98)} = 0.44, p = .62$, and only accounted for an additional 0.1% of the variance.

Table 34

Study 1: Effect of Disclaimer Type and General Social Comparison Tendency on Attainability (N=102)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.26	4.05	-	15.57	.00
	Condition	0.37	-1.91	-0.46	-5.17	.00
	General comparison tendency	0.03	0.02	0.06	0.62	.62
II.	Constant	0.25	4.10	-	15.95	.00
	Condition	0.35	-1.41	-0.54	-3.99	.00
	General comparison tendency	0.04	0.04	0.10	0.86	.54
	Condition X General comparison tendency	0.11	-0.05	-0.07	-0.66	.62

Muscle dissatisfaction. In this regression, predictors of muscle dissatisfaction were examined (see Table 35). With the significant covariates baseline muscle dissatisfaction and trait self-esteem, the model was significant, $F_{(2,98)} = 98.44$, $p < .001$, and accounted for 70.8% of the variance. Experimental condition and general social comparison tendency together added 5.8% to the variance already accounted for by the covariates, $\Delta F_{(2,97)} = 7.81$, $p = .001$. Specifically, men in the muscularity disclaimer condition reported greater muscle dissatisfaction than did those in the colour disclaimer condition. The squared partial correlation between experimental condition and muscle dissatisfaction was .13, a small effect size. The addition of the interaction term in Step 3 did not contribute significantly to the model, $\Delta F_{(1,96)} = 0.86$, $p = .36$, and only accounted for 0.4% of the variance.

Table 35

Study 2: Effect of Disclaimer Type and General Social Comparison Tendency on Muscle Dissatisfaction (N=102)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.43	25.09	-	58.38	.00
	Baseline muscle dissatisfaction	0.05	0.66	0.77	12.74	.00
	Trait self-esteem	0.09	-0.21	-0.15	-2.45	.01
II.	Constant	0.59	23.49	-	39.93	.00
	Baseline muscle dissatisfaction	0.05	0.68	0.79	12.88	.00
	Trait self-esteem	0.08	-0.19	-0.13	-2.26	.04
	Condition	0.84	3.20	0.22	3.93	.00
	General comparison tendency	0.07	0.01	0.01	0.12	.90
III.	Constant	0.59	23.53	-	39.84	.00
	Baseline muscle dissatisfaction	0.05	0.70	0.78	12.82	.00
	Trait self-esteem	0.08	-0.18	-0.12	-2.29	.04
	Condition	0.84	3.22	0.22	3.95	.00
	General comparison tendency	0.09	0.07	0.06	0.69	.49
	Condition X General comparison tendency	0.13	-0.12	-0.07	-0.93	.36

Physical condition esteem. In this regression, predictors of physical condition esteem were examined (see Table 36). With only the significant covariate baseline physical condition esteem, the model was significant, $F_{(1,100)} = 138.06, p < .001$, and accounted for 58.0% of the variance in physical condition esteem. The addition of experimental condition and general social comparison tendency did not contribute significantly to the model, $\Delta F_{(2,98)} = .32, p = .59$, and only accounted for an additional 1.5% of the variance in physical condition esteem. Similarly, adding the interaction term did not contribute significantly to the model, $\Delta F_{(1,97)} = 0.04, p = .84$, and only accounted for an additional 0.1% of the variance.

Table 36

Study 2: Effect of Disclaimer Type and General Social Comparison Tendency on Physical Condition Esteem (N=102)

		<i>SE b</i>	<i>B</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.68	41.07	-	54.59	.00
	Baseline physical condition esteem	0.07	0.77	0.76	11.75	.00
II.	Constant	0.93	43.60	-	44.96	.00
	Baseline physical condition esteem	0.06	0.81	0.82	12.66	.00
	Condition	0.41	-1.17	-0.10	-1.59	.31
	General comparison tendency	0.11	-0.14	-0.09	-1.28	.20
III.	Constant	0.91	42.43	-	65.66	.00
	Baseline physical condition esteem	0.07	0.82	0.81	12.73	.00
	Condition	0.89	-1.69	-0.13	-1.63	.23
	General comparison tendency	0.14	-0.11	-0.07	-0.77	.44
	Condition X General comparison tendency	0.21	-0.04	-0.02	-0.20	.84

Negative affect. In this regression, predictors of negative affect were examined (see Table 37). With only the significant covariates baseline negative affect and trait self-esteem, the model was significant, $F_{(2,99)} = 68.87, p < .001$, and accounted for 48.3% of the variance. Experimental condition and general social comparison tendency together added 4.6% to the variance already accounted for by the covariates, $\Delta F_{(2,97)} = 5.04, p = .02$. Specifically, men in the muscularity disclaimer condition reported greater negative affect than did men in the colour disclaimer condition. The squared partial correlation between experimental condition and negative affect was .06, a small effect size. Lastly, the addition of the interaction term in Step 3 did not contribute significantly to the model, $\Delta F_{(1,96)} = 1.27, p = .20$, and only accounted for an additional 1.5% of the variance.

Table 37

Study 2: Effect of Disclaimer Type and General Social Comparison Tendency on Negative Affect (N=102)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.41	13.30	-	32.85	.00
	Baseline negative affect	0.08	0.66	0.66	8.70	.00
	Trait self-esteem	0.10	-0.21	-0.19	-1.97	.04
II.	Constant	0.37	12.27	-	35.48	.00
	Baseline negative affect	0.08	0.64	0.63	8.50	.00
	Trait self-esteem	0.09	-0.20	-0.20	-2.01	.04
	Condition	0.81	2.05	0.20	2.79	.01
	General comparison tendency	0.06	0.01	0.01	0.17	.94
III.	Constant	0.33	12.19	-	35.88	.00
	Baseline negative affect	0.08	0.66	0.66	8.84	.00
	Trait self-esteem	0.08	-0.17	-0.20	-2.04	.04
	Condition	0.80	1.99	0.18	2.50	.01
	General comparison tendency	0.09	-0.12	-0.14	-1.38	.17
	Condition X General comparison tendency	0.23	0.27	0.11	1.13	.20

Protein consumption (g/ml). In this regression, predictors of protein consumption (g/ml) were examined (see Table 38). None of the potential covariates were significant. The addition of experimental condition and general social comparison tendency contributed significantly to the model, $\Delta F_{(2,99)} = 4.80, p = .04$, and accounted for 8.8% of the variance. Specifically, men in the muscularity disclaimer condition consumed more grams of protein per millilitre than did those in the colour disclaimer condition. The squared partial correlation between experimental condition and protein consumption (g/ml) was .07, a small effect size. The addition of the interaction term did not contribute significantly to the model, $\Delta F_{(1,98)} = 0.92, p = .32$, and only accounted for an additional 0.2% of the variance.

See Table 39 and 40 for a summary of the hypotheses, statistical procedures, results, and exploratory analyses for Study 2.

Table 38

Study 2: Effect of Disclaimer Type and General Social Comparison Tendency on Grams of Protein per Millilitre Consumed (N=102)

		<i>SE b</i>	<i>b</i>	β	<i>t</i>	<i>Sig.</i>
Step	Variables Entered					
I.	Constant	0.001	0.06	-	42.95	-
	Condition	0.002	0.006	0.23	2.75	.02
	General comparison tendency	0.00	0.00	0.05	0.55	.59
II.	Constant	0.001	0.06	-	42.71	.00
	Condition	0.002	0.006	0.23	2.75	.02
	General comparison tendency	0.00	0.001	0.03	0.23	.82
	Condition X General comparison tendency	0.00	0.00	0.13	0.96	.32

State physique comparison. The effect of disclaimer type on state physique comparison was examined in exploratory analyses to aid the interpretation of the results. A one-way ANOVA was conducted to test whether conditions differed in state physique comparison. There was a significant difference between experimental conditions in state physique comparison, $F_{(1,100)} = 5.63$, $p = .03$, such that participants engaged in state physique comparison more extensively in the muscularity disclaimer condition ($M = 7.17$, $SD = 1.20$) than in the colour disclaimer condition ($M = 5.83$, $SD = 1.21$).

Table 39

Study 2: Summary of Hypotheses, Statistical Procedures, and Results

Hypothesis	Statistical Procedure(s) - ANOVA and Hierarchical Regression			Results
	Dependent or Criterion Variable	Significant Covariates	Independent or Predictor	
1. The models' physique would be rated as less relevant in terms of domain of comparison in the muscularity disclaimer condition than in the colour disclaimer condition.	Relevance = Regression #1		Experimental Condition	Hypothesis not supported: the models' physique was rated as more relevant in the muscularity disclaimer condition than in the colour disclaimer condition.
2. The models' physique would be rated as less personally attainable in the muscularity disclaimer condition than in the colour disclaimer condition.	Personal Attainability = Regression #2		Experimental Condition	Hypothesis supported: the models' physique was rated as less personally attainable in the muscularity disclaimer condition than in the colour disclaimer condition.
3. Men in the muscularity disclaimer condition would report lower muscle dissatisfaction, greater physical condition esteem, lower negative affect, and consume less grams of protein per millilitre than would men in the colour disclaimer condition.	Muscle Dissatisfaction = Regression #3	Baseline Muscle Dissatisfaction Trait Self-Esteem	Experimental Condition	Hypothesis not supported: men in the muscularity disclaimer condition reported greater muscle dissatisfaction than those in the colour disclaimer condition.
	Physical Condition Esteem = Regression #4	Baseline Physical Condition Esteem	Experimental Condition	Hypothesis not supported: men in the muscularity disclaimer and colour disclaimer conditions did not significantly differ in physical condition esteem.

Statistical Procedure(s) - ANOVA and Hierarchical Regression				
Hypothesis	Dependent or Criterion Variable	Significant Covariates	Independent or Predictor	Results
	Negative Affect = Regression #5	Baseline Negative Affect Trait Self-Esteem	Experimental Condition	Hypothesis not supported: men in the muscularity disclaimer condition reported greater negative affect than did those in the colour disclaimer condition.
	Protein Consumption (g/ml) = Regression #6		Experimental Condition	Hypothesis not supported: men in the muscularity disclaimer condition consumed more grams of protein per millilitre than did those in the colour disclaimer condition.
4. Among men who engaged in greater state physique comparison, those in the muscularity disclaimer condition would report lower muscle dissatisfaction, greater physical condition esteem, lower negative affect, and consume less grams of protein per millilitre compared to those in the colour disclaimer condition. Among men who engaged in less state physique comparison, there would be no significant differences in muscle dissatisfaction, physical condition esteem, negative affect, and grams of protein per millilitre consumed between experimental conditions.	Muscle Dissatisfaction = Regression #3	Baseline Muscle Dissatisfaction Trait Self-Esteem	Experimental Condition X State Physique Comparison	Hypothesis not supported: among men who engaged in greater state physique comparison, those in the muscularity disclaimer condition reported greater muscle dissatisfaction than did those in the colour disclaimer condition. Among men who engaged in less state physique comparison, those in the muscularity disclaimer condition reported greater muscle dissatisfaction than did those in the colour disclaimer condition. This interaction may be spurious.

Statistical Procedure(s) - ANOVA and Hierarchical Regression				
Hypothesis	Dependent or Criterion Variable	Significant Covariates	Independent or Predictor	Results
	Physical Condition Esteem = Regression #4	Baseline Physical Condition Esteem	Experimental Condition X State Physique Comparison	Hypothesis partially supported: among men who engaged in greater state physique comparison, men in the muscularity disclaimer condition did not report greater physical condition esteem than those in the colour disclaimer condition. Among men who engaged in less state physique comparison, experimental condition did not differentially influence physical condition esteem.
	Negative Affect = Regression #5	Baseline Negative Affect Trait Self-Esteem	Experimental Condition X State Physique Comparison	Hypothesis partially supported: among men who engaged in greater state physique comparison, men in the muscularity disclaimer condition did not report lower negative affect than those in the colour disclaimer condition. Among men who engaged in less state physique comparison, experimental condition did not differentially influence negative affect.

Statistical Procedure(s) - ANOVA and Hierarchical Regression				
Hypothesis	Dependent or Criterion Variable	Significant Covariates	Independent or Predictor	Results
	Protein Consumption (g/ml) = Regression #6		Experimental Condition X State Physique Comparison	Hypothesis partially supported: among men who engaged in greater state physique comparison, men in the muscularity disclaimer condition did not consume less grams of protein per millilitre than those in the colour disclaimer condition. Among men who engaged in less state physique comparison, experimental condition did not differentially influence grams of protein per millilitre consumed.

Table 40

Study 2: Summary of Exploratory Analyses, Statistical Procedures, and Results

Exploratory Comparison	Exploratory Analyses - Hierarchical Regression			Results
	Criterion Variable	Significant Covariates	Predictor Variable	
1. Among men high in general social comparison tendency, would men in the muscularity disclaimer condition differ from those in the colour disclaimer condition in muscle dissatisfaction, physical condition esteem, negative affect, and grams of protein per millilitre consumed?	Muscle Dissatisfaction = Regression #9	Baseline Muscle Dissatisfaction Trait Self-Esteem	Experimental Condition X General Social Comparison Tendency	Among men high in general comparison tendency, experimental condition did not differentially influence muscle dissatisfaction.
	Physical Condition Esteem = Regression #10	Baseline Physical Condition Esteem	Experimental Condition X General Social Comparison Tendency	Among men high in general comparison tendency, experimental condition did not differentially influence physical condition esteem.
	Negative Affect = Regression #11	Baseline Negative Affect Trait Self-Esteem	Experimental Condition X General Social Comparison Tendency	Among men high in general comparison, experimental condition did not differentially influence negative affect.
	Protein Consumption (g/ml) = Regression #12		Experimental Condition X General Social Comparison	Among men high in general comparison, experimental condition did not differentially influence grams of protein per millilitre consumed.

Exploratory Analyses - Hierarchical Regression				
Exploratory Comparison	Criterion Variable	Significant Covariates	Predictor Variable	Results
2. Among men low in general social comparison tendency, would men in the muscularity disclaimer condition differ from those in the colour disclaimer condition in muscle dissatisfaction, physical condition esteem, negative affect, and grams of protein per millilitre consumed?	Muscle Dissatisfaction = Regression #9	Baseline Muscle Dissatisfaction Trait Self-Esteem	Experimental Condition X General Social Comparison Tendency	Among men low in general social comparison tendency, experimental condition did not differentially influence muscle dissatisfaction.
	Physical Condition Esteem = Regression #10	Baseline Physical Condition Esteem	Experimental Condition X General Social Comparison Tendency	Among men low in general social comparison tendency, experimental condition did not differentially influence physical condition esteem.
	Negative Affect = Regression #11	Baseline Negative Affect Trait Self-Esteem	Experimental Condition X General Social Comparison Tendency	Among men low in general social comparison tendency, experimental condition did not differentially influence negative affect.
	Protein Consumption (g/ml) = Regression #12		Experimental Condition X General Social Comparison Tendency	Among men low in general social comparison tendency, experimental condition did not differentially influence grams of protein per millilitre consumed.

Discussion

Relevance. Contrary to what was predicted, the media ideal physique was rated as more self-relevant in the muscularity disclaimer condition than in the colour disclaimer condition. These results suggest that informing men of the muscle enhancements said to have been made to images of the media ideal renders the model's physique more self-relevant for the purposes of comparison than does informing them of an appearance irrelevant enhancement made to the image. A number of factors could account for these unexpected findings. First, it is possible that having knowledge of the muscle enhancements increased the salience of cultural norms for muscularity, in other words, the socially prescribed standards of muscularity that men should resemble and that others find attractive. As described earlier, cultural norms for muscularity are pervasive and are conveyed by images of the male media ideal, as well as by messages in the media that suggest that men can and should enhance their muscularity (Baghurst et al., 2006; Burgess et al., 2007; Labre, 2005; Leit et al., 2002; Soulliere & Blair, 2006). Cultural norms for muscularity also are acknowledged and accepted by men (Labre, 2005; Ridgeway & Tylka, 2005). Findings from numerous studies show that men consider society's ideal shape for men to be muscular and deem this ideal to be normal, desirable, and what others, including women, find attractive (Grossbard et al., 2011; Labre, 2005; Oswald & Lindstedt, 2006; Ridgeway & Tylka, 2005). It can be argued that the muscle enhancement said to have been made to the media ideal is consistent with, and reinforces, the cultural norms for muscularity. Thus, knowledge of these enhancements may heighten men's awareness of these norms, as well as the message that such norms are

valued and rewarded in society, making the models' physique more relevant. This interpretation of the findings is supported by the results for men's appraisal of the extent to which the images were representative of the male media ideal. The models in the muscularity disclaimer condition were rated as more representative of the male media ideal than those in the colour disclaimer condition. Therefore, it is possible that knowledge of muscle-related digital alterations to the media ideal increased the salience of the cultural norms for muscularity, rendering these images more relevant for the purposes of comparison.

Another possible interpretation of these findings is that knowledge of the muscle enhancement increased men's desire to look similar to the model, and thereby increased the relevance of the models' physique. Men assigned to the muscularity disclaimer condition were told that the model's muscularity was made larger via a photo editing computer program. This information may have conveyed the implicit message that "bigger is better," making the model's physique more desirable, as well as more self-relevant. The wish to look similar to the model, however, was not measured in this study. In one study of women's desirability ratings of digitally altered media, Bissell (2006) found that compared to women who viewed images of the thin-ideal without a disclaimer label, women who viewed thin-ideal images with a disclaimer label that stated "the image below has been digitally manipulated to enhance the model's appearance" reported a greater desire to look like the altered model. Thus, there is preliminary evidence showing that having knowledge of the digital alteration increases the model's desirability in women. In Bissell's (2005) study, however, the relevance of the model was not

measured. It is unclear whether increased desirability ratings also increased the relevance of the model as a comparison target.

To date, researchers have not examined men's relevance ratings of the male media ideal described as digitally altered. However, women's relevance ratings of digitally altered media were examined in one study (Tiggemann et al., 2013). The findings of the present study are consistent with the results reported in Tiggemann et al. (2013) who found that contrary to predictions, compared to women who viewed unlabelled images of the thin ideal, women who viewed images of the thin ideal with a specific warning label that stated "Warning: This image has been digitally altered to smooth skin tone and slim arms and legs" rated these images as more self-relevant for the purposes of comparison. However, unlike in the current study, the control and experimental images differed in two ways. Specifically, the control images were unlabelled whereas the experimental images were labelled. Furthermore, the experimental images were described as digitally altered and digitally altered in a specific way. Thus, the control images differed from the experimental images both by having a label, and a label specific content. Therefore, in Tiggemann et al.'s (2013) study, it is difficult to isolate what aspect of the disclaimer label influenced women's relevance ratings. In the current study, the images in both the control and experimental conditions had a label and were described as digitally altered. The only difference between conditions was the nature of the claimed alteration: colour versus muscularity.

Despite the aforementioned differences in the manipulation of digital alteration information between the current study and the study conducted by Tiggemann et al.

(2013), the findings of these studies are consistent with the “boomerang effect.” The boomerang effect refers to the paradoxical effect of increased desirability of media images and increased body dissatisfaction in response to knowledge of the digital alterations made to these images. The results of the current study suggest that men may exhibit this boomerang effect in the form of rating the media ideal described as being altered in terms of muscularity as more relevant than images of the media ideal described as altered in terms of colour, an appearance irrelevant dimension in this context. This outcome perhaps reflects greater salience of the cultural norms and/or increased desire to look similar to the model in the muscularity disclaimer condition.

According to Social Comparison Theory the relevance of a domain of comparison influences the likelihood that one will engage in comparison within that domain (Lockwood & Kunda, 1997). Specifically, the more relevant the domain of comparison, the more likely one will engage in comparison on that domain. Consequently, men may be more likely to engage in comparison with images that are described as digitally altered in terms of muscularity, than with images that are described as digitally altered on an appearance irrelevant dimension. The effect of having digital alteration information on the relevance of the media ideal physique is contrary to the goals of media literacy interventions that aim to disrupt social comparison process by reducing the relevance of the media ideal as a comparison target (Ogden & Sherwood, 2008; Yamamiya & Thompson, 2008). A first avenue of research might be to examine whether knowledge of digital alterations made to the male media ideal influences the salience of the cultural norms for muscularity and/or men’s desire to look similar to the male media ideal.

Attainability. As predicted, the media ideal physique in the muscularity disclaimer condition was rated as less personally attainable than in the colour disclaimer condition. A possible explanation of this finding comes from Lockwood and Kunda's (1997) research on the impact of engaging in comparison with outstanding others. As described in Study 1, Lockwood and Kunda (1997) describe factors that influence the degree to which a superior other's level of success is deemed personally attainable. A superior other's success will be deemed personally attainable when this person depicts success in a relevant domain, demonstrates ways of achieving that success, and when one believes they can improve in that domain, i.e., that they eventually could achieve that level of performance.

In the present study, having knowledge that the model's muscularity was enlarged using a photo editing computer program suggests that the model's level of muscularity is artificial and the creation of a photo editor. In contrast, images described as digital altered in terms of colour still leave the possibility that the level of muscularity depicted by the model was the result of the model's own efforts, such as engaging in exercise. Therefore, it can be argued that compared to the models depicted in the colour disclaimer condition, the models depicted in the muscularity disclaimer condition did not suggest a strategy in which one could realistically engage to enhance one's muscularity. Furthermore, given that the level of muscularity was the creation of a photo editor, the opportunity to improve in the domain of muscularity may be perceived as less likely. Thus, the artificial manner in which the model's muscularity was said to be enhanced coupled with the fact that the model's level of muscularity was determined by an external

source, a photo editor, may reduce men's personally attainability ratings of achieving a physique similar to that of the model.

Another possible explanation of these findings is that having knowledge of the digital alterations said to have been made to the model's level of muscularity implies that such a level of muscularity may be unattainable even by "experts" in appearance, i.e., professional models (Tiggemann et al., 2013). If professional models, who without retouching are arguably exceptionally attractive and muscular, require their photos to be digitally altered, men may think about their own level of muscularity and how much "help" or photo editing they would require to achieve a similar level of muscularity. Thus, if socially prescribed levels of muscularity are difficult to achieve by professional models, men may conclude that this level of muscularity is unattainable for them as well.

Muscle dissatisfaction, physical condition esteem, negative affect, and protein consumption. Contrary to predictions, men in the muscularity disclaimer condition reported greater muscle dissatisfaction and negative affect and consumed more protein than those in the colour disclaimer condition. Although unexpected, these findings follow from the results for men's corresponding relevance and attainability ratings of the models' physique depicted in the muscularity disclaimer and colour disclaimer conditions. As reported above, having knowledge of the muscle enhancement to the models' level of muscularity increased the relevance and reduced the attainability of the model's physique. Thus, according to Social Comparison Theory, one would expect a corresponding change in self-evaluations and mood, specifically, increased muscle dissatisfaction and negative affect, which was found. As stated in previous sections,

viewing images of the media ideal described as digitally altered in terms of muscularity may have increased men's desire to look similar to the model, as well as increased their realization that the level of muscularity depicted by the model was unattainable, resulting in men experiencing greater dissatisfaction with their own level of muscularity and greater negative affect. This interpretation assumes that men were engaging in comparison more extensively with the models' physique in the muscularity disclaimer condition than in the colour disclaimer condition. Findings from exploratory analyses supported this interpretation. Indeed, men in the muscularity disclaimer condition engaged in state physique comparison more extensively than did men in the colour disclaimer condition.

Another explanation of these findings is that compared to having knowledge of an appearance irrelevant digital alteration made to media ideal image, having knowledge of digital alteration made to the model's muscularity may have primed men to think about physical imperfections in general, as well as their own because digital alterations made to the model's physique may imply that the model's physique, clearly superior to the average, was flawed in some way. Consequently, increased activation of men's awareness of their own imperfections related to their muscularity and the discrepancy between the men's and the model's level of muscularity could have led to a temporary drop in muscle satisfaction along with an increase in negative affect (Dittmar, Halliwell, & Stirling, 2009).

An alternative explanation of these findings is that the type of digital alteration described may have influenced where, within the image, the participants directed their

attention. Compared to participants in the colour disclaimer condition, those in the muscularity disclaimer condition may have directed more of their attention to the model's body and/or muscularity because the digital alteration that was described was specific to the model's muscularity. Men in the muscularity disclaimer condition also may have examined the model's body more closely looking for evidence of digital alteration than did men in the colour disclaimer condition. Directing more of their attention to the model's body may have resulted in a deeper level of processing of the model's physique as well as increased salience of the discrepancy between the model's and the participants' level of muscularity, resulting in greater muscle dissatisfaction and negative affect in the muscularity disclaimer condition than in the colour disclaimer condition. Researchers have examined the relationship between attentional bias towards images of the media ideal and body dissatisfaction in women (Brown & Dittmar, 2005) and men (Cho & Lee, 2013; Nikkelen, Anschutz, Ha, & Engels, 2012). In one study of women's level of attention to images of the thin ideal, findings showed that compared to women who processed the images of the thin ideal at a low level of attention, those who processed the images at a high level of attention reported greater weight-focused anxiety. Using eye tracking technology to measure men's attentional bias, researchers reported mixed findings in two studies. Specifically, Cho and Lee (2013) found greater attentional bias towards muscular models among men who were high in body dissatisfaction compared to men who were low in body dissatisfaction. In contrast, Nikkelen et al. (2012) found that greater attentional bias towards the model's body was associated with enhanced body satisfaction. However, in the aforementioned studies, the images of the media ideal were

not described as digitally altered. Therefore, it remains an empirical question whether men show an attentional bias toward media images described as digitally altered in terms of muscularity and whether attentional bias directly influences their muscle dissatisfaction and negative affect.

Contrary to predictions, differences in disclaimer type had no effect on physical condition esteem. This null effect may be result of the types of digital alterations described to the participants. Alterations specific to muscularity and colour arguably do not influence the perceived physical abilities of the model, therefore perceptions of the model's physical abilities may have been similar in the muscularity disclaimer and colour disclaimer conditions. Thus, men's evaluations of their own physical abilities may not have been differentially affected in these two conditions. Also, in the current study, men were asked to rate the extent to which the model's physique was relevant for the purposes of comparison rather than rate the relevance of the model's physical abilities. Therefore, it is not known whether men consider the media ideal as more or less relevant in the domain of physical abilities. It is possible that men use other, more diagnostic targets of comparison to evaluate their physical abilities, such as same aged peers (Karazsia & Crowther, 2009).

In terms of protein consumption, differences were observed depending on disclaimer type. Contrary to predictions, men who viewed the muscularity disclaimer images consumed more grams of protein per millilitre than did those who viewed the colour disclaimer images. In the context of Social Comparison Theory and the above reported findings for attainability it would follow that compared to having knowledge of an

appearance irrelevant digital alteration, having knowledge of the muscularity digital alteration, which made the models' physique less personally attainable, would reduce men's subsequent behavioural efforts to enhance their muscularity. This was not the case. Instead men in the muscularity disclaimer condition consumed more grams of protein per millilitre than did those in the colour disclaimer condition. As described above, viewing images of the media ideal said to have been digitally altered in terms of muscularity may have increased the salience of the cultural norms for muscularity as well as men's desire to look similar to the media ideal. Thus, despite perceiving the models' physique as less attainable than the models' physique depicted in the colour disclaimer images, knowledge of the muscle enhancements still may motivate men to try to come close to achieving this socially desirable physique perhaps to experience the anticipated social rewards associated with a muscular physique (Mussap, 2006).

This is the first study to examine and find that disclaimers informing men of muscle enhancement to images of the male media ideal resulted in greater muscle dissatisfaction and negative mood, as well as greater protein consumption. To date, the effect of disclaimer type has been examined exclusively in women (Ata et al., 2013; Slater et al., 2012; Tiggemann et al., 2013), with mixed findings. In one study that included adolescent boys, investigators examined the effect of exposure to digitally altered images of college-aged men and women on adolescent girls and boys' objectified body consciousness and physical self esteem (Harrison & Hefner, 2014). They found that independent of gender, participants who viewed images of college-aged students that were described as "refined...using a computer photo retouching program" reported higher

objectified body consciousness and lower physical self-esteem than did participants exposed to images without a label. As described earlier, unlike in the current study, potential confounds, such as the presence or absence of a label and the content of the label indicating the image was digitally altered or not were not controlled for in these studies. Therefore, it is difficult to determine what aspect of the label manipulation affected the adolescent girls and boys. The pattern of findings in the present study is consistent with the paradoxical effects of increased desirability of media images and increased body dissatisfaction in response to knowledge of the digital alterations made to media images found by Bissell (2006) and Harrison and Hefner (2014), respectively. The findings from the present study add to this literature by identifying potential variables, namely judgements of relevance and attainability, that may affect reactions to viewing images of the male media ideal said to have been digitally altered.

Moderating effect of state physique comparison. Contrary to predictions, among men who engaged in state physique comparison more extensively, those in the muscularity disclaimer condition reported greater muscle dissatisfaction than those in the colour disclaimer condition. Disclaimer type had no effect on negative affect, physical condition esteem, and protein consumption. Contrary to predictions, among men who engaged in state physique comparison less extensively, those in the muscularity disclaimer condition reported greater muscle dissatisfaction than did those in the colour disclaimer condition and as predicted, disclaimer type did not differentially influence their physical condition esteem, negative affect, and protein consumption.

Although the aforementioned interaction between state physique comparison and muscle dissatisfaction was found to be statistically significant, the significance of this finding is questionable. Visual inspection of the graph shows that the regression lines for men who compared themselves more or less extensively are almost parallel suggesting that the interaction, although statistically significant, may not be reliable. Furthermore, in the analyses, this was the only interaction found to be statistically significant and the effect size of this interaction was .06 which is considered small. Given these considerations, the interaction may be spurious and replication of this finding is necessary to consider it reliable. As such, the effect of disclaimer type of men's self-evaluations, negative affect, and protein consumption may not depend on level of state physique comparison. If indeed this is the case, it is possible that viewing images of the media ideal said to have been digitally altered in terms of muscularity affects all men because knowledge of these alterations increases the salience of culture norms of muscularity, as well as the desire to look similar to the model.

This is the first study to examine the effect of state physique comparisons on the relationship between having knowledge of the digitally alterations made to media ideal images and men's self-evaluations, affect, and muscle-building behaviour. Given the potentially spurious nature of the interaction, replication is necessary.

Exploratory analyses – Moderating effect of general social comparison tendency. The results indicated that among men with a high tendency toward making general social comparisons, disclaimer type did not differentially influence their muscle dissatisfaction, negative affect, physical condition esteem, or protein consumption. Similarly, among

men with a low tendency toward making general social comparison, disclaimer type did not influence men's muscle dissatisfaction, negative affect, physical condition esteem, or protein consumption

These findings suggest that men's responses to having knowledge of digital alterations to media images are independent of their disposition toward making general comparison. To date, there are no studies of the moderating effect of general social comparison tendency. As suggested previously, men who were assigned to the muscularity disclaimer condition were all affected by these images, independent of trait comparison tendency, potentially because disclaimer type may have increased the salience of cultural norms for muscularity and men's desire to look similar to the model.

CHAPTER IV

General Discussion

Summary of Findings

Attainability and relevance of the male media ideal were hypothesized to be influenced by differences in body conceptualization and in knowledge of digital alterations. Based on Social Comparison Theory, judgements of a comparison target's attainability and relevance may affect men's self-evaluations and comparison processes. This research was the first to experimentally investigate the effect of body conceptualization and type of digital alteration on college-aged men's self-evaluations, negative affect, and muscle-building behaviour. State physique comparison and general social comparison tendency were examined as moderators. In Study 1, performance-focussed and appearance-focussed ads were rated as equally relevant and as expected, the

performance-focussed ads were rated as more attainable. Consequently, men who viewed the performance-focussed images engaged in a greater number of bicep curls than those who viewed the appearance-focussed images, potentially because these images demonstrated strategies in how to achieve the physique shown in the ad. Lastly, body conceptualization and attainability only mattered for men who indicated engaging in comparison to a greater extent. Among men who engaged in state physique comparison more extensively, those assigned to the appearance-focussed ads reported greater muscle dissatisfaction and negative affect than those assigned to the performance-focussed ads. Similarly, men with a high tendency toward engaging in general social comparison reported greater muscle dissatisfaction after viewing the appearance-focussed ads than did those who viewed the performance-focussed ads.

Study 2 was conducted to examine whether informing men of the digitally alterations said to have been made to appearance-focussed images would reduce the negative effects of engaging in comparison with appearance-focussed images. Having knowledge of the muscle enhancement alterations was expected to reduce the relevance of the media ideal physique, engagement in comparison, as well as negative self-evaluations, negative affect, and engagement in muscle-building behaviour. In Study 2, disclaimer type had an effect on relevance and attainability judgements, as well as on men's self-evaluations, affect, and behaviour but generally in unexpected ways. The media ideal physique was rated as more relevant yet less attainable in the muscularity disclaimer condition than in the colour disclaimer condition. Consequently, men experienced greater muscle dissatisfaction and negative affect, and consumed more protein in the muscularity

disclaimer condition than did those in the colour disclaimer condition. The effects of disclaimer type were independent of level of state and trait social comparison. Thus, attempting to mitigate the negative effects of engaging in comparison with appearance-focussed images was ineffective and informing viewers of digital alterations made to the models' physique exacerbated these negative effects, resulting in a "boomerang effect." The results of the present study suggest that informing men of the digital alterations enhancing the muscularity of models may unintentionally exacerbate muscle dissatisfaction and negative affect, as well as increase engagement in muscle-building behaviour by perhaps reinforcing cultural norms for muscularity as well as the desirability of the male media ideal.

Implications of Study 1 and Study 2

The results of the present research emphasize the need for effective prevention and intervention efforts aiming to mitigate the negative effects of exposure to the male media ideal. Specifically, societal and institutional changes that de-emphasize the unrealistic appearance standards for men depicted in media ideal are needed. Such changes may include decreased use of the male media ideal in media. On an individual level, creation of interventions that target men who are vulnerable to the negative effects of media exposure, namely those who engage in comparison extensively, may be helpful. Lastly, rigorous research documenting the effectiveness of such strategies before implementation also is necessary.

In an effort to reduce the negative effects of exposure to appearance-focussed media images on men's self-evaluations, reducing the use of the male ideal in media is

suggested. Instead, marketers could incorporate men of other body types that are representative of the general population in their advertising. A similar strategy has been adopted by marketers targeting the female population, such that average and plus size models have been increasingly used in advertisements. Researchers have examined the effectiveness of images of the thin ideal compared to images depicting other body types, such as average sized women, and found that such ads were equally effective in terms of women's product evaluations (Bian & Wang, 2015) and brand recall. Importantly, these desirable marketing goals were achieved without triggering body dissatisfaction in viewers (Halliwell & Dittmar, 2004; Roberts & Roberts, 2015; Yu, 2014). Thus, depicting men of diverse body types may still yield effective advertisements without the accompanying increase in muscle dissatisfaction. This has yet to be empirically examined.

Currently in North America, reducing the use of the female thin ideal in media is a voluntary choice made by marketers, and perhaps a choice made in response to growing social consciousness of the negative effects of exposure to the thin ideal and/or to social pressure to change. Outside North America, however, the use of the thin ideal in media has become government-regulated in some countries. For example, in Israel, legislation forbids underweight models in advertisements and regulates Photoshop usage in media. Albeit controversial, there is preliminary research suggesting that reducing the circulation of emaciated models in media may reduce the rate of eating disorders (Costa-Font, & Jofre-Bonet, 2013). An alternative approach may be to provide incentives to companies and marketers to adhere to voluntary guidelines regulating the unrealistic appearance

standards depicted in media (Tschannen, 2014). Voluntary or government-mandated regulation of the use and digital alteration of the media ideal also may be an effective approach to reduce the use of the male ideal in the media. Further research is needed to determine the feasibility and effectiveness of this strategy.

The results of the present research also showed that only men who compared themselves extensively to the models were vulnerable to the negative effects associated with viewing appearance-focused media images. As such, this group of men may benefit from psychotherapeutic interventions that help them to explore and understand their motivations for engaging in comparison, as well as their self-beliefs that may influence their engagement in comparison. For example, an individual might engage in unfavourable social comparisons extensively in response to holding dysfunctional self-worth contingency beliefs and to maintain a negative sense of self. Exploring the origins of these beliefs and working through same via the therapeutic alliance may be helpful (Luke & Stopa, 2009).

The results of the present research coupled with those of earlier studies of adding disclaimers to images of the thin ideal (Bissell, 2006; Tiggemann et al., 2013) underscore the importance of examining the effectiveness of prevention strategies prior to implementation. Policy makers assumed that adding disclaimer labels to images of the thin ideal would reduce the relevance of the model as a comparison target because the model's appearance is artificially created. Adding disclaimer labels to images of the thin ideal also was expected to reduce engagement in comparison with the model, as well as reduce women's body image dissatisfaction. However, the results from three studies of

the effects of disclaimer labels on women's body image and social comparison processes (Bissell, 2006; Harrison & Hefner, 2014; Tiggemann et al., 2013) and from the present research suggest that adding disclaimer labels to images of the media ideal has an unforeseen paradoxical effect. Specifically, knowledge of alterations made to already highly attractive models may impress upon viewers the extreme importance of looking as perfect as one can be. Paradoxically, images of enhanced perfection become more relevant as they come even closer to the societal ideal. For women, these interventions may unintentionally increase the relevance of the media ideal (Tiggemann et al., 2013), the desirability to look similar to the media ideal (Bissell, 2006), as well as body image dissatisfaction (Harrison & Hefner, 2014). For men, the results of the present study suggest that these interventions may unintentionally exacerbate muscle dissatisfaction and negative affect, as well as increase engagement in muscle-building behaviour by perhaps reinforcing cultural norms for muscularity as well as the desirability of the male media ideal. Thus, although the implementation of disclaimer labels may appear to be logical and sensible, the effectiveness of these policy interventions only can be supported or unsupported via research studies. Further research is necessary to determine whether adding disclaimer labels to images of the media ideal is beneficial, harmful, or simply ineffective.

Other types of prevention programs also have been implemented prior to undergoing rigorous testing and were found to be ineffective (Pearson, Goldklang, & Striegel-Moore, 2002; West & O'Neal, 2004). For example, early eating disorder preventative interventions were implemented in classroom settings under the assumption that they

would reduce body image dissatisfaction and eating disorder behaviours. However, researchers found substantial variation in response to the interventions, including an increase in eating disorder behaviours (Huon, Roncolato, Ritchie, & Braganza, 1997; O’Dea & Maloney, 2000). Similarly, the largest school-based prevention program, Drug Abuse Resistance Education (D.A.R.E.), was implemented and gained popularity and significant federal funding throughout the 1980s and 90s prior to undergoing scientific evaluation. Two decades after its implementation, research findings showed that the D.A.R.E. program was ineffective in achieving its goals, namely preventing substance use in school-aged youth (Lynam, et al., 1999; West & O’Neal, 2004). Thus, before resources are spent creating and implementing prevention programs that appear to be logical, research demonstrating the effectiveness of these programs is necessary.

Despite research documenting the detrimental effects of exposure to images of the media ideal on women’s (Groesz et al., 2002) and men’s body satisfaction (Ferguson, 2013), the response to these findings in the form of research, prevention programs, advocacy, and social campaigns, has focussed on women’s body image concerns and the thin ideal. To date, prevention efforts targeting the negative effects of exposure to the male media ideal are in their infancy. A number of factors may account for the discrepancy between the number of existing prevention efforts directed towards men and women. Findings from numerous studies show that both men and women are negatively affected by exposure to the media ideal, however, the magnitude of these effects are larger for women, such that women are more dissatisfied with their body than are men (Ferguson, 2013). Thus, resources may be allocated to programs that address the needs

of those most affected by exposures to the media ideal, i.e., women. Another potential obstacle associated with addressing the negative effects of the male media ideal on men may be the social stigma associated with men discussing their body image concerns. Historically, body dissatisfaction has been perceived as a “women’s problem” (Rodin et al., 1984) and it was assumed that men were protected from body image issues (Connan, 1998). However, findings indicate that men are concerned with their body image and muscularity (Frederick et al., 2007; Hatoum & Belle, 2004; Hildebrandt et al., 2004; Morrison et al., 2004; Olivardia et al., 2004), yet, are discouraged from discussing their concerns and seeking help because body image concerns are considered to be effeminate (Pope et al., 2000). Such social stigma may contribute to the lack of interventions for men. Finally, women’s body image concerns in response to viewing the media ideal may elicit more attention than men’s due to the negative psychological and physical consequences associated with attempting to emulate the thin ideal. For women, thinness is valued and achieved through restrictive eating and excessive exercise. Furthermore, for some vulnerable women, the pursuit of thinness may develop into severe pathology, such as anorexia which can be fatal (Arcelus, Mitchell, Wales, & Nielsen, 2011). For men, muscularity is valued and achieved through consumption of high protein foods and/or supplements and engagement in muscle-building exercises. For some vulnerable men, the pursuit of muscularity may involve steroid use and development of muscle dysmorphia (Olivardia, Pope, & Hudson, 2000), which are rarely fatal (Cafri et al., 2005). Thus, it is possible that the often severe consequences associated with pursuing thinness are more salient than the consequences associated with pursuing muscularity and

therefore, may mobilize a greater effort aimed at mitigation. Nevertheless, the present study is part of mounting evidence documenting the negative effect of the male media ideal on men and the need for effective prevention programs that target men's processing of these images.

Future Research and Limitations

The present research was the first empirical examination of the effect of disclaimers on men. Further research is needed to learn more about men's cognitive processes in response to disclaimer labels. Conducting qualitative studies using focus groups may help determine how the disclaimer labels are actually being processed and, subsequently, perceived.

General limitations. One limitation of the present research was its exclusive recruitment of undergraduate students, which leads to some caution when applying the present results to the general population. The effect of exposure to images of the male media ideal that differed in body conceptualization and relevance on men's self-evaluations and body-change behaviours may be specific to a certain age group, i.e., early adult men. Previous research shows that older men are more concerned with body function than with muscularity (Umstatted, Wilcox, & Dowda, 2011). Older men may perceive the male media ideal as less relevant, given that the media ideal epitomizes appearance standards rather than standards of body function. Consequently, the effect of exposure to the male media ideal may be less extensive in older men.

Another limitation was the artificial nature of the exposure to the images of the male media ideal. To maintain the credibility of the cover story, and to ensure that all men

were exposed to the images for the same amount of times, participants had 20 minutes to examine and rate the ads. These circumstances are not representative of how men are exposed to images of the male ideal in a naturalistic setting. In terms of length of exposure, individuals may not look at a single image for an extended period of time, but may spend lengthy periods of time looking at many images. Furthermore, men were evaluating the images using a questionnaire, and therefore, they were perhaps more actively engaged in processing the images than they would be in their everyday lives where they may be more passive observers. Men also did not have a choice of the images they viewed, whereas in a naturalistic setting a subset of men might actively avoid these types of media, more easily ignore them, or choose other types of media. Men who avoid appearance-focussed images of the male ideal in their everyday life may be less vulnerable to experiencing fluctuations in the muscle satisfaction.

In addition, only the immediate effect of exposure to the male media ideal on muscle-building behaviours was measured. Therefore, the effects of exposure to images of the media ideal that differed in body conceptualization and relevance may reflect transient effects of viewing these images. For example, in Study 1, compared to viewing appearance focussed ads, exposure to performance focussed ads may have temporarily induced motivation to engage in a greater number of bicep curls because the viewer, in that moment, believed that they could approach the level of muscularity that was depicted in the advertisement. However, such effects may be transient and either diminish once a person ceases looking at the images, or once they come to the realization that such goals are perhaps unrealistic. Future studies should attempt to collect follow-up data on

subsequent engagement in body-change behaviours to determine whether these effects are longer-lasting.

Specific limitations - Study 2. A limitation of this study was that although the control and experimental images were described as digitally altered but altered different ways, the degree to which the image was altered was unknown to the participants. In other words, informing men that the model's physique was altered to make his muscles appear larger did not indicate the degree to which the model's physique was altered. Perhaps interventions that show the process by which photo editing renders an ordinary image extraordinary would discourage a boomerang effect, because men could see both the "before" and "after" images as well as the extent of the intervention necessary to arrive at the final product. Interventions that depict the entire photo editing process have been found to be effective in reducing women's body dissatisfaction after viewing images (Ogden & Sherwood, 2008) or videos (Quigg & Want, 2011) of the thin ideal. The effectiveness of showing men the entire photo editing process could be examined in future studies.

The images of the media ideal were selected to be credible as digitally altered images. However, it is not known whether the images of the media ideal had been digitally altered and whether participants believed that the images had been digitally altered and altered in the manner described. Measuring the perceived realism of the model, the degree to which the image or model was perceived as digitally altered, and what aspect of the image participants believed to be digitally altered would provide more insight into what men actually think of these images.

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APPENDICES

Appendix A

Coloured Images Body as Object

#1



#2



#3



The advertisement features a pair of steampunk-style headphones with large, circular speakers and a headband with brass accents. A red Nokia smartphone is connected to the headphones via a cable. The background is a plain, light blue-grey color.

NOKIA
Connecting People

All Styles
All Music
Almighty

Nokia 5200 approx. 100 - 3.5 mm jack.
Over the air download - from your data card.
nokia.co.uk/musicalmighty

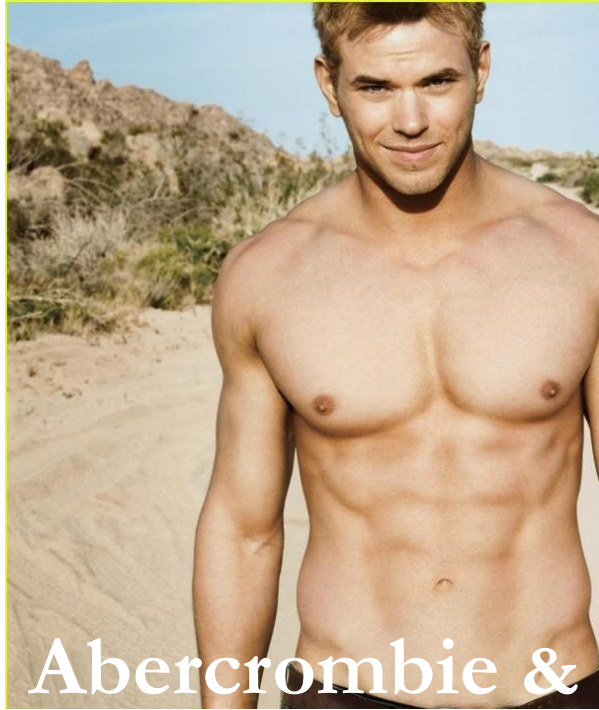
#4



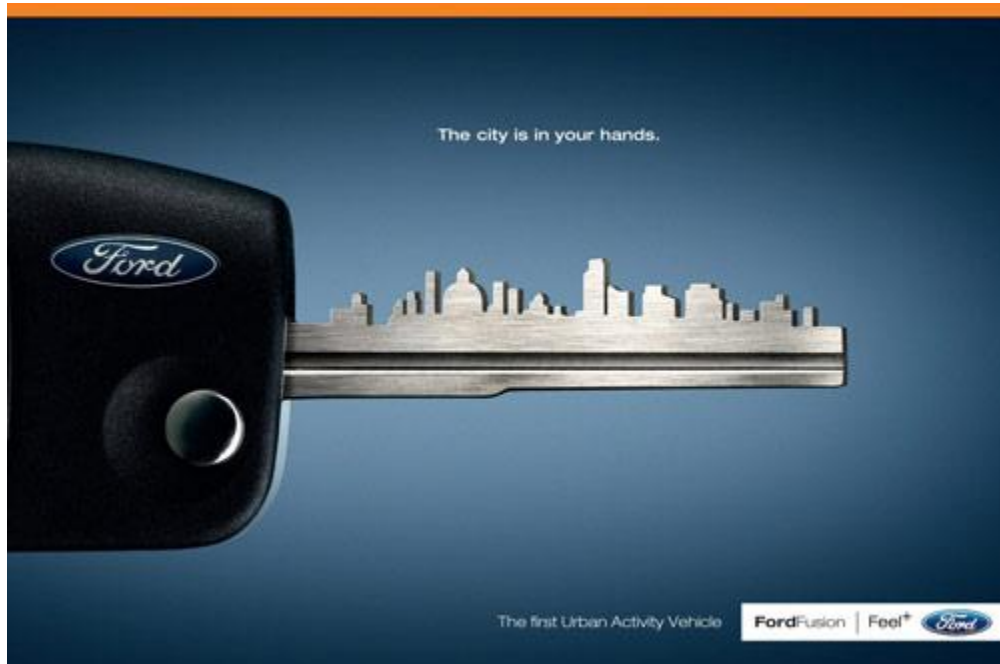
#5



#6



#7



#8



#9



Apple iPhone

Touching is believing.

The revolutionary new iPhone is now available at Apple and AT&T[®] retail stores.

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#10



#11



#12



Appendix B

Coloured Images Body as Process

#1



#2



#3



The advertisement features a pair of steampunk-style headphones with large, circular earcups and a metallic headband. The headphones are connected to a Nokia smartphone via a cable. The phone's screen displays a red 'W' logo. The background is a plain, light blue-grey color.

NOKIA
Connecting People

All Styles
All Music
Almighty

NOKIA 5200 SPEAKERS - 3.5 mm jack
Download the app: Download - from your device and
nokia.co.uk/musicalmighty

#4



#5



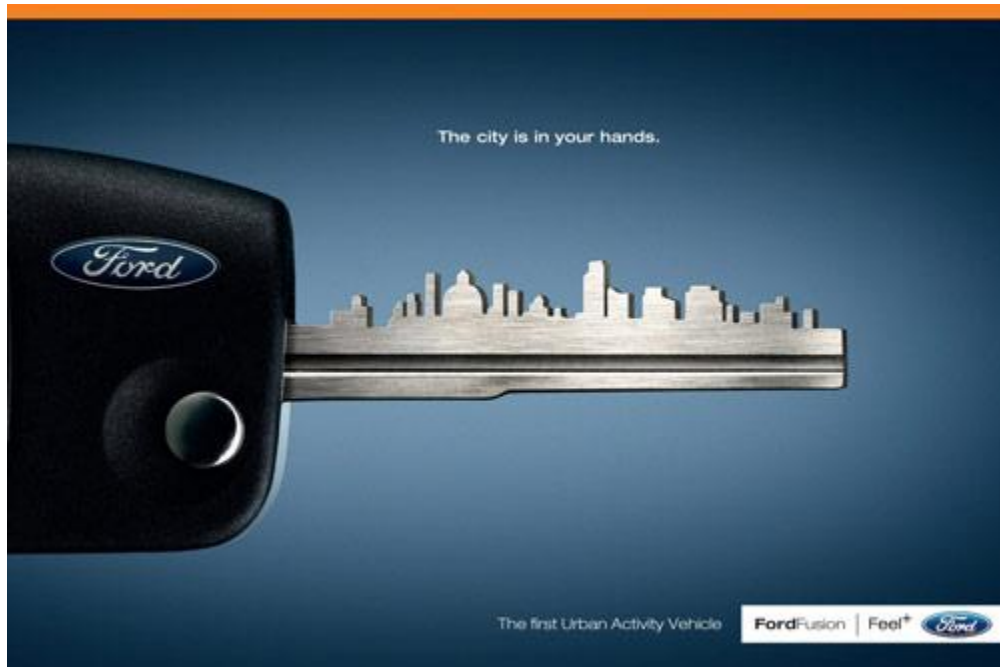
#6



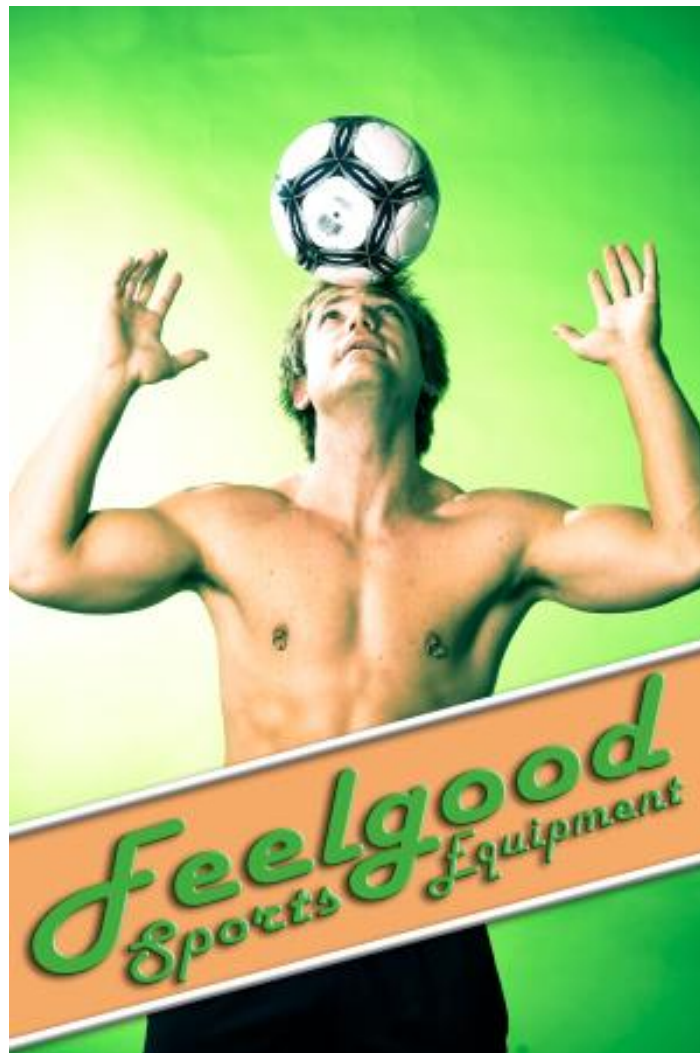
#7



#8



#9



#10

iPhone

Touching is believing.

The revolutionary new iPhone is now available at Apple and AT&T retail stores.

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#11



#11



#12

Champion



Appendix C

Consumer Response Questionnaire

ADVERTISEMENT #: _____

1. If I saw this ad in a magazine, it would catch my eye.

1	2	3	4	5	6	7	8	9
Strongly disagree							Strongly Agree	

2. The model in this ad is muscular.

1	2	3	4	5	6	7	8	9
Strongly disagree							Strongly Agree	

3. I aspire to be as strong as the model in this ad.

1	2	3	4	5	6	7	8	9
Strongly disagree							Strongly Agree	

4. This ad makes me interested in the product.

1	2	3	4	5	6	7	8	9
Strongly disagree							Strongly Agree	

5. The model's physique in this ad is relevant to me for the purposes of comparison.

1	2	3	4	5	6	7	8	9
Strongly disagree							Strongly Agree	

Not at all

Very much

12. I compare my own appearance to the appearance of the model in this ad.

1 2 3 4 5 6 7 8 9

Not at all

Very much

13. In relation to myself, the model in this ad is...

1 2 3 4 5 6 7 8 9

Much less attractive
than me

About the same
attractiveness as me

Much more attractive
than me

14. In relation to myself, the model in this ad is...

1 2 3 4 5 6 7 8 9

Much less muscular
than me

About the same
muscularity as me

Much more muscular
than me

15. To what extent is this ad emphasizing the performance (body-as-process) or appearance (body-as-object) qualities of the model's body?

Performance qualities include high level of activity, natural pose, using advertised product, and direct eye gaze.

Appearance qualities include low level of activity, highly posed, not using advertised product, and ambiguous eye gaze.

1 2 3 4 5 6 7 8 9

Body-as-Process/
Performance

Body-as-Object/
Appearance

Appendix D

Iowa-Netherlands Comparison Orientation Measure (INCOM)

Most people compare themselves from time to time with others. For example, they may compare the way they feel, their opinions, their abilities, and/or their situation with those of other people. There is nothing particularly “good” or “bad” about this type of comparison, and some people do it more than others. We would like to find out how often you compare yourself with other people. To do that we would like you to indicate how much you agree with each statement below, by using the following scale.

A	B	C	D	E
I disagree strongly				I agree strongly

1. I often compare how my loved ones (boy or girlfriend, family members, etc.) are doing with how others are doing.

A	B	C	D	E
I disagree strongly				I agree strongly

2. I always pay a lot of attention to how I do things compared with how others do things.

A	B	C	D	E
I disagree strongly				I agree strongly

3. If I want to find out how well I have done something, I compare what I have done with how others have done.

A	B	C	D	E
I disagree strongly				I agree strongly

4. I often compare how I am doing socially (e.g., social skills, popularity) with other people.

A	B	C	D	E
I disagree strongly				I agree strongly

5. I am not the type of person who compares often with others.

A	B	C	D	E
I disagree strongly				I agree strongly

6. I often compare myself with others with respect to what I have accomplished in life.

A	B	C	D	E
I disagree strongly				I agree strongly

7. I often like to talk with others about mutual opinions and experiences.

A	B	C	D	E
I disagree strongly				I agree strongly

8. I often try to find out what others think who face similar problems as I face.

A	B	C	D	E
I disagree strongly				I agree strongly

9. I always like to know what others in a similar situation would do.

A	B	C	D	E
---	---	---	---	---

I disagree
strongly

I agree
strongly

10. If I want to learn more about something, I try to find out what others think about it.

A

B

C

D

E

I disagree
strongly

I agree
strongly

11. I never consider my situation in life relative to that of other people.

A

B

C

D

E

I disagree
strongly

I agree
strongly

Appendix E

Drive for Muscularity Scale

Please read each item carefully then, for each one, circle the number that best applies to you.

1. I wish that I were more muscular.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

2. I lift weights to build up muscle.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

3. I use protein or energy supplements.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

4. I drink weight gain or protein shakes.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

5. I try to consume as many calories as I can in a day.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

6. I feel guilty if I miss a weight training session.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

7. I think I would feel more confident if I had more muscle mass.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

8. Other people think I work out with weights too often.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

9. I think that I would look better if I gained 10 pounds in bulk.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

10. I think about taking anabolic steroids.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

11. I think that I would feel stronger if I gained a little more muscle mass.

1	2	3	4	5	6
Always	Very Often	Often	Sometimes	Rarely	Never

12. I think that my weight training schedule interferes with other aspects of my life.

1	2	3	4	5	6
---	---	---	---	---	---

Always Very Often Often Sometimes Rarely Never

13. I think that my arms are not muscular enough.

1 2 3 4 5 6

Always Very Often Often Sometimes Rarely Never

14. I think that my chest is not muscular enough.

1 2 3 4 5 6

Always Very Often Often Sometimes Rarely Never

15. I think that my legs are not muscular enough.

1 2 3 4 5 6

Always Very Often Often Sometimes Rarely Never

Appendix F

Body Esteem Scale

On this page are listed a number of body parts and functions. Please read each item and indicate how you feel about this part or function of your own body using the following scale:

- 1 = Have strong negative feelings
- 2 = Have moderate negative feelings
- 3 = Have no feeling one way or the other
- 4 = Have moderate positive feelings
- 5 = Have strong positive feelings

- 1. body scent _____
- 2. appetite _____
- 3. nose _____
- 4. physical stamina _____
- 5. reflexes _____
- 6. lips _____
- 7. muscular strength _____
- 8. waist _____
- 9. energy level _____
- 10. thighs _____
- 11. ears _____
- 12. biceps _____
- 13. chin _____
- 14. body build _____
- 15. physical coordination _____
- 16. buttocks _____
- 17. agility _____
- 18. width of shoulders _____

- 19. arms _____
- 20. chest _____
- 21. appearance of eyes _____
- 22. cheeks/cheekbones _____
- 23. hips _____
- 24. legs _____
- 25. figure or physique _____
- 26. sex drive _____
- 27. feet _____
- 28. sex organs _____
- 29. appearance of
stomach _____
- 30. health _____
- 31. sex activities _____
- 32. body hair _____
- 33. physical condition _____
- 34. face _____
- 35. weight _____

Appendix G

Positive and Negative Affect Schedule – Extended Form

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way during the past few weeks. Use the following scale to record your answers:

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely
_____	_____	_____	_____	_____
cheerful	sad	active	angry at self	
_____	_____	_____	_____	_____
disgusted	calm	guilty	enthusiastic	
_____	_____	_____	_____	_____
bashful	tired	nervous	sheepish	
_____	_____	_____	_____	_____
sluggish	amazed	lonely	distressed	
_____	_____	_____	_____	_____
daring	shaky	sleepy	blameworthy	
_____	_____	_____	_____	_____
surprised	happy	excited	determined	
_____	_____	_____	_____	_____
strong	timid	hostile	frightened	
_____	_____	_____	_____	_____
scornful	along	proud	astonished	
_____	_____	_____	_____	_____
relaxed	alert	jittery	interested	
_____	_____	_____	_____	_____
irritable	upset	lively	loathing	
_____	_____	_____	_____	_____
delighted	angry	ashamed	confident	
_____	_____	_____	_____	_____
inspired	bold	at ease	energetic	
_____	_____	_____	_____	_____
fearless	blue	scared	concentrating	
_____	_____	_____	_____	_____
disgusted with self	shy	drowsy	dissatisfied with self	

Appendix H

Exercise Motivations Inventory-2

On the following pages are a number of statements concerning the reasons people often give when asked why they exercise. Whether you currently exercise regularly or not, please read each statement carefully and indicate, by circling the appropriate number, whether or not each statement is true for you personally, or would be true for you personally if you did exercise. If you do not consider a statement to be true for you at all, circle the "0". If you think that a statement is very true for you indeed, circle the "5". If you think that a statement is partly true for you, then circle the "1", "2", "3" or "4", according to how strongly you feel that it reflects why you exercise or might exercise. Remember, we want to know why you personally choose to exercise or might choose to exercise, not whether you think the statements are good reasons for anybody to exercise.

Personally, I exercise (or might exercise):	Not at all true for me					Very true for me
1. To stay slim	0	1	2	3	4	5
2. To avoid ill-health	0	1	2	3	4	5
3. Because it makes me feel good	0	1	2	3	4	5
4. To help me look younger	0	1	2	3	4	5
5. To show my worth to others	0	1	2	3	4	5
6. To give me space to think	0	1	2	3	4	5
7. To have a healthy body	0	1	2	3	4	5
8. To build up my strength	0	1	2	3	4	5
9. Because I enjoy the feeling of exerting myself	0	1	2	3	4	5
10. To spend time with friends	0	1	2	3	4	5
11. Because my doctor advised me to exercise	0	1	2	3	4	5
12. Because I like trying to win in physical activities	0	1	2	3	4	5
13. To stay/become more agile	0	1	2	3	4	5
14. To give me goals to work towards	0	1	2	3	4	5
15. To lose weight	0	1	2	3	4	5

16. To prevent health problems	0	1	2	3	4	5
17. Because I find exercise invigorating	0	1	2	3	4	5
18. To have a good body	0	1	2	3	4	5
19. To compare my abilities with other peoples'	0	1	2	3	4	5
20. Because it helps to reduce tension	0	1	2	3	4	5
21. Because I want to maintain good health	0	1	2	3	4	5
22. To increase my endurance	0	1	2	3	4	5
23. Because I find exercising satisfying in and of itself	0	1	2	3	4	5
24. To enjoy the social aspects of exercising	0	1	2	3	4	5
25. To help prevent an illness that runs in my family	0	1	2	3	4	5
26. Because I enjoy competing	0	1	2	3	4	5
27. To maintain flexibility	0	1	2	3	4	5
28. To give me personal challenges to face	0	1	2	3	4	5
29. To help control my weight	0	1	2	3	4	5
30. To avoid heart disease	0	1	2	3	4	5
31. To recharge my batteries	0	1	2	3	4	5
32. To improve my appearance	0	1	2	3	4	5
33. To gain recognition for my accomplishments	0	1	2	3	4	5
34. To help manage stress	0	1	2	3	4	5
35. To feel more healthy	0	1	2	3	4	5
36. To get stronger	0	1	2	3	4	5
37. For enjoyment of the experience of exercising	0	1	2	3	4	5
38. To have fun being active with other people	0	1	2	3	4	5
39. To help recover from an illness/injury	0	1	2	3	4	5
40. Because I enjoy physical competition	0	1	2	3	4	5
41. To stay/become flexible	0	1	2	3	4	5

42. To develop personal skills	0	1	2	3	4	5
43. Because exercise helps me to burn calories	0	1	2	3	4	5
44. To look more attractive	0	1	2	3	4	5
45. To accomplish things that others are incapable of	0	1	2	3	4	5
46. To release tension	0	1	2	3	4	5
47. To develop my muscles	0	1	2	3	4	5
48. Because I feel at my best when exercising	0	1	2	3	4	5
49. To make new friends	0	1	2	3	4	5
50. Because I find physical activities fun especially when competition is involved	0	1	2	3	4	5
51. To measure myself against personal standards	0	1	2	3	4	5

Appendix I

Rosenberg Self-Esteem Scale

Please record the appropriate answer per item, depending on whether you strongly agree, agree, disagree, or strongly disagree with it.

1. On the whole, I am satisfied with myself.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

2. At times, I think I am no good at all.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

3. I feel that I have a number of good qualities.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

4. I am able to do things as well as most other people.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

5. I feel I do not have much to be proud of.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

6. I certainly feel useless at times.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

7. I feel that I'm a person of worth, at least on an equal plane with others.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

8. I wish I could have more respect for myself.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

9. All in all, I am inclined to feel that I am a failure.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

10. I take a positive attitude toward myself.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

Appendix J

BECK DEPRESSION INVENTORY-II (BDI-II)

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness

- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all the time.
- 3 I am so sad or unhappy that I can't stand it.

2. Pessimism

- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

3. Past Failure

- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

4. Loss of Pleasure

- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings

- 0 I don't feel particularly guilty.
- 1 I feel guilty over many things I have done or should have done.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all of the time.

6. Punishment Feelings

- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7. Self-Dislike

- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed in myself.
- 3 I dislike myself.

8. Self-Criticalness

- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all my faults.
- 3 I blame myself for everything bad that happens.

9. Suicidal Thought or Wishes

- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10. Crying

- 0 I don't cry anymore than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

11. Agitation

- 0 I am no more restless or wound up than usual.
- 1 I feel more restless or wound up than usual.
- 2 I am so restless or agitated that it's hard to stay still.
- 3 I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

- 0 I have not lost interest in other people or activities.
- 1 I am less interested in other people or thing than before.
- 2 I have lost most of my interest in other people or things.
- 3 It's hard to get interested in anything.

13. Indecisiveness

- 0 I make decisions about as well as ever.

- 1 I find it more difficult to make decisions than usual.
- 2 I have much greater difficulty in making decisions than I used to.
- 3 I have trouble making any decisions.

14. Worthlessness

- 0 I do not feel I am worthless.
- 1 I don't consider myself as worthwhile and useful as I used to.
- 2 I feel more worthless as compares to other people.
- 3 I feel utterly worthless.

15. Loss of Energy

- 0 I have as much energy as ever.
- 1 I have less energy than I used to have.
- 2 I don't have enough energy to do very much.
- 3 I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

- 0 I have not experienced any change in my sleeping pattern.
- 1a I sleep somewhat more than usual.
- 1b I sleep somewhat less than usual.
- 2a I sleep a lot more than usual.
- 2b I sleep a lot less than usual.
- 3a I sleep most of the day.
- 3b I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

- 0 I am no more irritable than usual.
- 1 I am more irritable than usual.
- 2 I am much more irritable than usual.
- 3 I am irritable all the time.

18. Changes in Appetite

- 0 I have not experienced any change in my appetite.
- 1a My appetite is somewhat less than usual.
- 1b My appetite is somewhat greater than usual.
- 2a My appetite is much less than before.
- 2b My appetite is much greater than usual.
- 3a I have no appetite at all.
- 3b I crave food all the time.

19. Concentration Difficulty

- 0 I can concentrate as well as ever.
- 1 I can't concentrate as well as usual.
- 2 It's hard to keep my mind on anything for very long.

3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.

1 I get more tired or fatigued more easily than usual.

2 I am too tired or fatigued to do a lot of the things I used to do.

3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.

1 I am less interested in sex than I used to be.

2 I am much less interested in sex now.

3 I have lost interest in sex completely.

Appendix K

EATING ATTITUDES TEST (EAT)

Height: ___ feet ___ inches Weight: _____ lbs

Please Circle a Response for Each of the Following Statements:

Question	Always	Usually	Often	Some- times	Rarely	Never
1. Am terrified about being overweight.	3	2	1	0	0	0
2. Avoid eating when I am hungry.	3	2	1	0	0	0
3. Find myself preoccupied with food.	3	2	1	0	0	0
4. Have gone on eating binges where I feel I may not be able to stop.	3	2	1	0	0	0
5. Cut my food into small pieces.	3	2	1	0	0	0
6. Aware of the calorie content of foods I eat.	3	2	1	0	0	0
7. Particularly avoid food with a high carbohydrate content (bread, rice, potatoes)	3	2	1	0	0	0
8. Feel that others would prefer if I ate more.	3	2	1	0	0	0
9. Vomit after I have eaten.	3	2	1	0	0	0
10. Feel extremely guilty after eating.	3	2	1	0	0	0
11. Am preoccupied with a desire to be bigger.	3	2	1	0	0	0
12. Think about burning up calories when I exercise.	3	2	1	0	0	0

13. Other people think I'm too thin.	3	2	1	0	0	0
14. Am preoccupied with the thought of having fat on my body.	3	2	1	0	0	0
15. Take longer than others to eat my meals.	3	2	1	0	0	0
16. Avoid foods with sugar in them.	3	2	1	0	0	0
17. Eat diet foods.	3	2	1	0	0	0
18. Feel that food controls my life.	3	2	1	0	0	0
19. Display self-control around food.	3	2	1	0	0	0
20. Feel that other pressure me to eat.	3	2	1	0	0	0
21. Give too much time and thought to food.	3	2	1	0	0	0
22. Feel uncomfortable after eating sweets.	3	2	1	0	0	0
23. Engage in dieting behaviour.	3	2	1	0	0	0
24. Like my stomach to be empty.	3	2	1	0	0	0
25. Have the impulse to vomit after meals.	3	2	1	0	0	0
26. Enjoy trying new rich foods.	3	2	1	0	0	0
27. I would like to increase my upper body size i.e. chest, biceps, shoulders	3	2	1	0	0	0
28. I would like to increase my lower body size i.e. thighs, bottom, hips	3	2	1	0	0	0

Appendix L

Demographic Questionnaire

1. Age: _____

2. School enrolment:

Full-time student

Part-time student

Present year in university (e.g., first year, second year, third year, etc.): _____.

Major(s) at university: _____

Minor(s) at university: _____

3. What is your ethnic background?

European

East Asian

South Asian

Central Asian

African Canadian

Hispanic

Middle Eastern

Native Canadian

Other (please specify):

4. Sexual Orientation:

Heterosexual

Gay

Bisexual

Other

5. Describe all of the different types of physical activity in which you engage and for how long (minutes per week):

Type of physical activity:	Number of minutes per week:

6. How many times per month do you use any of the following performance-enhancing substances:

Substance:	Number of times per month:
Nitric Oxide	
Stimulants	
Creatine	
Protein supplements	
Vitamins	
Other (please specify):	

7. How much time do you spend glancing at and/or reading each of the following types of magazines (including on-line magazines) in minutes per week:

Type of Magazine	Minutes per week:
Electronics	
Fitness	

Fashion/Lifestyle	
Health	
Automobile	
Sports	
Other (please specify):	

8. Please indicate the name of video games you play and for how long (minutes per week):

Name of Video Game	Minutes per week

9. Please indicate the name of comic books you read and for how long (minutes per week):

Name of Comic Book	Minutes per week

10. Indicate how much time you spend doing the following activities in minutes per week:

Activity:	Minutes per week
Watching television	
Using the internet	
Using social networking sites, such as Facebook, Twitter, etc.	

Appendix M

Self-Monitoring Scale-Revised

DIRECTIONS: The statements below concern your personal reactions to a number of different situations. No two statements are exactly alike, so consider each statement carefully before answering. Use the following scale to indicate the extent of your agreement with each item:

0 = Certainly, always false

1 = Generally false

2 = Somewhat false, but with exceptions

3 = Somewhat true, but with exceptions

4 = Generally true

5 = Certainly, always true

1. In social situations, I have the ability to alter my behaviour if I feel that something else is called for	0	1	2	3	4	5
2. I am often able to read people's true emotions correctly through their eyes.	0	1	2	3	4	5
3. I have the ability to control the way I come across to people, depending on the impression I wish to give them	0	1	2	3	4	5
4. In conversations, I am sensitive to even the slightest change in the facial expression of the person I am conversing with	0	1	2	3	4	5
5. My powers of intuition are quite good when it comes to understanding others' emotions and motives	0	1	2	3	4	5
6. I can usually tell when others consider	0	1	2	3	4	5
7. When I feel that the image I am portraying isn't working, I can readily change it to something that does	0	1	2	3	4	5
8. I can usually tell when I've said something inappropriate by reading it in	0	1	2	3	4	5

the listener's eyes

9. I have trouble changing my behaviour to suit different people in different situations	0	1	2	3	4	5
10. I have found that I can adjust my behaviour to meet the requirements of any situation I find myself in	0	1	2	3	4	5
11. If someone is lying to me, I usually know it at once from the person's manner of expression	0	1	2	3	4	5
12. Even when it might be to my advantage, I have difficulty putting up a good front	0	1	2	3	4	5
13. Once I know what the situation calls for, it's easy for me to regulate my actions accordingly	0	1	2	3	4	5

Appendix N

Revised Self Consciousness Scale

Please rate each item in terms of how true it is of you. Please circle one and only one number for each question according to the following scale:

0 = extremely uncharacteristic;

4 = extremely characteristic

1. I am always trying to figure myself out	0	1	2	3	4
2. I'm concerned about my style of doing things	0	1	2	3	4
3. Generally, I'm not very aware of myself	0	1	2	3	4
4. It takes me time to overcome my shyness in new situations	0	1	2	3	4
5. I reflect about myself a lot	0	1	2	3	4
6. I'm concerned about the way I present myself	0	1	2	3	4
7. I'm often the subject of my own fantasies	0	1	2	3	4
8. I have trouble working when someone is watching me	0	1	2	3	4
9. I never scrutinize myself	0	1	2	3	4
10. I get embarrassed very easily	0	1	2	3	4
11. I'm self-conscious about the way I look	0	1	2	3	4
12. I don't find it hard to talk to strangers	0	1	2	3	4
13. I'm generally attentive to my inner feelings	0	1	2	3	4
14. I usually worry about making a good impression.	0	1	2	3	4

15. I'm constantly examining my motives	0	1	2	3	4
16. I feel anxious when I speak in front of a group	0	1	2	3	4
17. One of the last things I do before I leave my house is look in the mirror	0	1	2	3	4
18. I sometimes have the feeling that I am off somewhere watching myself	0	1	2	3	4
19. I'm concerned about what other people think of me	0	1	2	3	4
20. I'm alert to changes in my mood	0	1	2	3	4
21. I'm usually aware of my appearance	0	1	2	3	4
22. I'm aware of the way my mind works when I work through a problem	0	1	2	3	4
23. Large groups make me nervous	0	1	2	3	4

Appendix O

Study 1: Participant Pool Advertisement

You are invited to take part in two different research studies. Study one is entitled “The relationship between personality traits and exercise behaviour.” Study two is entitled “Effectiveness of male-directed advertisements.” Both research studies are being conducted by Katherine Krawiec, M.A. (primary investigator) and Dr. Josee Jarry, C. Psych (faculty advisor) of the psychology department at the University of Windsor.

The purpose of Study one is to examine personality traits associated with exercise. This study is completed in an on-line format and your responses will be kept completely confidential. You will be asked to complete a few questionnaires related to personality traits and exercise behaviours. This study will take approximately 30 minutes to complete.

The purpose of Study two is to examine the factors that influence the evaluation of male-directed advertisements. More specifically, the relationship between personality traits and characteristics of advertisements will be examined. Study two will be conducted in the lab. You will view 12 advertisements and complete a questionnaire for each ad. Subsequently, you will be asked to fill out several personality questionnaires. Study two will take approximately 90 minutes to complete and will be completed in one session.

If you volunteer to participate in these studies, you will be participating in both Study one and Study two, which are two separate studies. These studies are not offered separately. You will receive 2 bonus points for completing both Study one and Study two toward the psychological participant pool, if you are registered in the pool and enrolled in one or more eligible courses.

Appendix P

Study 1: Consent Form

CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: Study 1: Personality Traits and Exercise Behaviour
Study 2: Effectiveness of Male-Directed Advertisements

You are asked to participate in a research study conducted by Katherine Krawiec and Dr. Josee Jarry, from the Clinical Psychology Department at the University of Windsor. The results of this study will contribute to Katherine Krawiec's Doctoral Dissertation.

If you have any questions or concerns about the research, please feel to contact Katherine Krawiec at (519) 253-3000, extension 4708 and/or Dr. Josee Jarry at (519) 253-3000 extension 2237.

PURPOSE OF THE STUDY

The purpose of study one is to examine personality traits and their association with exercise behaviour. Study two will examine the factors that influence the evaluation of male-directed advertisements. More specifically, the relationship between personality traits and characteristics of advertisements will be examined.

PROCEDURES

If you volunteer to participate in this study, you will be participating in both study one and study two, which are two separate studies. By signing this consent form you are indicating that you wish to participate in study one and study two. Upon reading and endorsing this consent form you will be asked to complete study one which is an on-line study. As such, you will be asked to complete a few questionnaires related to personality traits and exercise behaviours on-line.

Study two will be conducted in the lab. You will view 12 advertisements and complete a questionnaire for each ad. Subsequently, you will be asked to fill out several personality questionnaires.

Study one will take approximately 30 minutes. Study two will take approximately 90 minutes to complete and will be completed in one session.

POTENTIAL RISKS AND DISCOMFORTS

During the course of your participation you will be asked some questions that may be personal in nature. A risk associated with this study is the possibility of thinking about

some personal issues that may cause some psychological and emotional concerns for you. You will be given the opportunity to discuss these concerns thoroughly with the experimenter. If you have any concerns you wish to discuss with an independent party, please feel free to contact the Student Counselling Centre at 253-3000, ext 4616.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The benefit from participating in this research is the opportunity to learn about and contribute to psychological research. You will also learn how your personality influences your perception of magazine ads.

COMPENSATION FOR PARTICIPATION

For your participation you will receive 2 bonus points towards the psychology course of your choice, as long as the instructor is providing an opportunity to earn bonus points.

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. To ensure confidentiality, there will be no identifying features on the questionnaires. In addition, all paper data will be kept in a locked cabinet that is available for access only by the investigator.

Electronic data collected will be stored on an electronic database on a secure computer. Data will be destroyed in December, 2017.

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 do not want to answer and still remain in the study. You may exercise the option of removing your data from the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so (e.g., very incomplete questionnaires).

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE SUBJECTS

Research findings from this study will be available on the University of Windsor REB website.

Web address: www.uwindsor.ca/reb

Date when results are available: January 2013

SUBSEQUENT USE OF DATA

This data will not 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 Personality Traits and the Effectiveness of Male-Directed Advertisements 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

Appendix Q

Study 1: Weight/Height Consent Form

CONSENT STATEMENT

You have just participated in a research study conducted by Katherine Krawiec and Dr. Josee Jarry at the University of Windsor entitled: Personality Traits and the Effectiveness of Male-Directed Advertisements.

As a final part of the larger study you have just completed, you have been asked to allow the investigator to obtain a measure of your height and weight, so your body mass index (BMI) can be calculated.

The information you provide the investigator will remain confidential and will be disclosed only with your permission. Any information you provide will be used for research purposes only, which may eventually include publication of a research article. Taking part in this final portion of the study is completely voluntary. If you do not wish to be weighed or have your height measured, you are free to refuse without any penalty of loss of bonus points.

If you are willing to participate in this study and understand all that will be asked of you in participating, please sign your name following this consent statement.

I hereby acknowledge that, after reading this statement, I am willing to allow the investigator to measure my height and weight. I understand that all information I provide will be used for research purposes only and that confidentiality is assured. I also realize I am free to withdraw from the study at any time without penalty.

Signature of participant

Date

Signature of investigator

Date

Appendix R

Nutrition Labels for Beverages A, B, and C

A	B	C
Nutrition Facts	Nutrition Facts	Nutrition Facts
Serving Size 1 cup (8 fl oz) 250 mL	Serving Size 1 cup (8 fl oz) 250 mL	Serving Size 1 cup (8 fl oz) 250 mL
Amount per Serving	Amount per Serving	Amount per Serving
Calories 90 Calories from Fat 40	Calories 90 Calories from Fat 40	Calories 90 Calories from Fat 40
% Daily Value*	% Daily Value*	% Daily Value*
Total Fat 4.5g 7%	Total Fat 4.5g 7%	Total Fat 4.5g 7%
Saturated Fat 0.5g 3%	Saturated Fat 0.5g 3%	Saturated Fat 0.5g 3%
Trans Fat 0g 3%	Trans Fat 0g 3%	Trans Fat 0g 3%
Cholesterol 0mg 0%	Cholesterol 0mg 0%	Cholesterol 0mg 0%
Sodium 85g 4%	Sodium 85g 4%	Sodium 85g 4%
Potassium 410mg 12%	Potassium 410mg 12%	Potassium 410mg 12%
Total Carbohydrate 4g 1%	Total Carbohydrate 4g 1%	Total Carbohydrate 4g 1%
Dietary Fiber 2g 8%	Dietary Fiber 2g 8%	Dietary Fiber 2g 8%
Sugars 2g	Sugars 2g	Sugars 2g
Protein 5g	Protein 15g	Protein 25g
Vitamin A 2% · Vitamin C 0%	Vitamin A 2% · Vitamin C 0%	Vitamin A 2% · Vitamin C 0%
Calcium 2% · Iron 8%	Calcium 2% · Iron 8%	Calcium 2% · Iron 8%
*Percent Daily Values are based on a 2,000 calorie diet.	*Percent Daily Values are based on a 2,000 calorie diet.	*Percent Daily Values are based on a 2,000 calorie diet.

Appendix S

Taste Test Questionnaire

Milkshake: _____

Please rate the milkshake on the following dimensions:

1. Creaminess

1	2	3	4	5
not at all				very much

2. Sweetness

1	2	3	4	5
not at all				very much

3. Palatability

1	2	3	4	5
not at all				very much

4. Fragrancy

1	2	3	4	5
not at all				very much

5. I would drink this milkshake again.

1	2	3	4	5
not at all				very much

Appendix U

Study 2: Participant Pool Ad

You are invited to take part in two different research studies. Study one is entitled “The relationship between personality traits and exercise behaviour.” Study two is entitled “Effectiveness of digitally altered male-directed advertisements.” Both research studies are being conducted by Katherine Krawiec, M.A. (primary investigator) and Dr. Josee Jarry, C. Psych (faculty advisor) of the psychology department at the University of Windsor.

The purpose of Study one is to examine personality traits associated with exercise. This study is completed in an on-line format and your responses will be kept completely confidential. You will be asked to complete a few questionnaires related to personality traits and exercise behaviours. This study will take approximately 30 minutes to complete.

The purpose of Study two is to examine the factors that influence the evaluation of male-directed advertisements that have been digitally altered. More specifically, the relationship between personality traits and digitally altered advertisements will be examined. Study two will be conducted in the lab. You will view 12 advertisements and complete a questionnaire for each ad. Subsequently, you will be asked to fill out several personality questionnaires. Study two will take approximately 90 minutes to complete and will be completed in one session.

If you volunteer to participate in these studies, you will be participating in both Study one and Study two, which are two separate studies. These studies are not offered separately. You will receive 2 bonus points for completing both Study one and Study two toward the psychological participant pool, if you are registered in the pool and enrolled in one or more eligible courses.

Appendix V

Study 2: Consent Form

You are asked to participate in a research study conducted by Katherine Krawiec and Dr. Josee Jarry, from the Clinical Psychology Department at the University of Windsor. The results of this study will contribute to Katherine Krawiec's Doctoral Dissertation.

If you have any questions or concerns about the research, please feel to contact Katherine Krawiec at (519) 253-3000, extension 4708 and/or Dr. Josee Jarry at (519) 253-3000 extension 2237.

PURPOSE OF THE STUDY

The purpose of study one is to examine personality traits associated with exercise. Study two will examine the factors that influence the evaluation of male-directed advertisements that have been digitally altered. More specifically, the relationship between personality traits and digitally altered advertisements will be examined.

PROCEDURES

If you volunteer to participate in this study, you will be participating in both study one and study two, which are two separate studies. By signing this consent form you are indicating that you wish to participate in study one and study two. Upon reading and endorsing this consent form you will be asked to complete study one which is an on-line study. As such, you will be asked to complete a few questionnaires related to personality traits and exercise behaviours on-line.

Study two will be conducted in the lab. You will view 12 advertisements and complete a questionnaire for each ad. Subsequently, you will be asked to fill out several personality questionnaires.

Study one will take approximately 30 minutes. Study two will take approximately 90 minutes to complete and will be completed in one session.

POTENTIAL RISKS AND DISCOMFORTS

During the course of your participation you will be asked some questions that may be personal in nature. A risk associated with this study is the possibility of thinking about some personal issues that may cause some psychological and emotional concerns for you. You will be given the opportunity to discuss these concerns thoroughly with the experimenter. If you have any concerns you wish to discuss with an independent party, please feel free to contact the Student Counselling Centre at 253-3000, ext 4616.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The benefit from participating in this research is the opportunity to learn about and contribute to psychological research. You will also learn how your personality influences your perception of magazine ads.

COMPENSATION FOR PARTICIPATION

For your participation you will receive 2 bonus points towards the psychology course of your choice, as long as the instructor is providing an opportunity to earn bonus points.

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. To ensure confidentiality, there will be no identifying features on the questionnaires. In addition, all paper data will be kept in a locked cabinet that is available for access only by the investigator.

Electronic data collected will be stored on an electronic database on a secure computer. Data will be destroyed in December, 2017.

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 do not want to answer and still remain in the study. You may exercise the option of removing your data from the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so (e.g., very incomplete questionnaires).

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE SUBJECTS

Research findings from this study will be available on the University of Windsor REB website.

Web address: www.uwindsor.ca/reb

Date when results are available: January 2013

SUBSEQUENT USE OF DATA

This data will not 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 Personality Traits and the Effectiveness of Digitally Altered Male-Directed Advertisements 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

Appendix W

Study 2: Weight/Height Consent Form

CONSENT STATEMENT

You have just participated in a research study conducted by Katherine Krawiec and Dr. Josee Jarry at the University of Windsor entitled: Personality Traits and the Effectiveness of Digitally Altered Male-Directed Advertisements.

As a final part of the larger study you have just completed, you have been asked to allow the investigator to obtain a measure of your height and weight, so your body mass index (BMI) can be calculated.

The information you provide the investigator will remain confidential and will be disclosed only with your permission. Any information you provide will be used for research purposes only, which may eventually include publication of a research article. Taking part in this final portion of the study is completely voluntary. If you do not wish to be weighed or have your height measured, you are free to refuse without any penalty of loss of bonus points.

If you are willing to participate in this study and understand all that will be asked of you in participating, please sign your name following this consent statement.

I hereby acknowledge that, after reading this statement, I am willing to allow the investigator to measure my height and weight. I understand that all information I provide will be used for research purposes only and that confidentiality is assured. I also realize I am free to withdraw from the study at any time without penalty.

Signature of participant

Date

Signature of investigator

Date

VITA AUCTORIS

NAME: Katherine D. Krawiec
PLACE OF BIRTH: Toronto, ON
YEAR OF BIRTH: 1981
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