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# The Effect of the Muscular Ideal Prime in a Lexical Decision Task

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# THE EFFECT OF THE MUSCULAR IDEAL PRIME IN A LEXICAL DECISION TASK

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THE EFFECT OF THE MUSCULAR IDEAL

PRIME IN A LEXICAL DECISION TASK

STEPHANIE A. HENLEY

## ABSTRACT

Research has shown that body dissatisfaction (BD) is prevalent among males and is associated with unhealthy outcomes (Karazsia & Crowther 2009). Muscular ideal internalization and social comparison are predictors of BD in males. However, the majority of body image research has focused on females, with limited research having been conducted with males. In particular, little research has been aimed at understanding the internal mechanisms associated with male BD. In the current study, I examined the effect of priming an extreme muscular body and a moderate muscular body on the subsequent perception of positive and negative feeling words and positive and negative body-related words in traditional college-aged males. At least 24 hours prior to the in-lab portion of the study, male participants completed an online survey that asked basic demographic information (including their height and weight), the Male Bodies Attitude Scale questionnaire, and the Sociocultural Attitudes Towards Appearance Questionnaire. One-third of the participants viewed extreme muscular male models, one-third viewed moderate muscular male models, and one-third viewed plant pictures (control group). All participants completed a lexical decision task including six categories of word stimuli: body positive (BICEPS), body negative (UGLY), feeling positive (PROUD), feeling negative (ASHAMED), neutral (CHAIN), and nonword (JUPER). Stimuli were presented one at a time and participants were asked to determine as quickly and accurately as possible whether each stimulus was a real American English word or a

nonword. Based on past research (Barlett, Smith, & Harris, 2006), I predicted that those primed by the extreme muscular male models would respond significantly more slowly to body and feeling positive words and significantly more quickly to body and feeling negative words compared to those primed with the control or moderate muscular male models. In contrast to these predictions, males in the extreme muscular prime group responded significantly more quickly to both body positive and feeling positive words, and significantly more slowly to feeling negative words. Males in the moderate muscular prime group responded significantly more quickly to both body and feeling positive words, and significantly more slowly to body negative words. I discuss the theoretical and practical implications of these results.

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# CHAPTER I

## INTRODUCTION

People view approximately 25 appearance-related commercials a day (Agliata & Tantleff-Dunn, 2004). According to the Tripartite Influence Model (TPIM), pressures from family, peers, and the media to obtain an unrealistic body composition can lead to body dissatisfaction and harmful changes in body attitudes and body behaviors (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Karazsia & Crowther, 2010). Research has found that approximately 90% of undergraduate males report being dissatisfied with their bodies (Frederick, Sadehgi-Azar, Haselton, Buchanan, Peplau & Berezovskaya, 2007).

As our world is becoming increasingly overloaded with visual stimulation, the negative effect media has on individuals' body image is becoming more prevalent (Agliata & Tantleff-Dunn, 2004; Johnson, McCreary, & Mills, 2007). Moreover, males subjected to the unrealistic muscular ideal portrayed in the media report an increase in body dissatisfaction and an increase in depression (Agliata & Tantleff-Dunn, 2004). These increased levels of body dissatisfaction are associated with steroid use, extreme weight lifting, and maladaptive eating patterns (Cafri, Thompson, Ricciardelli, McCabe, Smolak, & Yesalis, 2005). Due to the unhealthy outcome of these behaviors, it is

important to understand the factors related to their use.

It is well reported that various forms of media (e.g., commercials, images, video games) lead to an increase in body dissatisfaction and depression levels in males (Agliata & Tantleff-Dunn, 2004; Cahill & Mussap, 2007; Barlett & Harris 2008). However, there is limited research on the internal mechanisms that either lead to – or cause – body dissatisfaction. Barlett, Smith, and Harris (2006) investigated these internal mechanisms in males by attempting to demonstrate a dual encoding process through the use of a lexical decision task. The task presented participants with a stimulus that was either a word or nonword. Participants were instructed to identify the stimulus as a word or nonword as quickly and accurately as possible by pressing the appropriate button. The researchers examined participants' responses to negative and positive feeling words and negative and positive body-related words. According to the dual encoding process account, males were expected to show facilitation for the body and feeling negative words and interference from the body and feeling positive words after being primed to think about their own bodies. These researchers primed their male participants to think about their own bodies by instructing participants to handle either extreme muscular or moderate muscular action figures. The study demonstrated interference but not facilitation. One possible reason for the inability to demonstrate facilitation is the form of media used. According to TPIM (Thompson et al., 1999), in order for the media to affect levels of body dissatisfaction, one must engage in social comparison and internalization. Although Barlett, Harris, Smith, and Bonds-Raacke (2005) were able to demonstrate a decrease in body dissatisfaction after handling extreme muscular action figures in college-aged males, it is reasonable (as acknowledged by Barlett et al., 2006)

that college-aged males may not have engaged in social comparisons to these action figures (whereas young males may do so).

Vitousek and Hollon's (1990) cognitive theory of eating disorders is consistent with Barlett et al.'s (2006) dual encoding process. The cognitive theory suggests that eating disordered females organize their self-schemas around weight and the effect it has on the self. The suggestion is that females at risk for an eating disorder process words that are congruent with their self-schema faster (i.e., they process fat words faster if they view themselves as fat) and resist words that are incongruent with their self-schema (i.e., they process thin words slower if they do not view themselves as thin).

Using the same framework as Vitousek and Hollon's (1990) cognitive theory and the TPIM, I predicted that the use of another type of prime (e.g., pictures of male models) would cause males to engage in social comparison and internalization, and thus demonstrate what Barlett et al. (2006) failed to achieve with the use of action figures as primes; that is, a facilitation of body and feeling negative words (i.e., words congruent with their self-schemas) and interference from body and feeling positive words (i.e., words incongruent with their self-schemas). Successful demonstration of both facilitation and interference as a function of extreme muscular male models with both body positive and negative and feeling positive and negative words, respectively, would support theoretical frameworks positing facilitation with schema-congruent stimuli and interference with schema-incongruent stimuli.

# CHAPTER II

# LITERATURE REVIEW

## 2.1 The Tripartite Influence Model

TPIM was originally developed by Thompson, et al., (1999) as a model to explain risk factors associated with body dissatisfaction and symptomatology of bulimia and restriction among females. TPIM postulates that peers, parents, and media are the core influences that lead to social comparison and internalization of a certain "ideal" body image. According to Thompson et al. (1999), internalization is the process of accepting the social ideal body figure as standard and creating personal goals for obtainment. Social comparison and internalization can lead to body dissatisfaction, which may result in maladaptive eating behaviors. Psychological functioning (e.g., levels of self-esteem and depression) is another variable in this model; however, there is some discrepancy as to its placement. In one model, Thompson et al. (1999) propose that bulimia and psychological functioning have a shared relationship (i.e. bulimia and psychological functioning are a result of one another). In a second model, Thompson et al. (1999) propose psychological functioning as a mediator between the three core influences (peers, parents, and media) and higher levels of social comparison and internalization. This second model suggests that those with higher levels of depression and lower levels of

self-esteem are more likely to engage in social comparison and internalization because they are more susceptible to influences that increase attentiveness to appearance pressures set forth by sociocultural influences.

TPIM stems from Festinger's Social Comparison Theory (1954). Social comparison theory states that individuals have an internal drive to compare themselves to others in either an upward or a downward manner. Upward comparison, in the context of perceived physical attractiveness, is when an individual compares himself or herself to someone perceived to be more attractive, which can lead to a decrease in self-esteem. Downward comparison is when an individual compares himself or herself to someone perceived to be less attractive, which can lead to an increase in self-esteem.

Cahill and Mussap (2007) found that male participants reported significantly higher body dissatisfaction after viewing photos of muscular male models. The increase in body dissatisfaction was significantly related to the level of participation in strategies to increase muscle (e.g., taking diet pills or consuming protein drinks). Various psychological traits were tested as possible mediators of the relationship between increase in body dissatisfaction and level of participation in strategies to increase muscle. Internalization and frequency of body comparison were found to be two mediating factors. However, for the males that viewed the muscular male model photos, in order for there to be a relationship between increased body dissatisfaction and strategies to increase muscle, male participants needed to value the photos (internalization) and have a predisposition to body comparison. These factors are related to a psychological engagement with the photos, resulting in an increase of salience of the images (frequency of comparison).

Over time, the ideal male figure has grown increasingly muscular (Johnson et al., 2007; Pope, Olivardia, Gruber, & Borowiecki, 1999). Men report the desire to gain muscle "waist-up" (e.g., chest and arms) which is reflective of the "ideal" male body image media portrays (Frederick et al., 2007). Ridgeway and Tylka (2005) asked male participants a series of open-ended questions (e.g., "describe your perception of the overall body shape that men in general desire", "describe characteristics of men's bodies that society emphasizes as ideal") and demonstrated that men's perceived ideal body shape and composition is extremely similar to what they believe society considers attractive; these findings are consistent with internalization.

TPIM has been extended to explain influences related to body dissatisfaction in adolescent and young adult males. Karazsia and Crowther (2009) examined internalization and social comparison as simultaneous mediating factors between social influences (peers, parents, and media) and body dissatisfaction. Consistent with TPIM, these authors found that both internalization and social comparison were significant mediating factors and important to the understanding of body dissatisfaction in males. The results were consistent with Social Comparison Theory (Festinger, 1954) in that men engaged in social body comparison to acquire information about the ideal body figure.

## 2.2 Body Ideal in Males

The ideal male body endorsed by the media (e.g., advertisements, movies) is lean, muscular, and athletic (Frederick et al., 2007; Ridgeway & Tylka, 2005). This notion of an ideal male body image is evident in the pages of many magazines, on television, and even in toys targeted to adolescent boys. In the past 30 years, action figures, popular among young boys (e.g., G.I. Joe, Superman), have become increasingly muscular

(Johnson et al., 2007). Often times the muscular composition is so excessive it would be beyond the capacity of human development. Barlett et al. (2005) examined the impact of these extreme muscular action figures on traditional college-aged males in their study using wrestling action figures to support the claim that unrealistic body composition (e.g., excessively large muscles) has a negative impact on self-esteem. The results showed participants who handled extreme muscular action figures (when stretched to a height of 6 ft., had measurements greater than the average male; waist: 27 in., biceps: 25 in., and chest: 64 in.) revealed a decrease in state self-esteem levels compared to those who did not handle any action figure.

The shift toward an idealized lean, muscular, athletic body composition is further supported in another study conducted with traditional college-aged males (Ridgeway & Tylka, 2005). In an open-ended questionnaire, when asked to describe their ideal male body image, males consistently referred to an overall muscular and lean body. Male participants made mention of specific body parts (e.g., arms, chest, calves, back, and abdomen) and expressed their desire to be lean and muscular. This study supports the belief that men are mostly concerned with the areas at or above the waist (e.g., chest, arms, and abdomen). However, body parts below the waist (e.g., calves and upper leg) were also mentioned by many participants and should not be excluded when assessing men's satisfaction with their bodies.

Frederick et al. (2007) conducted four studies with male participants from three different regions in the United States, Ukraine, and Ghana in order to investigate male body dissatisfaction across cultures. In this study, body silhouettes were used to determine men's satisfaction with their body composition. Traditionally, when

determining body dissatisfaction, male participants look at silhouettes that manipulate body fat level. However, Frederick et al. (2007) assert there are differences for males not only regarding their body fat, but also their muscularity. Therefore, two silhouettes were created in order to independently assess male participants' satisfaction with their level of body fat and muscularity. All men, regardless of region, desired to be more muscular. However, participants from the United States had the highest dissatisfaction with their muscle level (90%) compared to participants from Ukraine (66.6%) and Ghana (50%). The study also found that many males from the United States were dissatisfied with their body fat levels, and within those that were dissatisfied, the majority wanted to be leaner. This study supports the claim that males in the United States desire a more muscular lean body.

## 2.3 Body Dissatisfaction

Body dissatisfaction can be defined in more than one way. Baranowski, Jorga, Djordjevic, Marinkovic, and Hetherington (2003) define body dissatisfaction as a relationship between cognition and negative thoughts about the body, whereas, Thompson, Heinberg, Altabe, & Tantleff-Dunn (1999) define body dissatisfaction as the subjective evaluation of one's body on a continuum from satisfaction to dissatisfaction. It has been consistently reported that women are more dissatisfied with their bodies than men (Thompson et al., 1999; Algars, Santtila, Varjonen, Witting, Johansson, Jern, & Sandnabba, 2009; Calogero & Thompson, 2010). However, research has shown that body dissatisfaction is becoming increasingly prevalent among males and has been associated with a number of harmful outcomes, such as maladaptive dieting, steroid use, and appearance and performance enhancing supplement use (Cafri et al., 2005, Karazsia

& Crowther, 2009). Body dissatisfaction in males is also associated with increased depression (Ricciardelli, McCabe, & Ridge, 2006).

Cafri et al. (2005) looked at the physiological and psychological effects of these possible harmful outcomes in males. One area of importance reviewed was anabolic-androgenic (i.e., illegal) and prohormones (i.e., legal) steroid use. Both variations of steroids come with the possible side effects of an increased risk of coronary artery disease and a possible causal relationship with stroke and liver failure (Friedl, 2000). In addition to these physiological effects, there have been reports of depression, manic symptoms/episodes, and aggression (Pope & Katz, 1990). In extreme cases, anabolic-androgenic steroid withdrawal has appeared to lead to suicide and in the cases of aggression, has shown associations with homicidal tendencies (Pope & Katz, 1990).

Another important area Cafri et al. (2005) discussed is maladaptive eating, specifically males' desire to dramatically increase or decrease weight. In order to gain weight, males must increase their calorie consumption. A major concern associated with the desire to gain weight is the possibility of obesity, which can lead to cardiovascular disease (McCreary & Sasse, 2002). On the other hand, to lose weight males may opt to decrease calorie consumption. Goldfield, Blouin, and Haroer (1998) cite maladaptive eating (e.g., anorexia, bulimia) as a major risk factor of decreased calorie consumption.

## 2.4 Priming

In body image research, media stimuli reflecting the media ideal have repeatedly been used to investigate a change in an individual's state body dissatisfaction level (Agliata & Tantleff-Dunn, 2004; Johnson et al., 2007). The majority of investigations support the notion that exposure to media ideal stimuli may lead to an increase in state

body dissatisfaction for both males and females. Yamamiya, Cash, Melnyk, Posavac, and Posavac (2005) found that exposure (even as brief as five minutes) to a thin media ideal female model versus neutral stimuli, lead female participants to have an increase in state body dissatisfaction. Similarly, Agliata and Tantleff-Dunn (2004) conducted a study with traditional college-aged male participants to determine whether exposure to commercials featuring males with that cultural ideal body would have a negative impact on body dissatisfaction and mood. These researchers found that after viewing a half hour show with four commercials containing male actors that were judged to be indicative of the male ideal body, male participants had a significantly higher state level of body dissatisfaction and an increased self-report of depression.

There are many reasons behind exposing participants to the media ideal stimuli. First, exposure to the media ideal stimulus is believed to activate an individual's self-schema. According to Festinger's theory of Social Comparison (1954), by activating these self-schemas, individuals are engaging in upward comparison (i.e., comparing to someone more attractive), thereby causing a decrease in self-esteem (or body-esteem), or downward social comparison (i.e., comparing to someone less attractive), thereby causing an increase in self-esteem. Second, researchers argue that by engaging in this comparison, "healthy" individuals are reacting to a subsequent task in the same (or a similar) manner as individuals with a body image disturbance or maladaptive eating disorder would react. Finally, researchers are attempting to demonstrate whether or not such stimuli (e.g., commercials, photos, advertisements) are causing a significant change in an individual's state body-dissatisfaction level or performance on a subsequent task. Repeated exposure to these stimuli may cause a shift from state to permanent body-

dissatisfaction or cause task performance to be more in-line with an individual with a diagnosed body image disturbance or maladaptive eating disorder.

2.5 Lexical Decision

In a lexical decision task, individuals are instructed to identify each stimulus as either a real English word or a nonword. Research has demonstrated that individuals are faster to respond to some words relative to others (Sanchez, Ferre, Garcia-Albea, & Guasch, 2006). For example, responses are typically faster to concrete words relative to abstract words, higher frequency words relative to lower frequency words, and familiar words relative to unfamiliar words. Lexical decision tasks are often used to investigate priming and interference. When reaction times (RTs) are faster to a specific set of words versus another, there is said to be facilitation; when RTs are slower, there is said to be interference.

Using the lexical decision paradigm, Ferraro, Andres, Stromberg and Kristjanson (2003) investigated a possible facilitation toward what they defined as "fat" words (e.g., large) with a group of female participants classified as being at risk for developing an eating disorder. These researchers found that at-risk females were fastest at processing fat words compared to all other word types (i.e., unrelated, neutral, and nonwords) and relative to females not at-risk for an eating disorder. These results demonstrates these at-risk females were not only fastest at processing fat words compared to themselves, but also compared to a control group.

Cassin, Ranson and Whiteford (2008) also used a lexical decision task to investigate facilitation toward processing of "fat" (e.g., chubby) words and interference toward processing of "thin" (e.g., slender) words. Vitousek and Hollon's (1990)

cognitive theory of eating disorders suggests that eating disordered females organize their self-schemas around weight and the effect it has on the self. Using this theory, Cassin et al. (2008) postulated that after viewing pictures of "thin ideal" female models, females at risk for an eating disorder would process words that are congruent with their self-schema faster (i.e., they would process fat words faster because they view themselves as fat) and resist words that are incongruent with their self-schema (i.e., they would process thin words slower because they do not view themselves as thin). While Cassin et al. (2008) failed to obtain results consistent with this theory, they recognize that it could have been due to the measure they were using to identify an individual as being at risk for an eating disorder or that they administered this measure after the prime and target tasks were completed. As stated previously, even brief exposure to the thin media ideal can increase state body dissatisfaction, which could have caused self-reports to be a reflection of the prime and not an actual reflection of being at risk for an eating disorder.

While the lexical decision task has been used with females as an attempt to help understand how the media ideal might affect cognitive processes, limited research of the same capacity has been conducted with males. To my knowledge, the only lexical decision task done with males looking at the muscular media ideal was the study conducted by Barlett et al. (2006). Barlett et al. (2006) investigated whether an extreme muscular action figure could cause "normal" healthy males to facilitate toward (i.e., process faster) body negative and feeling negative words and interfere from (i.e., process slower) body positive and feeling positive words. The study was able to demonstrate extreme muscular action figures caused interference from body positive and feeling positive words however it was not able to demonstrate facilitation toward body negative

and feeling negative words. They recognize that the prime used (i.e., action figures) may not have caused a group of traditional college-aged males to engage in social comparison, which is an essential part of activating self-schemas.

2.6 Questionnaires

2.6.1 SATAQ-3. The Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ) was developed by Heinberg, Thompson, and Stormer (1995) with the female thin media ideal in mind. It has since been revised to the SATAQ-3 (Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004). It is a 30-question questionnaire that includes four subscales: 1. Information: to what degree does media play a factor in perceived attractiveness. 2. Pressures: to what degree media pressure factors into the drive for physical attractiveness. 3. Internalization-general: to what degree the participant believes in and accepts the "ideal" male body. 4. Internalization-athlete: to what degree the participant endorses and accepts the "ideal" athletic body. Questions are answered using a 5-point Likert scale (from "definitely disagree to "definitely agree").

Though originally developed for females, Smolak, Levine, and Thompson (2001) found, with a few modifications, it extended to adolescent males with muscle development strategies and body dissatisfaction. Smolak et al. (2001) point out that the focus on lack of fat presented in the SATAQ-3 might make it a better measure for males. Also, the specific subscale that focuses on the internalization of an athletic ideal might give it more relevance for males (Karazsia & Crowther, 2008).

After making a few modifications (i.e., "… to look pretty" was changed to "… to look muscular"), Karazsia and Crowther (2008) tested the SATAQ-3 with a pool of male

participants and found strong support for the use of the questionnaire. They found a significant relationship between all four subscales and behaviors to increase muscles, tendencies to engage in physical comparison, negative affect, and body dissatisfaction. Additionally, they found both internalization subscales to be most relational to body dissatisfaction and to be the only subscales related to performance-enhancing supplement use.

2.6.2 MBAS. Tylka, Bergeron, and Schwartz (2005) developed the Male Body Attitude Scale (MBAS) as a way to assess men's attitudes about their body. This scale was constructed to measure both body dissatisfaction and body preoccupation which are often used in assessment of body disturbances (Pruzinsky & Cash, 2002). The MBAS is a 29 item questionnaire that is answered using a 6-point Likert scale (from "rarely" to "always"). It has 29 questions: 12 assess men's muscularity attitudes; eight assess men's body fat attitudes; two assess men's height attitudes; and seven assess men's overall body attitudes. The MBAS was found to have test–retest reliability, internal consistency, and construct validity (Tylka et al., 2005).

## 2.7 Research Purpose

The research study represents an extension of past research conducted by Barlett et al. (2006) that attempted to understand the internal processes in males after handling muscular action figures. These researchers attempted to demonstrate a dual pathway in which handling extreme muscular action figures would prime male participants to think about negative body image and feeling words (i.e., in a lexical decision task, they would respond faster to negative body and feeling words) and interfere with their ability to retrieve positive body image and feeling words (i.e., in a lexical decision task they would

respond slower to positive body and feeling words). The study was able to demonstrate that those primed with extreme muscular action figures (versus moderate muscular action figures and the control) did respond significantly slower to the feeling positive words ($p < .05$) and marginally significantly slower to body positive words ($p = .08$). However, they were unable to demonstrate the faster processing time with feeling negative ($p = .33$) and body negative ($p = .19$) words. One possible limitation of this study, as suggested by Barlett et al. (2006), is that the stimuli used may not have caused enough social comparison with the sample used. Adult males may not associate enough with wrestling action figures (i.e., adult males are not likely to play with action figures on a day-to-day basis); therefore, future research should use other stimuli (e.g., television commercials, magazine pictures) in an attempt to further investigate these findings.

The goal of the present study was to replicate the findings of facilitation and to obtain the effect missed (i.e., handling extreme muscular action figures will cause activation, or priming, of negative feeling and body image words). However, several important changes were made. First, consistent with Barlett et al.'s (2006) suggestion, this study used images of moderate and extreme muscular male models. Second, via self-report, this study collected the height and weight of the participants to determine their BMI. According to Ricciardelli and McCabe (2004), BMI is shown to be a contributing factor to body image in males. Third, the control group was primed the same way as our target groups using a neutral prime (i.e., plant pictures) instead of no prime. Fourth, this study used the MBAS (Tylka et al., 2005) to determine participants' level of body dissatisfaction. Fifth, this study used the SATAQ-3 (Karazsia & Crowther, 2008) to determine how much each participant internalized the media ideal. Sixth, all participants

complete the MBAS, SATAQ-3, and all basic demographic information at least 24 hours prior to the in-lab task. Requiring participants to provide this information in advance was done to guard against the effects the questionnaires may have had on the target task or the effects the target task and prime may have had on the questionnaires. Seventh, two separate blocks of the lexical decisions task (i.e., a neutral block and target block) were created. The first block (i.e., neutral) was done with neutral and nonwords only. The second block (i.e., target) was done with target, neutral, and nonwords. The neutral block was done prior to the prime task in order to get a true baseline performance of each participant and account for the possibility of increased arousal as a result of the pictures viewed during the prime task. Eighth, participants answered a series of questions after viewing each prime picture in order to increase the likelihood that they were engaging in social comparison (see Appendix N). Ninth, the prime was kept "active" throughout the lexical decision task (i.e., after every 40 trials, the participant saw three of the 13 prime pictures again).

Additionally it was my goal to add to the minimal body image literature that examines the internal processing associated with muscular stimuli. I expected to demonstrate that priming males with the muscular media ideal male body can have adverse effects on male participants.

2.8 Research Design

The current study used a 3 X 5 mixed design. The priming paradigm consisted of three between-participants levels: extreme muscular, moderate muscular, and control. The within-participants factor consisted of five levels: filler words (e.g., chain, extra), body positive words (e.g., attractive, handsome), feeling positive words (e.g., proud,

happy), body negative words (e.g., fat, weak), and feeling negative words (e.g., lame, ashamed).

2.9 Specific Predictions

Since limited research of this type has been done with males, the specific predictions were made based on the predictions of Barlett et al. (2006) and past lexical decision research conducted with females (Ferraro et al., 2003; Cassin et al., 2008).

Prediction 1: I predicted that the males in the extreme muscular prime group would respond significantly different to body negative and feeling negative words relative to those in the moderate and the control primes. More specifically, those primed by the extreme muscular would respond significantly faster to body negative and feeling negative words relative to those in the moderate and the control primes.

Prediction 2: I predicted that the males in the extreme muscular prime group would respond significantly different to body positive and feeling positive words relative to those in the moderate and the control primes. More specifically, those primed by the extreme muscular would respond significantly slower to body positive and feeling positive words relative to those in the moderate and the control primes.

# CHAPTER III

# EXPERIMENT

## 3.1 Method

3.1.1 Participants. Participants were recruited from the Cleveland State University Psychology Department participant pool and through word of mouth. All participants were volunteers, received credit towards a research requirement, or extra credit for their participation. After being separated into groups based on their BMI, participants were randomly assigned to one of three priming conditions (i.e., extreme muscular, moderate muscular, control). Each priming group had 10 participants, for a total sample size of 30. Demographic information is presented in Table 1.

Table 1. Mean (M) and standard deviation (SD) for Age, BMI, Grade Level, and Race.

| | Extreme ($n$ = 10) | Moderate ($n$ = 10) | Control ($n$ = 10) | Total ($n$ = 30) |
|---|---|---|---|---|
| Age in Years | 21.8 (3.01) | 22 (3.50) | 21.7 (4.90) | 21.8 (3.80) |
| BMI | 26.5 (4.82) | 25.3 (3.88) | 26.1 (4.18) | 26 (4.82) |
| Class | | | | |
| Freshman | 2 | 4 | 2 | 8 |
| Sophomore | 3 | 4 | 2 | 9 |
| Junior | 1 | 2 | 4 | 7 |
| Senior | 3 | 0 | 0 | 3 |
| Other | 1 | 0 | 2 | 3 |
| Race | | | | |
| White/Caucasian | 7 | 9 | 7 | 23 |
| Other | 3 | 1 | 3 | 7 |

3.1.2 Stimulus Materials. Thirteen pictures of extreme muscular males and 13 pictures of moderate muscular males were downloaded from the Internet. These pictures were matched so that they were similar in appearance. Ten undergraduate participants rated the muscularity of each picture and on a 1 (not muscular) to 5 (extremely muscular) Likert scale. Consistent with Barlett et al. (2006), the two groups (i.e., extreme muscular and moderate muscular) were viewed as significantly different in terms of their perceived muscularity (see Appendices A and B for a sample of each picture).

The lexical decision task used three types of word stimuli taken directly from Barlett et al. (2006): twenty target words: five body positive, five body negative, five feeling positive, and five feeling negative; 57 filler words not related to the body or feelings; and 80 nonwords. There was a three to one ratio of neutral to target words, equal number of words and nonwords, and all words were matched on length and frequency (Barlett et al., 2006). These words were presented in a completely randomized order (see Appendix C for a complete list of words).

3.1.3 Apparatus. The priming task and lexical decision task were presented with SuperLab 4.0.7b software (Cedrus Corporation, San Pedro, CA). RTs for the word and nonword responses were recorded using an RB-730 response box. Responses were recorded from the onset of the presentation of the stimulus word until the onset of the participant's press response where the red button on the left was indicative of a nonword and the green button on the right was indicative of a word.

3.1.4 Procedure. At least 24 hours prior to the in-lab portion of the study, participants were asked to fill-out an online survey through Cleveland State University's

Research Participation System[1]. After agreeing to the online consent form (see Appendix D), participants were asked some basic demographic information including how much TV they watch per week, how often they work out per week, how much internet they use per week, their height, and their weight (see Appendix E). Additionally they were asked to fill out two questionnaires: the SATAQ-3 (Karazsia & Crowther, 2008; see Appendix F) and the MBAS (Tylka et al., 2005; see Appendix G). Upon completion of the on-line survey, participants were asked to schedule a time, no less than 24 hours later, to complete the in-lab portion of the experiment.

The self-reported height and weight information of each participant was used to compute a body mass index (BMI) score. These scores were computed based on the calculator provided by the National Heart, Lung, and Blood Institute (NIH; https://www.nhlbi.nih.gov/guidelines/obesity/BMI/bmicalc.htm). Once scores were calculated, participants were placed in one of four BMI categories as set forth by the NIH (i.e., underweight, normal weight, overweight, obese). Based on these categorical placements, participants were then assigned to one of the three prime groups to ensure an even distribution of body composition.

Upon arrival to the laboratory for the in-lab portion of the experiment, participants were provided informed consent (see Appendix H) and completed a demographic questionnaire (see Appendix I). Each participant also completed a handedness inventory (Cohen 2008; see Appendix J), which was adapted from the Edinburgh inventory (Oldfield, 1971), an objective measure of the extent of right- or left-handedness of the individual.

[1]The online survey was completed at least 24 hours prior to the in-lab portion of the experiment to minimize the likelihood that participants' answers to the questions would bias their responses to the prime or the lexical decision trials.

All participants were tested individually and completed three separate tasks: a lexical decision task consisting of neutral words and nonwords, a prime task, and a lexical decision task consisting of target words (e.g., muscle, manly), neutral words, and nonwords.

Participants first performed the neutral lexical decision task in which they were instructed to decide both as quickly and accurately as possible whether the stimuli they viewed was a real English word or a nonword. This neutral task used only the 57 neutral words and 57 nonwords that matched the neutral words on length. This task was done first to ensure the prime was not affecting participants' baseline performance. After participants read instructions on the screen they were presented with a practice session consisting of 10 trials (five words and five nonwords) in order to become familiar with the task. Following the practice session, participants were reminded once again to respond both as quickly and accurately as possible. Each participant then completed 114 trials in which all stimuli were presented in a completely random order.

A given trial proceeded as follows: Using SuperLab 4.0.7b software (Cedrus Corporation, San Pedro, CA) the participant was presented with a stimulus word or nonword on a computer screen. They were then instructed to decide whether the stimuli was a word or nonword both as quickly and accurately as possible using an RB-730 response box where the red button on the left was indicative of a nonword and the green button on the right was indicative of a word. RTs were recorded from the onset of the presentation of the stimulus word until the onset of the participant's response. After the participant responded, a cue (i.e., "+") appeared on the center of the screen for a period of 1000ms, and then the next trial was initiated.

Upon completion of the neutral word versus nonwords discrimination task, using SuperLab 4.0.7b software (Cedrus Corporation, San Pedro, CA), participants completed a prime task. Based on their computed BMI score, participants were assigned to one of three prime groups. The first group (the control group) viewed plant pictures (n=10; Appendix K), the second group viewed pictures of moderate muscular males (n=10; see Appendix L), and the third group viewed pictures of extreme muscular males (n=10; see Appendix M). Each participant viewed a series of 13 pictures. Each picture appeared on the screen for a period of 30 seconds. Following this 30 second period, participants were asked to answer a series of four questions about each picture (see Appendix N) using a 4-point Likert scale (from "not at all" to "very much").

Once participants completed the priming task, all participants performed the target word versus nonword discrimination task. This task consisted of four separate blocks. The first block had 5 target words, 15 neutral words, and 20 nonwords for a total of 40 trials. The remaining three blocks each had 5 target words, 14 neutral words, and 20 nonwords for a total of 39 trials. In order to keep the prime active, prior to each block participants were presented with a series of three pictures from their original prime task. Each picture remained on the screen for 10 seconds for a total of 30 seconds. After participants read instructions on the screen they were presented with a practice session consisting of one picture and ten trials (five words and five nonwords) in order to become familiar with the task. Following the practice session, participants were reminded once again to respond both as quickly and accurately as possible. RTs were recorded from the onset of the presentation of the stimulus word until the onset of the participant's response.

Upon completion of the target word versus nonword discrimination task, participants were debriefed, thanked, and given research participation credit.

# CHAPTER IV

## RESULTS

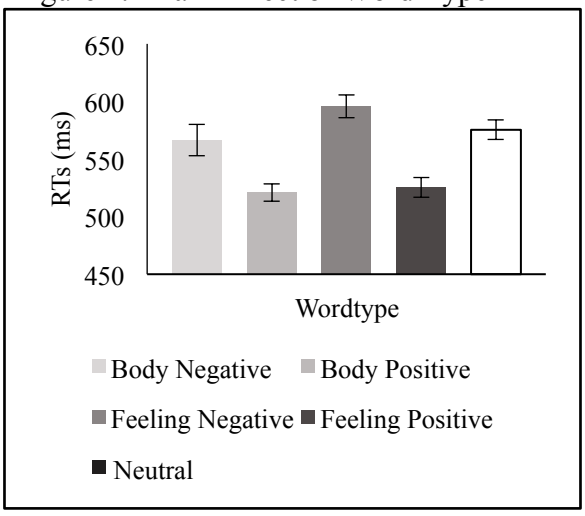
The three prime groups were similar in terms of age, race, and grade level (see Table 1). Consistent with Barlett, et al. (2006), prior to the main analysis, outliers were identified and removed, as following: First, RTs below 200ms were excluded and replaced with the mean for that word. Second, all incorrect responses were removed from the overall analyses. Overall participants correctly identified 95% of all the target words and 98% of all the neutral words. Third, mean RTs were computed for each individual word per prime condition (e.g., for the target word "steroid", a mean RT was computed for the extreme prime, moderate prime, and control prime). Any correct word responses greater than two standard deviations from the mean of that particular word was removed and then substituted with the mean for that word. Main analysis were conducted using 96% of all correct responses for the target words and 95% of all correct responses for the neutral words.

In order to determine if participants' scores on the SATAQ-3, MBAS, and BMI were affecting performance on the lexical decision task, a 3 x 5 mixed analyses of covariance (ANCOVA) with prime type a between participants factor, word type a within participants factor, and scores on the SATAQ-3, scores on the MBAS, and BMI as

covariates was performed on the RT data. The results showed a main effect for scores on the SATAQ-3, $F$ (1, 23) = 12.72, $p$ = .002, partial $h^2$ = .36, such that, as scores on the SATAQ-3 increased, participants RTs would slow down. Scores on the MBAS $F$ (1, 23) = 4.03, $p$ = .057, partial $h^2$ = .15, such that, as scores on the MBAS increased, participants RTs would speed up. The results did not show a main effect for BMI, $F$ (1, 23) = 1.57, $p$ = .222, partial $h^2$ = .06. These results support that scores on the SATAQ-3 and scores on the MBAS were affecting participants' performance, however, participants BMI was not. Scores on the SATAQ-3 and scores on the MBAS were therefore kept as covariates for all future analyses.

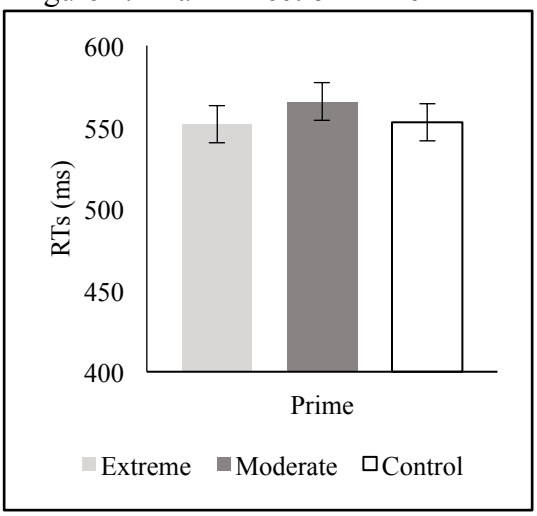
To address the predictions a 3 x 5 mixed analyses of covariance (ANCOVA) with prime type a between participants factor, word type a within participants factor, and scores on the SATAQ-3 and MBAS as covariates was performed on the RT data. These results revealed there was no main effect of prime type, $F$ (2, 25) = .445, $p$ = .646, partial $h^2$ = .03 (see Figure 1), or word type, $F$ (4, 100) = .314, p = .868, partial $h^2$ = .01 (see Figure 2).

Figure 1. Main Effect of Word Type




*bars indicate standard error

Figure 2. Main Effect of Prime




*bars indicate standard error

Consistent with predictions, the prime type x word type interaction reached significance, $F$ (8, 100) = 3.438, $p$ = .002, partial $h^2$ = .22. Pairwise comparisons were conducted in order to examine the specific predictions.

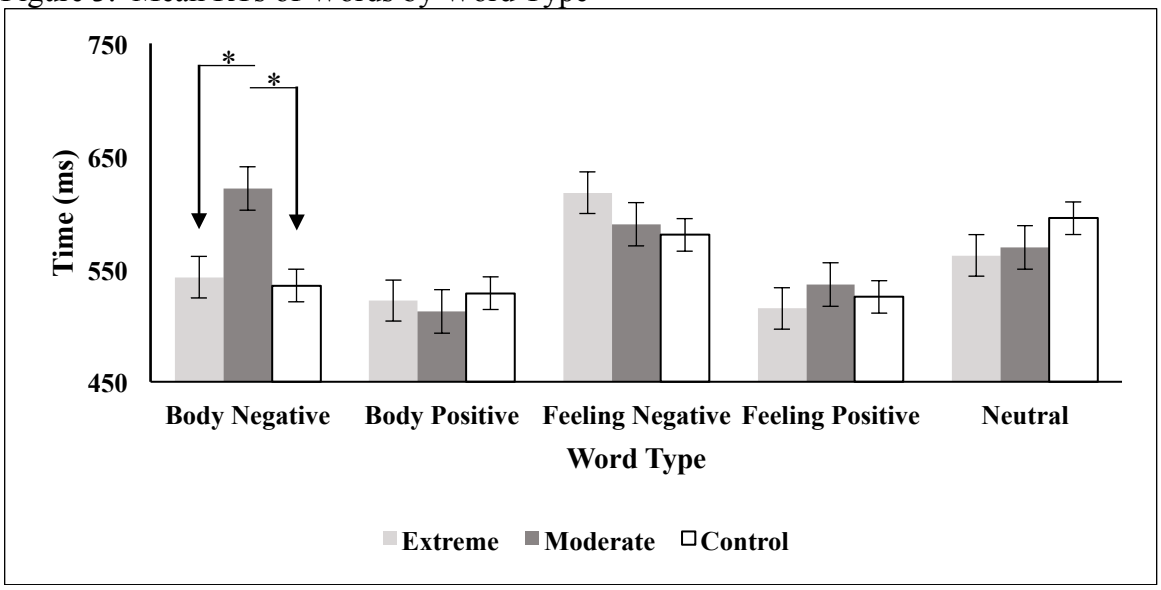
In keeping consistent with Barlett et al. (2006), each word type was examined individually to see if the groups performed differently in relation to one another (see Figure 3). Pairwise comparisons revealed that for the body negative words the extreme muscular and control prime groups performance were equivalent, $p$ = .823; however, the moderate muscular group responded significantly more slowly to the body negative words compared to both the extreme muscular prime, $p$ = .027, and the control prime, $p$ = .016. For body positive words, compared to the control, the extreme muscular group was performing the same, $p$ = .729, and the moderate muscular group was performing the same, $p$ = .398. For feeling negative words, compared to the control, the extreme muscular group was performing the same, $p$ = .139, and the moderate muscular group was performing the same, $p$ = .705. For feeling positive words, compared to the control, the extreme muscular group was performing the same, $p$ = .630, and the moderate muscular group was performing the same, $p$ = .624. Finally, for neutral words, compared to the control, the extreme muscular group was performing the same, $p$ = .736, and the moderate muscular group was performing the same, $p$ = .115 (for the specific RTs see Table 2). These results are in contrast to the predictions. Additionally, consistent with Barlett et al. (2006), it was expected that those primed by the moderate muscular would perform the same as the control.

Table 2. Mean RTs to Word Types Comparing Group Differences (*SE*)

| Condition | *n* | Body Negative* | Body Positive | Feeling Negative | Feeling Positive | Neutral |
|---|---|---|---|---|---|---|
| Extreme | 10 | 542.62 (23) | 522.00 (13) | 617.48 (17) | 515.01 (15) | 561.85 (14) |
| Moderate | 10 | 621.38 (24) | 512.27 (13) | 589.71 (17) | 536.04 (15) | 568.92 (15) |
| Control | 10 | 535.15 (23) | 528.52 (13) | 580.26 (17) | 525.35 (15) | 595.32 (15) |
| Total | 30 | 566.38 (13) | 520.93 (8) | 595.82 (10) | 525.47 (9) | 575.37 (8) |

*an overall difference in that word category, $p < .05$

Figure 3. Mean RTs of Words by Word Type




* $p < .05$, bars indicate standard error

Second, each prime group's performance compared to their own baseline (i.e., RTs to the target words compared to RTs to neutral words) was examined (see Figure 4). For the group primed by the extreme muscular pictures, pairwise comparisons revealed, relative to neutral words, RTs to body negative words were the same, $p = .458$, RTs were significantly faster to body positive words, $p = .012$, RTs were significantly slower to feeling negative words, $p = .006$, and RTs were significantly faster to feeling positive words, $p = .002$ (see Table 3). These results are in the opposite direction of the predictions.

For the group primed by the moderate muscular pictures, pairwise comparisons revealed, relative to neutral words, RTs to body negative words were marginally

significantly slower, $p = .052$, RTs were significantly faster to body positive words, $p = .001$, RTs were the same to feeling negative words, $p = .280$, and significantly faster to feeling positive words, $p = .026$ (see Table 3).

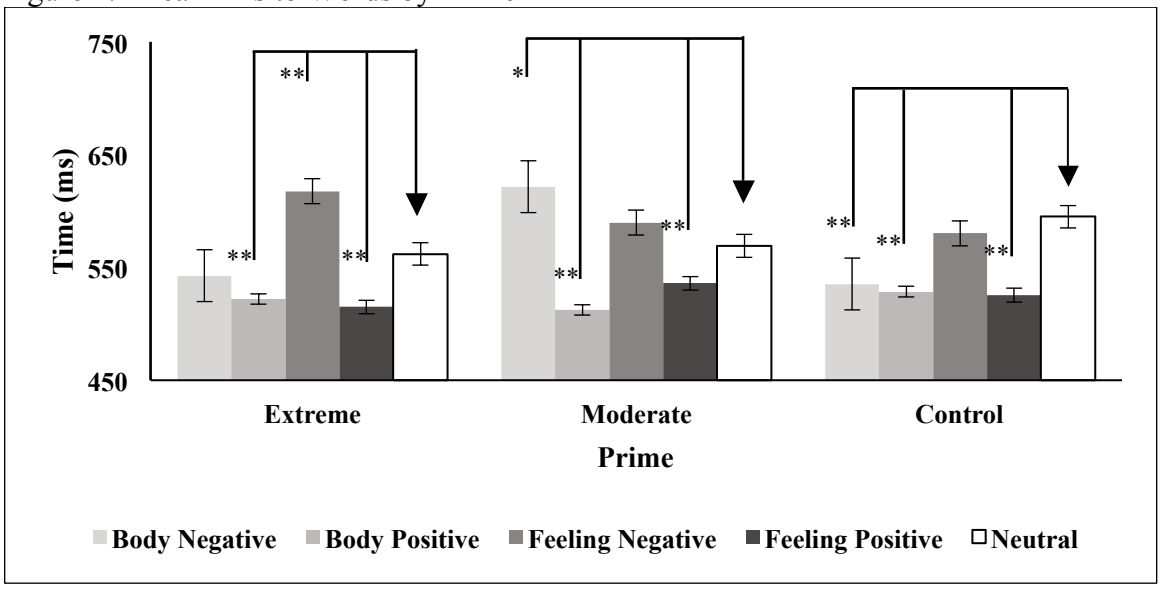
Finally, for the control group primed by plant pictures, pairwise comparisons revealed, relative to neutral words, RTs were significantly faster to body negative words, $p = .027$, RTs were significantly faster to body positive words, $p < .001$, RTs were the same to feeling negative words, $p = .427$, and RTs were significantly faster to feeling positive words $p < .001$ (see Table 3).

Table 3. Mean RTs to Word Types comparing baseline differences (*SE*)

| Word Type | Extreme Prime ($n = 10$) | Moderate Prime ($n = 10$) | Control Prime ($n = 10$) |
|---|---|---|---|
| Body Negative | 542.62 (23) | 621.38* (24) | 535.15* (24) |
| Body Positive | 521.00* (13) | 512.27* (13) | 528.52* (13) |
| Feeling Negative | 617.48* (17) | 589.71$^{o}$ (17) | 580.26 (17) |
| Feeling Positive | 515.01* (15) | 536.04* (15) | 525.35* (15) |
| Neutral | 561.85 (15) | 568.92 (15) | 595.32 (15) |
| Total | 551.79 (11) | 565.66 (12) | 554.54 (11) |

*significantly different than the neutral, $p < .05$
$^{o}$marginally significantly different than the neutral, $p < .10$

Figure 4. Mean RTs to Words by Prime




* $p < .10$, ** $p < .05$, bars indicate standard error

Finally, exploratory analysis were conducted to investigate the correlation between participants' scores on the SATAQ-3 and scores on the MBAS and their relation to one another and BMI (see Figure 5). Pearson correlations were conducted to compare scores on the SATAQ-3, scores on the MBAS, and BMI. Scores on the SATAQ-3 and scores on the MBAS were significantly correlated with one another, $r = .522$, $p = .003$, two-tailed, such that the more an individual internalizes the media ideal, the more dissatisfied they are with their body. Scores on the SATAQ-3 were significantly correlated with BMI, $r = .395$, $p = .034$, two-tailed, such that the more an individual internalizes the media ideal, the higher their BMI score is. Scores on the MBAS were significantly correlated with BMI, $r = .595$, $p = .001$, two-tailed, such that the more dissatisfied an individual is with their body, the higher their BMI score is.

Figure 5. Pearson Correlations with SATAQ-3, MBAS, & BMI

| | | MBAS Mean | SATAQ-3 Mean | BMI |
|---|---|---|---|---|
| MBAS Mean | Pearson Correlation | 1 | .522** | .594** |
| | Sig. (2-tailed) | | .003 | .001 |
| SATAQ-3 Mean | Pearson Correlation | .522** | 1 | .395* |
| | Sig. (2-tailed) | .003 | | .034 |
| BMI | Pearson Correlation | .594** | .395* | 1 |
| | Sig. (2-tailed) | .001 | .034 | |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

# CHAPTER V

# DISCUSSION

The current study was designed to extend the findings of Barlett et al. (2006) in order to determine how viewing pictures of men with different muscular composition would effect the processing of thought about men's bodies. Based on Barlett et al.'s (2006) predictions, as well as past research conducted with females (Ferraro et al., 2003, Cassin et al., 2008), it was predicted that after viewing pictures of extreme muscular male models, males would respond significantly faster to body and feeling negative words demonstrating a priming effect, and that males would respond significantly more slowly to body and feeling positive words demonstrating an interference effect. While evidence of both facilitation and interference was found, these patterns were in the opposite direction of what was predicted; and while these patterns were only expected to emerge with the extreme muscular prime group, they were present for the moderate muscular group as well.

The specific predictions were based on Barlett et al.'s (2006) study, which proposed a dual encoding process. The dual encoding process set forth follows the same line of thinking as Vitousek and Hollon's (1990) cognitive theory of eating disorders. According to this theory, eating disordered females organize their self-schemas around

weight and the effect it has on the self. The suggestion is that females at risk for an eating disorder process words that are congruent with their self-schema faster (i.e., they would process fat words faster because they view themselves as fat) and resist (i.e., process slower) words that are incongruent with their self-schema (i.e., they would process thin words slower because they do not view themselves as thin). The same principle was applied with males in Barlett et al.'s (2006) study – after being primed by an extreme muscular or moderate muscular prime, males would think about their own bodies and activate these same self-schemas found to be active in women. Once activated they would process schema-congruent and schema-incongruent information accordingly. However, the data appears to support the opposite; that is – males processed schema-congruent information slower and schema-incongruent information faster. There are a number of possible explanations that may account for these results.

The first possibility is that the male participants could have viewed themselves as more muscular than the males in the picture. There is evidence to support that while women tend to overestimate the size of their bodies (Grover, Keel, & Mitchell, 2003) men tend to underestimate (McCreary, 2002). McCreary (2002) found that while 33% of their sample of women thought they were heavier than they really were, 50% of their sample of overweight men believed they weighted less than they really did. It is possible that the males in the current study under estimated their bodies as well; however, this explanation is less likely. One of the questions participants were asked during the priming paradigm is how much more muscular the male in the picture is compared to themselves. They were asked to rate this on a four point scale (1 being not at all and 4 being very much). On average, the male participants in the moderate muscular group

rated 3.56 and male participants in the extreme muscular group rated 3.91.

A second possibility is that the males used in this study did not internalize the muscular ideal body composition. According to Calogero and Thompson (2010), men who have internalized this muscular ideal are more susceptible to the negative effects associated with exposure to muscular images. We know that the media endorses a lean athletic muscular composition (Frederick et al., 2007; Ridgeway & Tylka, 2005) and one way to measure how much an individual internalizes the media ideal is by using the SATAQ-3 as a measure (Karazsia & Crowther, 2008). After examining the participants in the current study, I found the sample displayed a limited range of scores on the SATAQ-3 (i.e., a limited range of levels of internalization). On a one to six scale, one being low internalization of the media ideal and six being high internalization of the media ideal, 47% of participants rate less than two and 93% of participants rated three or less. When asked if the male models in the pictures were in accordance with the participants' ideal male body, using a four-point scale (i.e., one being not at all and four being very much), participants in the moderate muscular group rated 2.93 and participants in the extreme muscular group rated 2.03. Future studies should attempt to compare individuals who have both high and low internalization of the media ideal.

A third possibility is that self-schemas were never activated in the male participants to begin with. In order to be consistent with Vitousek and Hollon's (1990) cognitive theory of eating disorders, men must have activated self-schemas that showed a discrepancy between how they believe they look next to the males in the picture they viewed. While the majority of males did believe the males presented during the priming paradigm were more muscular than they were, this does not necessarily mean self-

schemas were activated. Past research has found that compared to women, men tend to be less psychologically invested in their appearance (Muth & Cash, 1997). In fact Grover et al. (2003) found that while women's explicit and implicit weight identities were consistent (i.e., if they found themselves to be heavy in explicit measures, they also found themselves to be heavy in implicit measures), men's were not. Whether men identified as heavy or light during explicit measures, they were more likely to associate themselves as light during implicit measures (Grover, et al., 2003). Additionally, men seem to be less likely to equate themselves with images in the media they recognize as unobtainable and unrealistic (Arbour & Ginis, 2006). When asked how much they would like to look like the model in the picture on the same four point scale, male participants in the moderate muscular group rated 2.95 and males in the extreme muscular group rated 2.31. This would suggest males in the moderate muscular group wanted to look more like the moderate models, however, neither group was particularly high or particularly low. Participants may not have been engaging in social comparison because they did not care to look like these models or they saw them as too unrealistic or obtainable as suggested by Arbour and Ginis (2006).

This possibility makes the most sense in that our data support that male participants were simply primed by looking at pictures of either extreme muscular males or moderate muscular males. Males were not thinking of their own body image, rather, they were thinking about the bodies that were presented to them. Both groups responded significantly faster to the body positive and feeling positive words. This is directly opposite of what Vitousek and Hollon's (1990) cognitive theory of eating disorders would suggest. Male participants were facilitated toward positive words – both body and

feeling. Suggesting thinking about these pictures made them think more positively – possibly because they are imagining what the males in the picture are thinking or feeling.

The group primed by the extreme muscular picture responded significantly slower to feeling negative words, however not to body negative words. A possible explanation why interference effects did not emerge with the body negative words is because the males in the picture were so excessively muscular, the body piece of the word was in competition with the negative piece of the word. This makes sense as these men were neither significantly faster nor slower at identifying this word type compared to their responses to neutral words. Again, this is counter-intuitive to Vitousek and Hollon's (1990) cognitive theory of eating disorders. Men demonstrated interference from negative feeling words. Suggesting these pictures inhibited negative thoughts.

Additionally, the group primed by the moderate muscular picture responded significantly slower to body negative words and while it did not reach significance, they were slower at identifying feeling negative words. A possible explanation as to why feeling negative words did not reach significance is a practice effect. As we see in our control group, men got faster in general from the neutral task to the target task. I may not have been able to pick up the effect because while men slow down when processing feeling negative words, they also get faster because the task gets easier (i.e., practice effect). Once again this is counter-intuitive to Vitousek and Hollon's (1990) cognitive theory of eating disorders. These male participants demonstrated interference from both negative body and negative feeling words. Suggesting these pictures inhibited negative thoughts.

While this data demonstrate dual encoding, they are contrary to what was

originally predicted by Barlett et al. (2006) and Vitousek and Hollon's (1990) cognitive theory of eating disorders: men in the extreme prime and in the moderate prime demonstrated interference from negative words and facilitation toward positive words. This dual encoding provides evidence for the internal mechanisms being processed when men are exposed to various degrees of muscular stimuli and warrants further investigations. It is important that as we move forward in cognitive investigations with males, we are cautious at assuming males will perform similar to or the same as females. It is also important to recognize that there are gender differences when it comes to the media ideal. As stated above, men are less likely to compare themselves to unrealistic and unobtainable images (Arbour & Ginis, 2006). A study by van den Berg, Paxton, Keery, Wall, Guo, and Neumark-Sztainer (2007) found that while media body comparison was a significant predictor of body dissatisfaction for females, it was not for males suggesting the media ideal (i.e., these unrealistic body compositions) may not have the same effects on males. In order to understand this further, future research should attempt to investigate this cognitive theory using images of "real" people and attempt to isolate the effect of body comparison with the media ideal image.

The results of this study have implications for individuals who study body image with both males and females, clinical psychologists who work with male patients suffering from body image disturbances, and men who are constantly exposed to the media ideal body. While gender differences are reported in the literature (van den Berg, et al., 2007; Nowell & Ricciardello, 2008; Calogero & Thompson, 2010) there is a limited understanding of the cognitive processes at work in males, females, and how they differ from one another. There is also a limited understanding of whether the media body

comparison has the same mediating effect between media exposure and increases in body dissatisfaction in males as it does in females. While men have been found to have increased state body dissatisfaction after exposure to media ideal stimuli (Agliata & Tantleff-Dunn, 2004; Johnson et al., 2007) social comparison is often times assumed and not actually measured. It is also important going forward to attempt to understand the "why" part of why there may be gender differences.

Although the study was able to demonstrate a dual encoding process, albeit in the opposite direction of what was predicted, there are some possible limitations that need to be discussed. First, as stated above, our participants exhibited a limited range of scores on the SATAQ-3 (i.e., 93% of all our participants scores three or under on a six point scale). It is possible that a larger and more heterogeneous sample would have produced greater variability on SATAQ-3 scores, which in turn may have resulted in the activation of self-schemas. Future research should investigate individuals found to have high internalization of the media ideal compared to individuals found to have low internalization of the media ideal. Second, if men are in fact less likely to compare themselves to unrealistic, unobtainable images, future research should attempt this study using more realistic images of the male body. Third, this study is limited to a lexical decision task only. Future studies should investigate these findings using other tasks (e.g., mousetracking, eyetracking) to ensure these results are not task specific. Finally, this study was limited to undergraduate males in the United State who were mostly white with an average age of 22. Future research should investigate these findings with other regions, other races, and other ages.

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# APPENDICES

APPENDIX A
(Example of Extreme Muscular Pilot Paradigm)

Please rate this picture on a scale from 1 (not muscular) to 5 (very muscular) on how muscular you believe the individual in this picture is.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not Muscular | A little Muscular | Moderately Muscular | Quite Muscular | Extremely Muscular |

APPENDIX B
(Example of Moderate Muscular Pilot Paradigm)

Please rate this picture on a scale from 1 (not muscular) to 5 (very muscular) on how muscular you believe the individual in this picture is.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not Muscular | A little Muscular | Moderately Muscular | Quite Muscular | Extremely Muscular |

APPENDIX C
(Word List)

| Body Positive | Body Negative | Feeling Positive | Feeling Negative | Neutral | Nonword |
|---|---|---|---|---|---|
| Biceps | Ugly | Proud | Ashamed | Chain | Cooda |
| Attractive | Puny | Confident | Distress | Extra | Strobo |
| Muscle | Weak | Content | Lame | Towns | Shustling |
| Handsome | Steroid | Happy | Afraid | Share | Imdere |
| Strength | Fat | Manly | Frail | Claim | Poobicle |
| | | | | Commands | Alseshod |
| | | | | Bait | Himp |
| | | | | Naps | Ikle |
| | | | | Pens | Flum |
| | | | | Sample | Tummim |
| | | | | District | Deo |
| | | | | Remember | Zoiny |
| | | | | Appeared | Frubbinn |
| | | | | Bold | Gruppock |
| | | | | Neat Style | Kobo |
| | | | | Allowance | Roplo |
| | | | | Northeast | Edere |
| | | | | Translate | Heone |
| | | | | Remarks | Kolps |
| | | | | Percent | Otbee |
| | | | | Payment | Bivoal |
| | | | | Bonus | Creawhy |
| | | | | Sniff | Thukeds |
| | | | | Limbo | Hufle |
| | | | | Buffalo | Lrest |
| | | | | Lecture | Klort |
| | | | | Channel | Niotion |
| | | | | Daylight | Graxil |
| | | | | Marching | Aiperts |
| | | | | Double | Noyguls |
| | | | | Remove | Gackprod |
| | | | | Choir | Kullford |
| | | | | Lakes | Plashall |
| | | | | Belts | Zimop |
| | | | | Aliens | Denla |
| | | | | Clinic | Enple |
| | | | | Napkin | Yerbap |
| | | | | Objectives | Unsops |
| | | | | Legislature | Hinferes |
| | | | | Communists | Klimpto |

| | | | | | |
|---|---|---|---|---|---|
| | | | | Prison | Ilgars |
| | | | | Discover | Tunnderous |
| | | | | Combined | Resnaberes |
| | | | | Studying | Joidington |
| | | | | Rent | Gunpol |
| | | | | Bats | Woog |
| | | | | Mast | Heem |
| | | | | Clip | Poig |
| | | | | Kids | Trea |
| | | | | Coal | Tnol |
| | | | | Beef | Kuji |
| | | | | Turnips | Frib |
| | | | | Peddled | Joplack |
| | | | | Bagpipes | Strimpe |
| | | | | Lie | Dreelmoy |
| | | | | Eat | Nof |
| | | | | | Laz |
| | | | | | Juper |
| | | | | | Esantr |
| | | | | | Weverton |
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APPENDIX D
(Online Consent Form)

Informed Consent (online survey)
Online Portion (PART ONE)
Participant Consent Form

This research is being conducted by Stephanie Henley as part of her thesis project for her Master's degree from the Psychology Department at Cleveland State University under the direction of her thesis advisor, Dr. Conor T. M$^{c}$Lennan. Contact information for both Stephanie and Dr. M$^{c}$Lennan appear below.

The purpose of this research is to identify the effects of contemporary mass media images. This is a two-part experiment.

As a participant in Part One, you will be asked to complete a short questionnaire online. Once you are finished, please sign up for a time to come to the language research lab to complete Part Two of the experiment. Part One should take no longer than 30 minutes to complete. You will receive credit immediately upon completion of the survey. Please be aware that you are not required to participate in this research, and you may discontinue your participation at any time without penalty. The survey consists of a number of multiple-choice and/or free-answer questions. You may omit any items on the questionnaire that you prefer not to answer by selecting "check this box if you do not want to provide an answer for this question".

As a participant in Part Two, you will be asked to view some pictures from Internet advertisements and complete a short task on the computer. The purpose of this research is to investigate media images. Your participation is Part Two will be limited to one session lasting approximately 30 minutes.

Your data and responses on the online survey will remain confidential. However, as with all confidential research, there is the potential risk of breach of confidentiality. While this breach is possible, all responses are held in the Psychology Department Research Participation System (https://csuohio.sona-systems.com/default.aspx). This site is password protected and your responses may only be accessed by Stephanie and Dr. M$^{c}$Lennan. Furthermore, data from this study will likely only be presented, published, or discussed in aggregate. However, should an individual's data be singled out, this would only be done using a participant code, without using names or any other identifying information.

Additional risks associated with participation in this study are minimal and not beyond that of daily living. Potential risks include fatigue and possible discomfort from disclosing personal information. While you must complete all sections in one sitting (i.e., you are not allowed to resume at another time from where you left off) if you become tired, feel free to take as long as necessary to complete the survey.

If you need further assistance, you may schedule an appointment at the Cleveland State University Counseling and Testing Center by calling (216) 687-2277.

Participation is this study is completely voluntary and you may withdraw at any time without penalty. Should you choose to withdraw, the information you had provided up to that point would not be included in the analysis of this study. For every question you are given the option to decline to answer a question. If for any reason you are uncomfortable answering a question, please select the no response option, which will be considered a response. Please note, choosing not to respond to a question will not exclude the information you did provide from data analysis. If you have any questions regarding this research, feel free to contact Stephanie Henley at (216) 687-3834 or email her at s.henley25@ csuohio.edu, or call Dr. Conor T. M$^{c}$Lennan at (216) 687-3750 or email him at c.mclennan@csuohio.edu.
By continuing with this survey and selecting "YES, Start Survey" below, I am agreeing to the following statements:

"I am 18 years old or older and I voluntarily agree to participate in this study. My completion and electronic submission of this survey will serve as my consent. I may print a copy of (or contact the language research lab for a copy of) this consent statement for future reference."

"If I have any questions about my rights as a research participant I can contact the Cleveland State University Institutional Review Board at (216) 687-3630."

APPENDIX E
(Demographic Information)

Demographics (completed through online survey)

Thank you for taking the time to fill out our questionnaire. It has about 100 questions and should take no more than 30 minutes to fill-out. Please note that all information provided on this questionnaire will be strictly confidential. If you fill uncomfortable answering any question for any reason, please select the no response option or simply put N/R. Both of these will be considered a response.

1. Date of Birth
2. Gender
3. Grade Level
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. Graduate
    f. Other
4. If other, what is your grade level?
5. What is your major(s)?
6. What is your race/ethnicity?
    a. Hispanic
    b. African American,
    c. Asian American
    d. White/Caucasian
    e. American Indian
    f. European American
    g. Other
7. If other, what is your race/ethnicity?
8. Is English your native language?
    a. Yes
    b. No
9. If no, what is your native language?
10. Have you ever been diagnosed with an Eating Disorder?
    a. Yes
    b. No
11. If yes, which type of Eating Disorder?
12. If yes, when were you diagnosed with an Eating Disorder?
13. If yes, do you still have an Eating Disorder?
    a. Yes
    b. No
14. How much do you weigh in pounds?
15. How tall are you in inches?
16. How many minutes a day do you workout?

17. How many days per week do you workout?
18. How many minutes a day do you watch television?
19. How many days a week do you watch television?
20. How many minutes a day do you spend on the Internet?
21. How many days a week do you spend on the Internet?

APPENDIX F
(SATAQ-3)

1. TV programs are an important source of information about fashion and "being attractive".
2. I've felt pressure from TV or magazines to lose weight.
3. I would like my body to look like the people who are on TV.
4. I compare my body to the bodies of TV and movie stars.
5. TV commercials are an important source of information about fashion and "being attractive".
6. I've felt pressure from TV or magazines to look muscular.
7. I would like my body to look like the models who appear in magazines.
8. I compare my appearance to the appearance of TV and movie stars.
9. Music videos on TV are an important source of information about fashion and "being attractive".
10. I've felt pressure from TV and magazines to be muscular.
11. I would like my body to look like the people who are in the movies.
12. I compare my body to the bodies of people who appear in magazines.
13. Magazine articles are an important source of information about fashion and "being attractive".
14. I've felt pressure from TV or magazines to have a perfect body.
15. I compare my appearance to the appearance of people in magazines.
16. Magazine advertisements are an important source of information about fashion and "being attractive".
17. I've felt pressure from TV or magazines to diet.
18. I wish I looked as athletic as people in magazines.
19. I compare my body to that of people in "good shape".
20. Pictures in magazines are an important source of information about fashion and "being attractive".
21. I've felt pressure from TV or magazines to exercise.
22. I wish I looked as athletic as sports stars.
23. I compare my body to that of people who are athletic.
24. Movies are an important source of information about fashion and "being attractive".
25. I've felt pressure from TV or magazines to change my appearance.
26. I try to look like the people on TV.
27. Movie stars are an important source of information about fashion and "being attractive".
28. Famous people are an important source of information about fashion and "being attractive".
29. I try to look like sports athletes.

APPENDIX G
(MBAS)

1. I think I have too little muscle on my body.
2. I think my body should be leaner.
3. I wish my arms were stronger.
4. I feel satisfied with the definition in my abs (i.e., stomach muscles).
5. I think my legs are not muscular enough.
6. I think my chest should be broader.
7. I think my shoulders are too narrow.
8. I am concerned that my stomach is too flabby.
9. I think my arms should be larger (i.e., more muscular).
10. I feel dissatisfied with my overall body build.
11. I think my calves should be larger (i.e., more muscular).
12. I wish I were taller.
13. I think I have too much fat on my body.
14. I think my abs are not thin enough.
15. I think my back should be larger and more defined.
16. I think my chest should be larger and more defined.
17. I feel satisfied with the definition in my arms.
18. I feel satisfied with the size and shape of my body.
19. I am satisfied with my height.
20. Have you felt that your own body size or shape compared unfavorably to other men?
21. Has eating sweets, cakes, or other high calorie food made you feel fat or weak?
22. Have you felt like your muscle tone was way too low?
23. Have you felt excessively large and rounded (i.e., fat)?
24. Have you felt ashamed of your body size or shape?
25. Has seeing your reflection (e.g., in a mirror or window) made you feel badly about your size or shape?
26. Has seeing muscular men made you feel badly about your own body size or shape?
27. Have you been so worried about your body size or shape that you have been feeling that you ought to diet?
28. Have you ever felt that you were way too focused on your body size or shape?
29. Have you been particularly self-conscious about your body size or shape when in the company of other people?

APPENDIX H
(Informed Consent Form)


## Participant Consent Form

This research is being conducted by Stephanie Henley as part of her thesis project for a Master's degree from the Psychology Department at Cleveland State University under the direction of her thesis advisor Dr. Conor T. McLennan. Contact information for both Stephanie and Dr. McLennan appear below.

As a participant in this study, you will be asked to view some pictures from Internet advertisements and complete a short task on the computer. The purpose of this research is to investigate media images. Your participation will be limited to one session lasting approximately 30 minutes. Please be aware that you are not required to participate in this research, and you may discontinue your participation at any time without penalty.

Your data and responses on the participant intake form will remain confidential. However, as with all confidential research, there is the potential risk of breach of confidentiality. We will take various measures to ensure this confidentially. Your name will appear only on this informed consent form and the researcher's experiment log. These will be kept in a locked file cabinet. Furthermore, data from this study will likely only be presented, published, or discussed in aggregate. However, should an individual's data be singled out, this would only be done using a participant code, without using names or any other identifying information.

Additional, risks associated with participation in this study are minimal and not beyond that of daily living. Potential risks include fatigue and possible discomfort in disclosing sensitive information. If fatigue occurs, you can take as much time as you need to complete the experiment. Your data are important to this research project, and I hope that your participation contributes to your learning about psychological research.

Participation is completely voluntary and you may withdraw at any time without penalty. Should you choose to withdraw, the information you had provided up to that point would not be included in the analysis of this study. For further information regarding this research, please contact Stephanie Henley at (216) 687-3834, email: s.henley25@csuohio.edu, or Dr. Conor T. McLennan (216) 687-3750, email: c.mclennan@csuohio.edu.

Should you need further assistance, you may schedule an appointment at the Cleveland State University Counseling and Testing Center by calling (216) 687-2277. There are two copies of this consent form. After signing them, keep one copy for your records and return one to the researcher. Thank you in advance for participating in our research study.

Please indicate your agreement to participate by signing below.

I am 18 years or older and have read and understood this consent form and agree to participate.

I understand that if I have any questions about my rights as a research participant I can contact the Cleveland State University Institutional Review Board at (216) 687-3630.

Signature: _____ Date: _____

Name: _____ (Please Print)

APPENDIX I
(Demographics Questionnaire)

**PARTICIPANT INFORMATION FORM: PAGE 1**

**Stephanie A. Henley, Graduate Student: s.henley25@vikes.csuohio.edu**
**Dr. McLennan, Faculty Advisor: c.mclennan@csuohio.edu (216) 687-3750**
**Language Research Laboratory - Chester Building 249**
**LANGUAGERESEARCH@MAC.COM (216) 687-3834**
**http://www.facebook.com/languageresearch**
**Cleveland State University: Department of Psychology**

**FOR LRL USE:**

Room #_____

Participant #_____

_____ (credits) OR $_____

Experiment _____

Date _____

Experimenter _____

**Please fill in the following information:**

Name: _____

*Address: _____

_____

E-mail address(es): _____

_____

Telephone Number: _____ Cell Phone Number: _____

Date of Birth: _____ Place of birth (City):_____

Gender: _____ Major: _____

Place of Longest Residence (City): _____

First language spoken: _____

Are you (circle one): right-handed left-handed ambidextrous

What languages do you speak fluently? _____

Would you like to be added to (or remain on) our "Paid Participants Database" so that we can notify you in the future of paid experiments for which you are eligible to participate? _____

**Note: If you would prefer not to provide your full address and phone number(s), you may simply provide your zip code. Thank you.*

**PARTICIPANT INFORMATION FORM: PAGE 2**

**Stephanie A. Henley, Graduate Student: s.henley25@vikes.csuohio.edu**
**Dr. McLennan, Faculty Advisor: c.mclennan@csuohio.edu (216) 687-3750**
**Language Research Laboratory - Chester Building 249**
**LANGUAGERESEARCH@MAC.COM (216) 687-3834**
**http://www.facebook.com/languageresearch**
**Cleveland State University: Department of Psychology**

**FOR LRL USE:**

Room #_____

Participant #_____

_____ (credits) OR $_____

Experiment _____

Date _____

Experimenter _____

Please note that your responses to the following questions will *not* be directly linked to your name. As with any part of your experience as a research participant in our study, please feel free to ask the experimenter if you have any questions. Thank you.

Have you ever had a visual or reading disorder (other than glasses/contacts)?

(circle one) YES NO

If yes, please explain: _____

Is English your first language?

(circle one) YES NO

If no, what is it: _____

APPENDIX J
(Handedness Inventory)

Edinburgh Handedness Inventory (completed on computer)

You can further help us by providing answers to the following questions. There are no right or wrong answers. Please indicate your preferences in the use of hands in the following activities by answering L for Left hand OR R for Right hand, OR X for No preference. After answering L, R, or X, please answer whether or not you ever use the other hand for each activity by typing Y for Yes OR N for No. Please answer all of the questions. If you have any questions, please ask the experimenter. Please type in your assigned ID number.

Which hand do you write with?
L) Left R) Right X) No Preference

Writing
Do you ever use the other hand?
Y for Yes OR N for No

Which hand do you draw with?
L) Left R) Right X) No Preference

Drawing
Do you ever use the other hand?
Y for Yes OR N for No

Which hand do you throw with?
L) Left R) Right X) No Preference

Throwing
Do you ever use the other hand?
Y for Yes OR N for No

Which hand do you use when using scissors?
L) Left R) Right X) No Preference

Scissors
Do you ever use the other hand?
Y for Yes OR N for No

Which hand do you put your toothbrush in?
L) Left R) Right X) No Preference

Toothbrush
Do you ever use the other hand?

Y for Yes OR N for No

Which hand do you use when using a knife without a fork?
L) Left R) Right X) No Preference

Knife
Do you ever use the other hand?
Y for Yes OR N for No

Which hand do you use when using a spoon?
L) Left R) Right X) No Preference

Spoon
Do you ever use the other hand?
Y for Yes OR N for No

Which hand is your upper hand when using a broom?
L) Left R) Right X) No Preference

Broom
Do you ever use the other hand?
Y for Yes OR N for No

Which hand do you use when striking a match?
L) Left R) Right X) No Preference

Striking a match
Do you ever use the other hand?
Y for Yes OR N for No

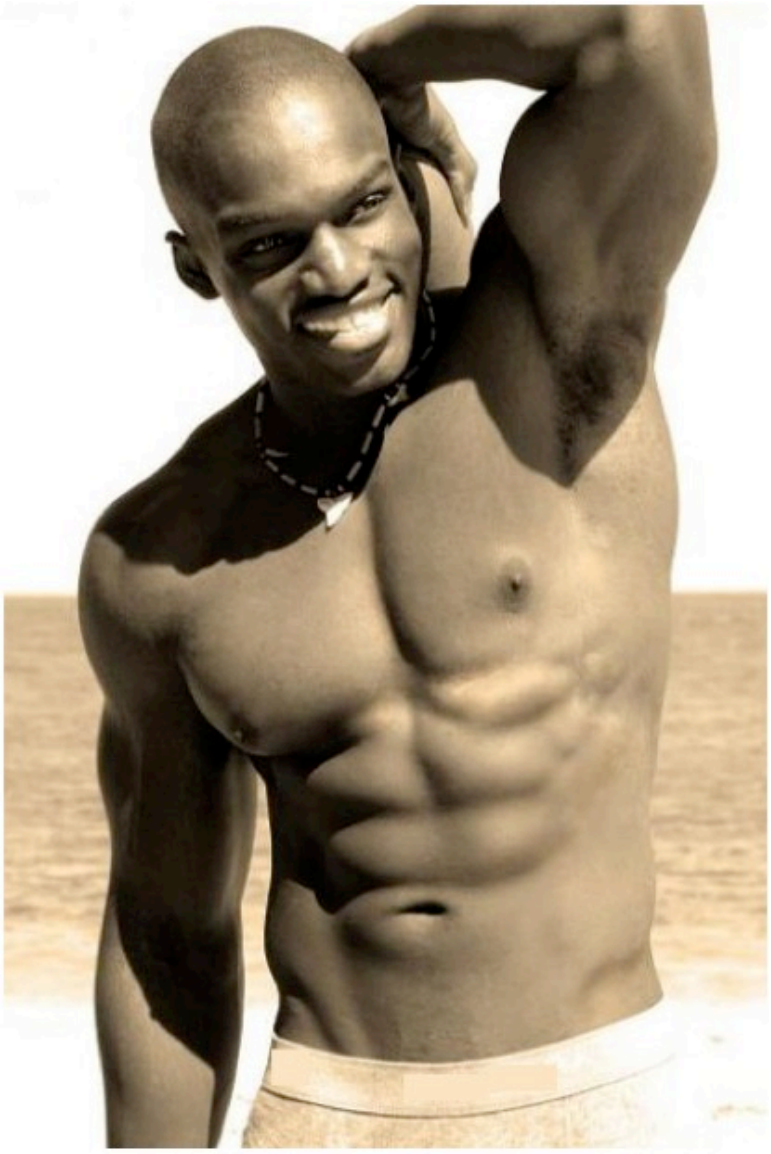
Which hand do you use when opening a lid to a box?
L) Left R) Right X) No Preference

Opening a lid to a box
Do you ever use the other hand?
Y for Yes OR N for No

Thank you! Please inform the researcher that you have completed this questionnaire.

APPENDIX K
(Control Prime)

APPENDIX L
(Moderate Muscular Prime)



APPENDIX M
(Extreme Muscular Prime)

APPENDIX N
(Prime Questions)

| PRIME | QUESTIONS |
|---|---|
| | |
| Control | 1. How close this plant is in accordance with your ideal of a nice plant.<br>2. I would buy this plant if I saw it in a store.<br>3. This would be a good picture to advertise this type of plant.<br>4. This plant is nicer than any other plant I have ever bought. |
| Moderate | 1. How close this image is in accordance to your ideal of a male body.<br>2. I would like my body to look like this man's body.<br>3. This man is more muscular than me.<br>4. In a busy gym, I would not workout next to this man. |
| Extreme | 1. How close this image is in accordance to your ideal of a male body.<br>2. I would like my body to look like this man's body.<br>3. This man is more muscular than me.<br>4. In a busy gym, I would not workout next to this man. |