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# An Evolutionary Psychology Perspective on Sex Differences in Exercise Behaviors and Motivations

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ABSTRACT. Researchers have found that men and women pursue sex-appropriate strategies to attract mates. On the basis of intrasexual competition, men should be more likely to enact behaviors to look larger, whereas women should be more likely to enact behaviors to look smaller. The types of exercises that each performs should reflect this expectation. The present study replicates and extends work by L. Mealey (1997) on sex differences in exercise behavior. In the present study, male participants focused their energy on gaining muscle mass and enhancing their upper body definition, whereas female participants focused their energy on losing weight with emphasis on their lower body. Both sexes reported efforts to improve their abdominal region. It appears that men and women adopt sex-appropriate exercise behavior as a method of self-enhancement for intrasexual competition.

Key words: evolutionary psychology, exercise, intrasexual competition, sex differences

HUMANS ARE A SEXUALLY DIMORPHIC SPECIES, meaning that each sex appears and acts differently than does the other in many ways. For instance, men tend to be larger, and women tend to be smaller. Accordingly, people can equate largeness with maleness and smallness with femaleness. Mealey (1997) demonstrated that there are systematic sex differences in exercise behavior. The present study is an extension and replication of Mealey's work on the sex differences between men and women in exercise behaviors and motivations, using a differ-

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ent population (a general population instead of gym-goers exclusively) and more rigorous measurement (multi-item measures instead of single-item measures).

Mealey (1997) found that work by other evolutionary psychologists on sex differences (Buss, 1989; Schmitt, Shackelford, Duntley, Tooke, & Buss, 2001) could be fruitfully used to explain differences in exercise behavior. Evolutionary psychologists only postulate sex differences where men and women can reproductively benefit from different strategies. The sex differences that evolutionary psychologists propose tend to be the means by which men and women select one another as mates and the means by which members of the same sex compete for mates. Consistent with an evolutionary perspective, Mealey found that men reported more time working out their upper bodies and that women spent slightly more time working out their lower bodies. Mealey posited that men and women might adopt sex-specific workout behaviors that were based on competition for mates.

Because of sexual dimorphism, women prefer men with larger upper bodies (Björntorp, 1987): a V-shaped torso with large upper body muscles (Kenrick, 1987). To enhance upper body size and maleness, men should focus on this area of the body when working out. In replication of Mealey (1997), I hypothesized the following:

> *Hypothesis 1:* Men will report spending more time focusing on upper body development than will women.

Because of sexual dimorphism, women are more likely than men to focus on their lower bodies because this part of the body tends to be where women accumulate their fat (Björntorp, 1987; Ross & Ward, 1982). In focusing on their lower bodies, women may be trying to enhance their femaleness and to maintain or improve their waist-to-hip ratio. In replication of Mealey (1997), I hypothesized the following:

> *Hypothesis 2a:* Men will report spending more time focusing on upper body development than will women.
>
> *Hypothesis 2b:* Women will report more time focusing on lower body development than will men.

Mealey (1997) did not address waist-to-hip ratio (WHR). Mealey addressed the *torso*, but that term is not likely to lend clean results regarding exercise involving the waist. There are reasons that should motivate both men and women to work out their abdomens, leading to no significant sex difference. Both sexes should be interested in maintaining the size of their waists because it affects their WHR. According to Singh (1993, 1994, 1995), men prefer women with a WHR of approximately 0.7, whereas women prefer men with a WHR of approximately 0.9. Men have a further motivation to focus on their waist: The discrepancy between shoulders and waist is attractive to women, as the earlier discussion of the V-shaped torso indicated. As a result, both sexes should focus on this area of their body when working out. Unlike Mealey, I hypothesized the following:

*Hypothesis 3:* There will be no significant sex difference in the time that participants report spending in focusing on abdominal exercises.

Mealey's (1997) study focused primarily on self-reported behaviors. The present study extended Mealey's findings by assessing motivations to exercise as well. Men and women report different reasons for engaging in weight-altering behaviors, and those motivations may also conform to evolution-based sex differences. Men have reported a desire to enhance their musculature and to stay in shape, whereas women have reported a desire to decrease clothing size, look better in clothes, and control weight (Brink & Ferguson, 1998; McDonald & Thompson, 1992; Silberstein, Streigel-Moore, Timko, & Rodin, 1988). These desires can be subsumed under the desire to enhance one's physical attractiveness. These desires and motivations may translate into actual behaviors that show sex differences in exercise motivations or goals.

Women prefer a more dominant-looking man (taller, darker, and bigger). To appear more attractive and more dominant, men may spend more time trying to build muscle (Ross & Ward, 1982) and to improve musculature through toning than will women. Men have previously reported a preference for anaerobic exercise (Mealey, 1997). Unlike Mealey, I hypothesized the following:

*Hypothesis 4:* Men will report more time spent trying to tone and build muscles than will women.

Men in the current Western culture prefer women who are more feminine-looking (smaller, shorter, and slimmer) than masculine-looking. As a result, women should be more likely to try to decrease their body mass. Women use dieting to control their weight and may also go to the gym to lower their weight. More generally, women should report spending more time trying to lose weight. Although women will try to decrease their overall weight, this attempt has its limits. With too little body fat, women become unable to bear children. However, the present study does not address extreme cases of weight loss in which the loss of childbearing ability is at great risk. Unlike Mealey (1997), I hypothesized the following:

*Hypothesis 5:* Women will report spending more time trying to lose weight than will men.

## Method

### *Participants*

Participants were 234 (110 [47%] women; 124 [53%] men) undergraduates from three Connecticut colleges. The mean age of the participants was 25 years (*SD* = 7.8 years; range = 16–65 years). Of all participants, 42% (the majority) of the sample self-identified as European American, 34% self-identified as African American, 17% self-identified as Hispanic American, 1% self-identified as Asian American,

and 6% self-identified as some other racial category. Of all participants, 15% classified themselves as homosexual. I offered participants extra credit in their communication or psychology class for their voluntary participation in the present study.

*Scales*

Participants gave all of their information through 5-point Likert-type scales ranging from 1 (*not at all*) to 5 (*very much*). I collected data on participants' motivations to work out, how much time participants spent on several different types of exercise, and how much time participants spent working out certain areas of their bodies.

To assess participants' amount of time spent focusing on upper body muscles, I created a seven-item measure. It asked participants, "How much do you work out your [body part]?" Items covered specific muscle groups (arms, back, neck, and chest) and specific muscles (triceps, pectoral, and biceps). I averaged the scores from these items to create a single measure for the focus on upper body muscles (Cronbach's $\alpha = .91$; $M = 2.51$, $SD = 1.11$).

To assess participants' amount of time spent focusing on lower body muscles, I created a five-item measure. It asked participants, "How much do you work out your [body part]?" Items covered specific muscle groups (upper and lower legs), specific muscles (buttocks), and areas (buttocks and hips). I averaged these items to create a single measure for the focus on lower body muscles (Cronbach's $\alpha = .88$; $M = 2.58$, $SD = 1.18$).

To assess participants' time spent focusing on their abdominal muscles, I created a six-item measure. It asked participants, "How much do you work out your [body part]?" Items covered the different parts of the abdomen (upper, lower, and side), the overall abdominal muscles, the stomach itself, and obliques. I averaged these items to create a single measure for the focus on the abdominal muscle group (Cronbach's $\alpha = .92$; $M = 2.86$, $SD = 1.22$).

To assess participants' amount of time focusing on muscle gain, I created a four-item measure. It asked participants, "How much do you work out your [workout goal]?" Items covered efforts for weight gain, efforts to gain muscle, time spent power lifting, and time spent lifting weights. I averaged these items to create a single measure for the focus on muscle gain (Cronbach's $\alpha = .81$; $M = 2.30$, $SD = 1.09$).

To assess participants' amount of time focusing on toning, I used a single-item measure. I asked participants how much they were concerned with their muscle tone ($M = 2.42$, $SD = 1.37$).

To assess participants' amount of time focusing on weight loss, I created a four-item measure. It asked participants, "How much do you work out your [workout goal]?" Items covered efforts for weight loss, concern for weight, concern for size, and concern for amount of fat. I averaged these items to create a single measure for the focus on weight loss (Cronbach $\alpha = .83$; $M = 2.65$, $SD = 1.19$).

## Results

There were no main effects or interactions when I used sexual orientation or race as independent variables, but I found significant sex differences in muscle group focuses. As Figure 1 shows, men reported more time working out their upper body muscles than did women, $t(232) = -6.38$, $p < .00$, $d = .59$ ($M_{men} = 2.90$, $SD_{men} = 1.11$; $M_{women} = 2.06$, $SD_{women} = 0.93$). Women reported more time working out their lower body muscles than did men, $t(232) = 2.03$, $p = .05$, $d = .20$ ($M_{men} = 2.43$, $SD_{men} = 1.11$; $M_{women} = 2.74$, $SD_{women} = 1.23$). I found no sex differences in efforts to enhance the abdomen, $t(232) = 1.04$, $p = .30$, $d = .10$ ($M_{men} = 2.78$, $SD_{men} = 1.17$; $M_{women} = 2.94$, $SD_{women} = 1.26$).

There were no main effects or interactions when sexual orientation or race was used as an independent variable in exercise type, but I found significant sex differences. As Figure 2 shows, men reported more time trying to build muscle mass than did women, $t(232) = -6.89$, $p < .00$, $d = .64$ ($M_{men} = 2.73$, $SD_{men} = 1.10$; $M_{women} = 1.83$, $SD_{women} = 0.87$). Men reported more concern with muscle tone than did women, $t(232) = -3.31$, $p = .001$, $d = .30$ ($M_{men} = 2.69$, $SD_{men} = 1.33$, $M_{women} = 2.11$, $SD_{women} = 1.36$). Women reported more time spent trying to lose weight than did men, $t(232) = 2.46$, $p = .02$, $d = .23$ ($M_{men} = 2.47$, $SD_{men} = 1.14$; $M_{women} = 2.85$, $SD_{women} = 1.21$).

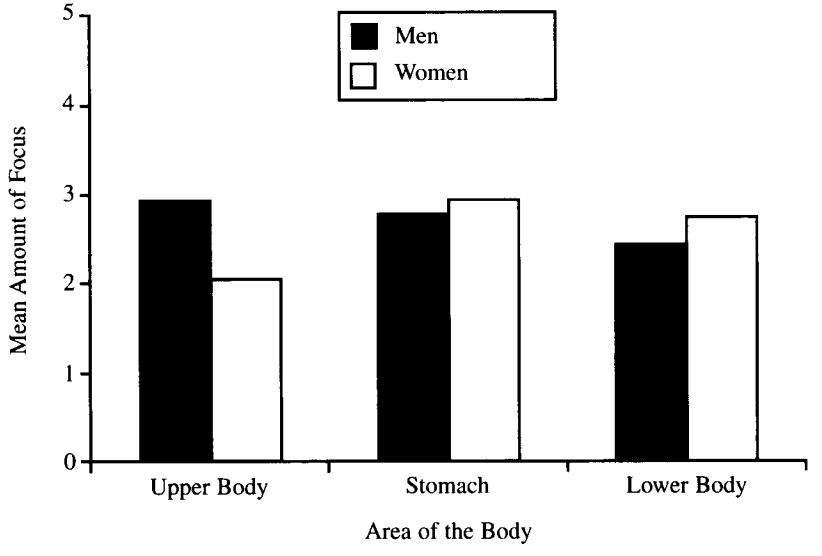


**FIGURE 1. Sex differences in muscle group focus. Upper body and lower body comparisons were significantly different at the level of $p < .05$. Abdomen comparisons did not differ significantly.**

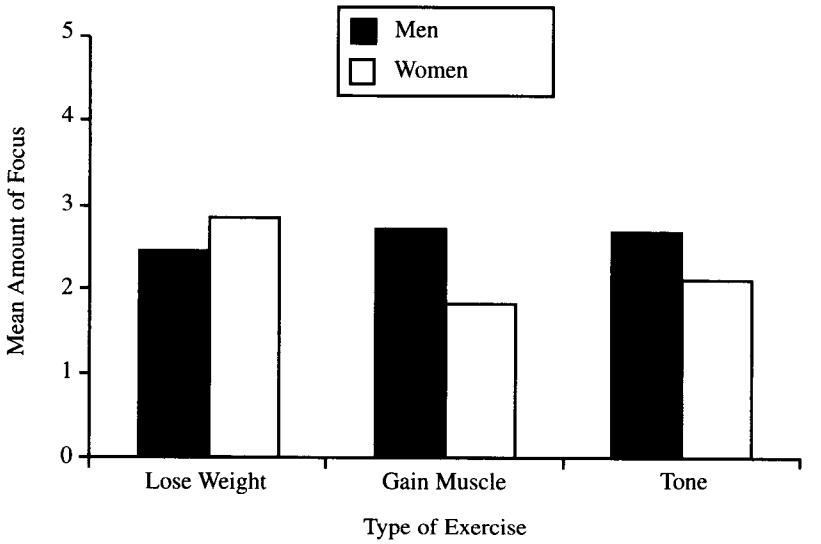


**FIGURE 2. Sex differences in motivations to exercise. All three comparisons were signifcantly different at the level of $p < .05$.**

## Discussion

The present study is a replication and extension of Mealey (1997), but it has some methodological differences that make it distinct. The present study sampled a general college population, whereas Mealey sampled individuals at a gym. As a result, the present study is more generalizable to a general college population and perhaps to the population at large. Like Mealey's study, the present study was self-report in nature, but instead of using single-item measures to assess exercise behaviors and motivations, it used multi-item scales. In asking self-report questions, the present study also differed from Mealey's study in that Mealey asked participants how much time they spent doing a given exercise in minutes, whereas I asked participants how much time through an infrequent-to-frequent scale. Finally, Mealey only reported one significant motivation for exercise behavior: the desire to look attractive to the opposite sex. Although that motivation is understandable in evolutionary terms and is consistent with the present findings, this study went one step further and examined sex differences in motivations to gain muscle mass, to tone muscles, and to lose weight. This study also adds to the literature on intrasexual competition (see Buss, 1988; Buss & Dedden, 1990; Schmitt, 1996) and sex differences.

In the present study, men reported more effort and time spent working out their upper bodies to gain and tone muscles than did female participants. Men

may have been trying to enhance their upper body size and definition. This part of the body is particularly relevant to the selection of male traits by all of the female primates, including humans (Wrangham & Peterson, 1996). Sex differences in exercise behavior are not only explainable by a desire among men to exploit the inherent preferences among women. Men may focus on this part of the body to aid in intrasexual competition directly. Men may prefer to use larger displays to aid in physical contests and combat and as a bluff display (Buss, 1988). Size among animals—including humans—is highly correlated with dominance and strength (Andersson, 1994). In fact, in prison populations, men are not competing for women but for the respect of other men. By increasing upper body size, men may increase their chances of either out-bluffing other men or winning intrasexual contests.

Female participants reported more of a focus on the lower-body muscles than males. Mealey (1997) reported no significant sex difference, but an analysis of the reported time spent working out the lower body shows this trend. The difference between the present results and Mealey's results may be due to different methods and sampling techniques. Fat deposits on these areas (legs, hips, and buttocks) are more common for women and thus affect women's WHR more than they do men's WHR. Women spend more time trying to reduce the size of these areas perhaps to lower and maintain their WHR, to better show their feminine traits, and to enhance their smallness. While men did report time and effort spent on the lower body (perhaps trying to enhance their buttocks, an area women have indicated interest in), men ultimately spent significantly less time than did women. This finding fits well with the logic of intrasexual competition. Men use their time and energy to maximize fitness returns. Because women prefer men with larger upper bodies, men's effort to enhance the lower part of their bodies becomes a waste of time.

In the present study, men and women reported spending similar amounts of time and effort on their abdomens. Because of the fairly large sample size (234) and the very small effect size ($d = .10$), researchers can consider this null result to be reliable. Men and women prefer particular WHRs in their partners (Singh, 1993, 1995). In the present study, women reported slightly more effort working out their abdomens than did men, yielding a finding that indicates the possibility that men may be less interested in their waist size than are women. Mealey (1997) did not assess this component of exercise behavior but instead examined exercise of the torso. Although the torso includes the abdomen, it also includes the upper body muscles, and thus a lack of specification may have contaminated Mealey's results.

In the present study, female participants reported spending more time focusing on weight loss. Feminist scholars (e.g., Wolf, 2002) have argued that women are motivated to lose weight because of seeing thin individuals in the media. Although this is a comforting idea, it only scratches the surface of female preferences for remaining slim. Such explanations only deal with proximate causes and not ultimate ones such as those indicating why women would even pay attention

to such messages. Similarly, social-learning theorists have posited that women and men are taught to adopt a culture of thinness and musculature, respectively, by the media, which offers sex-relevant images to men and women. For instance, beauty images are more salient to women because over evolutionary history, men have selected women for their physical attractiveness. So, while a media exposure hypothesis is relevant, it only touches on the proximal reasons why women would be more motivated to lose weight, and may confuse cause with effect.

In an evolutionary paradigm, individuals are motivated to engage in behaviors that attract mates. Buss and Schmitt (1993) posited that both sexes understand what the opposite sex desires. For instance, women are aware that men tend to prefer women who are somewhat smaller than they are. These preferences are based on millennia of evolution—not decades of media influence. Intrasexual competition motivates women to enact behaviors that will make them look better than other women. The present finding that women participants reported spending more effort and time trying to lose weight seems to confirm that motivation. The loss of weight allows women to enhance their signals of reproductive health and capacity (i.e., overall weight gain will effect a women's WHR). Because I drew the present sample from a country where food was ample, women may have used petiteness, sometimes to extremes, to advertise their qualities. As a result of the evolution of sexual dimorphism, men and women have diverged slightly in size. Men tend to be larger, and women tend to be smaller (approximately a 12% difference). People view largeness as more masculine and smallness as more feminine. The sexes then try to exploit these biases in perception.

Although some researchers might assert that a gym culture may be more characteristic of white individuals, the present study used a variety of racial and ethnic groups. In light of the ethnic variety in the sample and the lack of main effects that were associated with the race of the participant, it seems likely that effects from ethnocultural differences may not be a concern here. In contrast, the Standard Social Science Model (Barkow, Cosmides, & Tooby, 1992) predicts that there will be racial differences in exercise behavior because that perspective places culture in the center of its predictions. According to evolutionary psychologists, there is biologically little reason to believe that black or white participants would be more or less motivated to go to the gym. The evolved sex differences in sexually dimorphic species (such as humans) are rather large, but racial differences are literally skin deep. The present study supports the evolutionary paradigm and not the Standard Social Science Model. All individuals are interested in attracting mates. Evidence indicates the possibility that exercise and weightlifting may be a method that the sexes and races alike will use to enhance intrasexual competition abilities.

In the present study, I did not examine extreme strategies to gain muscles or lose weight. This study does not address steroid use or any other extreme measures that individuals take to look better. Even these extremes indicate the possibility of evolved sex differences as their most salient explanation. Some men are willing to risk their health and legal sanctions to make themselves look bigger by

using steroids and other performance enhancing pharmaceuticals. Some women are willing to damage their health and childbearing abilities to look smaller through extreme dieting. It is logical that individuals at these extremes may still conform to the evolved sex differences that I argued for earlier in this study.

A potential limitation of the present study is that the measures were self-report interval level scales. They neither asked participants how many hours they workout or how many repetitions they did nor tracked their exercise-related behaviors. Future researchers should assess Hypotheses 1–5 using ratio level scales and reliable behavioral indexes of exercise behavior.

The present study indicates the possibility that there are pronounced sex differences in exercise behaviors that are driven primarily by intrasexual competition. Through exercise, men and women can enhance their attractiveness to others and thus increase the probability of finding mates and that of getting a higher quality mate. Female and male participants indicated that they adopted sex-appropriate focuses in exercise behavior. Evolution not only has led individuals to understand what the opposite sex wants (Buss & Schmitt, 1993) but also motivates them to engage in behaviors that will enhance their overall relative attractiveness (Buss, 1988; Buss & Dedden, 1990; Schmitt, 1996).

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