

## **Impact of Exercise Partner Attractiveness on Mood, Enjoyment, and Exertion**

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### ABSTRACT

*Int J Exerc Sci 4(4): 265-272, 2011.* Social comparison theory was used to examine if males exercising with a female research confederate posing as either attractive or unattractive would alter their exercise mood, exertion, and enjoyment. A total of 101 college students (51 males and 51 females) were randomly assigned to one of three conditions: biking alone, biking with an attractive female confederate, or biking with the same female confederate appearing unattractive. All participants were instructed to complete 20 minutes of exercise at 60%-70% of their maximum target heart rate. Standard exercise mood measures (e.g., Activation-Deactivation Adjective Check List) were administered immediately prior to and immediately following exercise. Pulse rate and exercise work load (i.e., bike speed and RPMs) were assessed throughout the exercise experience and exercise enjoyment was measured following exercise. In the attractive condition, the confederate dressed fashionably in form fitting and stylish work-out clothes and wore make-up and jewelry while the same confederate in the unattractive condition wore baggie casual sweat clothes and no make-up or jewelry. Results indicated that female participants were more relaxed while males were less relaxed when they were in the unattractive confederate condition ( $p < .05$ ). However, no exertion differences emerged between experimental conditions ( $p$ 's  $> .05$ ). Participants reported the most enjoyment while in the control condition exercising alone and the least enjoyment in the attractive confederate condition ( $p < .05$ ). Social comparison theory predicts exercise outcome such that participants report less enjoyment yet more relaxation for females but less for males when exercising with an attractive female confederate thus altering their exercise experience based on those around them.

KEY WORDS: Exercise, social comparison, mood, exertion

## INTRODUCTION

A great deal of previous research has well demonstrated that regular aerobic exercise offers many significant physical and psychological health benefits. Regular exercisers can expect decreased susceptibility to many common illnesses such as cardiovascular disease, hypertension, diabetes, cancer and obesity,

in addition to reduced levels of depression, anxiety and stress (1-5, 8-9). Despite the compelling and abundant quality research that highlights the importance of regular exercise participation, 60 percent of Americans do not obtain the recommended amount and level of exercise advised by the Center for Disease Control while 25 percent of Americans do not exercise at all (6). There are numerous potential barriers that

discourage people from exercising including time and financial constraints, lack of energy, interest, motivation, and enjoyment. Discovering effective ways to incentivize and overcome potential obstacles will encourage exercise behavior and thus improve health and well-being.

Although research on the many physical health benefits of exercise is plentiful, there is surprisingly few quality published research studies that highlight the psychological and behavioral effects of exercising with others. The limited research focused on social exercise and exercise environment has generally found both mood advantages and disadvantages of exercising with others (10,11). Social comparison theory offers a useful framework for considering the potential influences of exercising with peers. This theory states that "There exists, in the human organism, a drive to evaluate his opinions and his abilities. To the extent that objective, non-social means are not available, people evaluate their opinions and abilities by comparison respectively with the opinions and abilities of others" (7). Thus, social comparison theory would suggest that one may have a different exercise experience dependent on who they are exercising with in terms of fitness level, exertion, attractiveness, and other qualities.

Recent research has examined social comparison theory by exploring how exercising with an individual posed as high-fit or low-fit affects exercise exertion, enjoyment, and several psychological and mood outcomes (14). Results suggest that perceived fitness of a stranger exercising nearby significantly affected exercise exertion such that exercising in the presence of someone who was perceived as

physically fit resulted in higher exertion and exercising alongside someone perceived as low fit resulted in less exertion. Thus, exercisers tend to mirror the exercise behavior of those around them. In addition, exercise environment and social contact appear to have an effect on mood outcomes (such as calmness and tiredness) such that exercising inside or outside with a close friend, alone, or with music has been shown to impact the energy, enjoyment, tiredness, and calmness of individual exercisers (13).

The current study seeks to further explore the effects of exercise partner characteristics by manipulating the participant's perceived attractiveness. We hypothesized that males exercising alongside an attractive female would exert themselves more than when exercising alone or with an unattractive female perhaps as an attempt to impress a potential dating interest or to display one's masculinity. We also suspect that perceived attractiveness of their exercise partner would influence the participant's enjoyment, relaxation, and tension levels. We predicted that females exercising alongside another female perceived as attractive or unattractive would alter exercise behavior as well as have an effect on enjoyment, relaxation, and tension. Consistent with social comparison theory, we predicted that female participants would exercise harder when exercising with an attractive female confederate and report feeling more tense, less relaxed, and have lower enjoyment scores.

## METHODS

### *Participants*

Participants included 102 undergraduates enrolled in a general psychology course at a

west coast private university (51 males and 51 females,  $M = 18.80$  years,  $SD = 1.10$  years). Students were required to earn several hours of research participation credit within the psychology department while taking the course or write a brief research term paper as part of their class assignment. The research project was evaluated and approved by the university human subjects committee for ethics compliance. Participants secured course credit for their involvement in the study.

### *Measures*

*Activation-Deactivation Adjective Check List (AD-ACL)* (15, 16). The AD-ACL is a self-report checklist that assesses exercise induced mood states (i.e., calm, tension, energy, tiredness). Previous research regarding the reliability and validity of the instrument has found that the AD-ACL is both reliable and valid. For example, test-retest reliability has been found to be  $r = 0.80$  and higher in most studies.

*Author developed Likert scales.* Several brief 10-point Likert scales developed and validated by the first author and used in many previous exercise research studies (10 - 14) were used to measure the participant's relaxation (1 = very stressed, 10 = very relaxed), enjoyment (1 = not enjoyable, 10 = very enjoyable), and perceived exertion while exercising (1 = not hard, 10 = very hard). Additional validated scales also developed and used in previous research (10 - 14) to assess how comfortable participants felt while exercising with the research confederate (1 = not comfortable, 10 = very comfortable), how fit they believed their exercise partner might be (1 = not fit, 10 = very fit), and how attractive they experienced their exercise partner (1 =

not attractive, 10 = very attractive) were used as well.

### *Protocol*

The day before their laboratory session, participants were sent an email to confirm their participation and appointment time. They were encouraged to wear exercise appropriate clothing as well.

Once they entered the laboratory and were greeted by the research assistant, participants were asked to review and then signed standard consent forms agreeing to participate. They were informed that the study involved the role of exercise and psychological functioning. They were then given the baseline pre-exercise questionnaires to complete. Their height and weight were assessed as well. Before exercising, the research assistant secured heart rate monitors on their chest.

All participants were randomly assigned to one of three laboratory conditions. The instructed duration and exercise intensity were the same in all three conditions (i.e., biking for 20 minutes on a stationary bike keeping their heart rates at 60%-70% maximum heart rate or about 130 beats per minute. Maximum heart rate is estimated to be  $220 - \text{age}$  (8) and thus for most general psychology students who are 18-20 years old, maximum heart rate is about 200 beats per minute. The three experimental conditions included (1) biking alone, (2) biking with an attractive female confederate, and (3) biking with an unattractive female confederate. The confederates biked at the same speed regardless of posing as "attractive" or "unattractive". For the purposes of this experiment we operationally defined "attractive" as wearing make-up, having

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hair done, and wearing tight and trendy exercise clothes. We operationally defined “unattractive” as wearing no make-up, wearing baggy and unflattering sweat clothes, and leaving hair messy and undone. Figures 1 and 2 provide a photo of the confederate in each experimental condition.



Figure 1. A confederate dressed for the attractive condition.

Several months before conducting the experiment, a pre-study manipulation check was conducted in order to determine if individuals would evaluate the confederates as attractive or unattractive using photos of the confederates dressed in each condition. The photos were shown to a random sample of 40 college students on campus who rated attractiveness level on a 10-point scale (1 = very unattractive, 10 =

very attractive) with significant differences between the attractive and unattractive conditions noted ( $P$ 's < .05).



Figure 2. The same confederate dressed for the unattractive condition.

In both the attractive and unattractive experimental conditions, confederates entered the laboratory after the participant had arrived and had been exercising alone for a baseline assessment period of 10 minutes. Confederates asked if they were in the right place for the fitness study and apologized to the researcher for being late. This was done to minimize suspicions that confederates were research assistants and to obtain a baseline measure of exercise exertion among the participants. The researcher then asked the confederate to quickly fill out consent forms and several questionnaires, put on a heart rate monitor,

and get on the exercise bike as soon as possible. Participants then biked with the confederate for 10 minutes. Heart rate, revolutions per minute, and speed were measured and recorded by the lab assistant once every two minutes for the duration of the 20 minutes the participant was exercising. In the control condition, participants were given identical instructions but exercised alone for the entire duration of the experiment.

After exercising, the participant was asked to complete the AD-ACL to measure mood, as well as several Likert scales to assess relaxation, enjoyment of the exercise experience, how hard they felt they exercised, how comfortable they felt with their exercise partner, and how attractive they found their exercise partner.

At the end of the experimental session, the research assistant debriefed participants and informed them of the purpose of the study. The confederates' identity was revealed (i.e., that they were part of the experiment) and participants were asked not to discuss the experiment with others on campus to avoid the chance of potential future participants learning about the details of the study. The participants were thanked for their time, had any questions answered, and provided with course credit.

*Statistical Analysis*

A 2 (Gender) x 3 (Experimental Condition) Analysis of Variance (ANOVA) was used to analyze the data. The only exception was for the mood post-exercise scores where a 2 (Gender) x 3 (Experimental Condition) Analysis of Covariance (ANCOVA) was used with pre laboratory exercise mood scores used as covariates in the analyses.

**RESULTS**

Our manipulation check was successful in that the average rating for attractive confederates was 6.41 (SD = 1.71) while the average rating for unattractive confederates was 5.31 (SD = 1.94). Confederates' attractiveness in the high attractive condition were ranked significantly higher than in the low attractive condition [ $F(1,75) = 6.87, P < .05$ ]. Means and standard deviations for mood and exertion measures are displayed in Table 1.

Table 1. Means and standard deviations for mood measures, physiological output, and manipulation check.

	Attractive		Unattractive		Control	
	Males	Females	Males	Females	Males	Females
<b>Mood</b>						
Tense*	10.17 (2.67)	9.30 (2.27)	10.09 (2.14)	8.47 (2.78)	9.09 (2.63)	7.83 (2.69)
Relax*	6.83 (2.08)	6.20 (1.32)	5.91 (1.91)	6.89 (1.73)	5.95 (1.65)	6.58 (1.78)
Enjoy**	5.96 (2.29)	6.10 (1.41)	7.35 (1.77)	6.84 (1.71)	8.00 (1.26)	7.00 (1.65)
<b>Physiological Output</b>						
RPM	68.11 (11.56)	62.26 (11.42)	60.06 (13.53)	64.70 (12.02)	65.13 (10.36)	61.14 (11.97)
Speed	28.66 (4.83)	25.84 (4.23)	24.85 (5.04)	27.37 (5.15)	27.73 (4.68)	25.71 (5.20)
Exercise Exertion	5.48 (2.02)	5.50 (1.79)	6.12 (1.79)	5.43 (1.95)	6.41 (1.20)	5.50 (1.10)
<b>Manipulation Check</b>						
Attractive*	6.41 (1.85)	6.40 (1.57)	5.59 (1.80)	5.05 (2.07)		
Perceived Fitness*	7.30 (1.33)	6.95 (1.15)	6.59 (1.00)	6.05 (1.84)		

\* $P < .05$ , \*\* $P < .01$

Pre-exercise mood measures were compared with post-exercise mood measures separately for each experimental condition and gender. Results indicated that there was a significant main effect for gender on tension scores such that males reported higher tension than females for all experiment conditions [ $F(1,95) = 5.74, P < .05$ ]. There was also a significant main effect for gender on relaxation scores [ $F(1,95) = 4.29, P < .05$ ] and a significant interaction effect between experiment condition and gender [ $F(2,95) = 3.18, P < .05$ ]. Females reported overall feeling more relaxed than



males and especially relaxed in the unattractive confederate condition. Males reported feeling the least relaxed in the unattractive experimental condition. A significant main effect for enjoyment scores surfaced on experimental condition [ $F(2,96) = 6.30, P < .01$ ] such that participants enjoyed exercising the most when they were alone, and enjoyed exercising the least when they were exercising with an attractive confederate. No significant main effects or interactions surfaced when examining rotations per minute (RPM), exercise speed scores, and perceived level of exertion scores during exercise [ $F(2,95) = 0.73, P > .05, F(2,93) = 2.05, P > .05, F(2,96) = 0.56, P > .05$ ].

### DISCUSSION

The purpose of the present study was to examine how social comparison theory could influence mood and exertion when exercising alone versus with a perceived attractive or unattractive female exercise partner. The study also assessed whether gender mediated any differences when biking with a female confederate. Overall, our results indicated that mood after exercise was influenced by the presence and the perceived attractiveness of the participant's exercise partner.

Inconsistent with previous research that suggests that exercise enjoyment is increased by social contact (13), the current study found that both males and females reported the most enjoyment while they were exercising alone and reported the least amount of enjoyment while exercising in the presence of an attractive female confederate. It may be worthwhile to note that enjoyment in most prior studies was measured when exercising with a friend,

while the current study involved exercising with a stranger. Despite contradictory findings regarding enjoyment, past research has indicated that participants felt the most calm when exercising alone than with a partner (12, 13). These findings, as well as those of the current study, suggest that individuals may feel more at ease when there are no immediate social standards for comparison.

The present study also found gender differences in mood, such that males felt less relaxed and more tense in the presence of a female confederate regardless of perceived attractiveness. In the present study, females reported higher levels of relaxation when biking next to another female they perceived as unattractive. This suggests that when comparing themselves to an unattractive female, participants may feel less threatened than when comparing themselves to an attractive female. Previous research have not found differences in tension when exercising alone versus with a partner (11- 13), however one study has found that female pairs reported greater exertion than mixed pairs while exercising (10). This suggests that perhaps people feel more distracted or less competitive in mixed pairs. Nevertheless, it seems that gender plays a role in how individuals compare themselves to others.

Surprisingly, the current study found no differences in exertion based on gender or experimental condition, which is inconsistent with prior research (14). However, the previous study manipulated exertion of the confederate in the high fit and low fit condition whereas the current study kept confederate exertion and speed constant regardless of physical appearance. This may indicate that in this setting, social

comparison theory is an intrinsic comparison that does not directly affect external behavior. Thus, changes in physiological exertion may be due to other mechanisms rather than social comparison, such as mimicking.

Implications of this research suggest that exercising next to a female perceived as attractive or unattractive could influence the psychological experience of exercise. Consistent with social comparison theory, individuals perhaps view themselves as physically superior or inferior to those exercising around them. Individuals then may feel more or less relaxed and more or less threatened depending upon the perceived attractiveness of those around them. Curiously, confederate attractiveness was unrelated to exercise exertion and thus the experience of participant enjoyment and relaxation was unrelated to exertion. These environmental factors should be considered when shaping an individual's preferred exercise regimen. Perhaps individuals should be more aware of who they are surrounding themselves with while exercising.

There are several important limitations of this study. The participant sample consisted of a generally homogenous population of healthy undergraduate students of a similar age at a private university. The sample was relatively small ( $n = 102$ ) and used only female confederates as well. Furthermore, this experiment was conducted in a laboratory setting, thus the experimental environment may impact participant's mood and exertion. The study could not determine many unresolved residual questions such as if exercising with many others such as in a busy health club or gym or exercising very close to or distant from

other exercisers might result in different psychological outcomes.

Future research should further investigate the difference between exercising in a laboratory versus in a more everyday environment, such as a gym or outdoors. The context in which individuals exercise may have important implications for adhering to exercise regimens and maximizing psychological benefits. In addition, alternative exercise types could be explored, such as running, group cardio classes, and weight lifting. Future research should also seek to sample a larger and more heterogeneous population, particularly one with a greater variability in fitness level. Gender differences between the participant and confederate should also be examined by including both a male and female confederate since this study utilized solely female confederates.

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