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## **ENVIRONMENTAL EFFECTS ON SOCIAL PHYSIQUE ANXIETY**

## **OKOLJSKI VPLIVI NA SOCIALNO ANKSIOZNOST, POVEZANO S FIZIČNIM IZGLEDOM**

### **Abstract**

Social physique anxiety (SPA; Hart, Leary, & Rejeski, 1989), the fear of evaluation of one's physique and physical appearance by others, has been associated with avoidance of exercise behavior and other negative health outcomes. The purpose of this research was to examine the relationship between SPA and environmental factors. In the first study, SPA of college students ( $N = 225$ ) was assessed immediately after participants imagined themselves in each of three campus environments (i.e., fitness center, dining hall, and library). A repeated-measures ANOVA indicated that participants' SPAS scores were significantly greater in the fitness center and dining hall than in the library. Study 2 replicated and extended Study 1 with female ( $n = 70$ ) and male ( $n = 50$ ) exercisers in three similar but actual environments (i.e., fitness center, dining hall, and library). ANOVA indicated that participants' SPAS scores were significantly greater in the fitness center than in the library and that females had significantly higher SPA than males. The results suggest that SPA is malleable and subject to environmental influences. Research identifying the specific factors that lead to elevated SPA in certain environments may help enhance exercise participation.

*Key words:* social physique anxiety, environment, exercise

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### **Izvleček**

Socialna anksioznost, povezana s fizičnim izgledom (SPA - Social physique anxiety; Hart, Leary, & Rejeski, 1989), strah pred ocenjevanjem fizičnega izgleda s strani drugih, je povezan z izogibanjem telesni vadbi in drugimi negativnimi vplivi na zdravje. Namen te raziskave je bil preučiti razmerje med SPA in okoljskimi dejavniki. V prvi študiji smo ocenjevali SPA študentov ( $N = 225$ ) takoj zatem, ko so si sodelujoči zamislili same sebe v treh različnih s študijem povezanih okoljih (tj. v fitnes centru, menzi in knjižnici). ANOVA za ponovljene meritve je pokazala, da so bile vrednosti udeležencev po SPA lestvici bistveno višje v fitnes centru in menzi kot v knjižnici. Druga študija je ponovljena, vendar razširjena prva študija, v kateri so sodelovali preizkušanci obeh spolov (ženske:  $n = 70$ ; moški:  $n = 50$ ) v treh podobnih, vendar realnih okoljih (tj. v fitnes centru, menzi in knjižnici). ANOVA je pokazala, da so bile vrednosti udeležencev po SPA lestvici bistveno višje v fitnes centru kot v knjižnici in da so bile precej višje vrednosti zabeležene pri ženskah kot pri moških. Rezultati kažejo, da je SPA spremenljiva in odvisna od okoljskih vplivov. Raziskava, ki bi opredelila specifične dejavnike, ki povzročajo večjo SPA v določenih okoljih, bi pripomogla k pogostejši vadbi.

*Ključne besede:* socialna anksioznost, povezana s fizičnim izgledom, okoljski dejavniki, vadba

## INTRODUCTION

Across a wide range of populations, exercise has been shown to have a positive effect on both psychological and physical health (United States Department of Health and Human Services [USDHSS], 1996, 2000). Benefits of exercise include relaxation, increased social contact, enhanced aerobic capacity, cardiovascular fitness, self-confidence, and decreased anxiety (Landers & Arnt, 2001; Long & Stavel, 1995; Scully, Kremer, Meade, Graham, & Dudgeon, 1998). In light of these benefits, it may seem surprising that there are still many people who remain sedentary (USDHSS, 2000). Clearly, it would be useful to better understand factors that affect participation in physical activity.

Self-presentation is one factor that has been identified as affecting people's exercise behavior, cognitions, and attitudes (see Hausenblas, Brewer, & Van Raalte, 2004 for a review). Self-presentation refers to processes by which people control and monitor how they are perceived and evaluated by others (Leary, Tchividjian, & Kraxberger, 1999; Schlenker, 1980). Specifically, people tend to want others to view them in desired ways. Therefore, people selectively present themselves in a manner that will most likely result in desired outcomes while concealing information that is inconsistent with the impression that they want others to form (Schlenker & Weigold, 1992).

Researchers exploring the self-presentational aspects of sport and exercise have paid particular attention to social physique anxiety (SPA), which was defined by Hart, Leary, and Rejeski (1989) as the fear of evaluation of one's physique and physical appearance by others. Women who are uncomfortable with their bodies, feeling that they are overweight or underweight, report elevated levels of SPA (Lox, Osborn, & Pellett, 1998). SPA levels seem to be highest for those who are uncomfortable or concerned with having their bodies evaluated.

Most exercise environments involve the possibility of physique evaluation by others. Some women with high SPA stop participating in physical activity or avoid physical activity because they are anxious and self-conscious about how their bodies appear when they are exercising (see review by Hausenblas, Brewer, & Van Raalte, 2004). Although some women with high SPA have been found to be involved in high levels of exercise, perhaps in an attempt to enhance the appearance of their bodies and reduce SPA (Belling, 1992; Frederick & Morrison, 1996), researchers have found that women with high SPA tend to exercise less than other people (Lantz, Hardy, & Ainsworth, 1997). Women with high SPA who *do* exercise prefer exercise classes that de-emphasize the physique (Crawford & Eklund, 1994) and are more likely to drop out of exercise classes than are women with low SPA (Treasure, Lox, & Lawton, 1998). Overall, nonexercisers have higher SPA than regular exercisers and competitive athletes (Bartlewski, Van Raalte, & Brewer, 1996; Finkenburg, DiNucci, McCune, Chenette, & McCoy, 1998; Van Raalte, Schmelzer, Smith, & Brewer, 1998).

Women with high SPA seem to be particularly sensitive to specific aspects of the exercise environment. Belling (1992) and Spink (1992) found that women with high SPA preferred to exercise alone significantly more than women with lower SPA. Bain, Wilson, and Chaikind (1989) found that overweight female exercisers avoided exercising in public settings because they felt anxious that others were evaluating them while they exercised. Yin (2001) reported that women who used the women-only area of a fitness club had higher SPA than women who used the coed area of the same fitness club.

Recently, the specific effects of various environments on social anxiety have been examined. Carron and Prapavessis (1997) had women imagine themselves in anxiety inducing environments either accompanied by a friend, a group, or alone. They found that women experienced less anxiety when they imagined being accompanied by a friend or being in a group than when they imagined being alone. Martin and Fox (2001) assessed the effects of different exercise environments on social anxiety and found that women in aerobic exercise classes with an instructor who used an “enriched” or interactive style experienced less social anxiety than did women exercising in a class with a bland instructor. Thus, variations in the social environment of an exercise setting seem to affect participants’ social anxiety.

Focht and Hausenblas (2003) explored the effects of different *physical* exercise environments on social anxiety. They had women with high SPA exercise in laboratory and naturalistic fitness center settings. They found that the anxiolytic effects of exercise were attenuated by exercising in naturalistic settings. That is, high SPA women who exercised in the fitness center failed to experience the long lasting significant reductions in state anxiety that were identified by women who exercised in a laboratory setting.

The results of the research by Carron and Prapavessis (1997), Martin and Fox (2001), and Focht and Hausenblas (2003) suggest that environmental factors play a role in determining *state anxiety* responses to exercise. It seems likely that these environmental factors also have an effect on SPA but research on the relationship between physical environment and SPA is even more limited. Carron et al. (Carron, Estabrooks, Horton, Prapavessis, & Hausenblas, 1999) assessed SPA in several hypothetical exercise environments. They had women imagine themselves wearing a bathing suit and walking onto a public beach alone or with friends. They also assessed how SPA was affected by imagining attending a party where all the guests are strangers either alone or with friends. Results indicated that changes in imagined *social* environments affected SPA. They did not, however, examine the effects of the different *physical* environments on SPA.

The purpose of this research was to examine the effects of physical environments on SPA. Based on previous research exploring social anxiety and exercise (Focht & Hausenblas, 2003; Martin & Fox, 2001), it was hypothesized that SPA would differ across physical environmental settings. Specifically, Study 1 evaluated exercisers’ SPA in three different settings. An environment with inherent physical evaluation components (e.g., fitness center) was expected to be associated with higher SPA than a less evaluative environment (e.g., library).

## Study 1

### METHOD

#### Participants

The participants were 225 female college students in the northeastern United States who ranged from 18 to 23 years of age ( $M = 19.59$ ,  $SD = 1.27$ ). Seventy of the participants were first year students, 65 were second year students, 54 were juniors, and 36 were seniors. Participants were primarily White, not of Hispanic origin ( $n = 190$ ) but other groups were also represented: Black, not of Hispanic origin ( $n = 15$ ), Hispanic ( $n = 6$ ), Asian or Pacific Islander ( $n = 5$ ), American Indian or Alaskan Native ( $n = 2$ ), and Other or unknown ( $n = 7$ ). Participants reported exercising an average of 10.44 hours per week ( $SD = 6.69$ ).

## Instruments

### *Social Physique Anxiety Scale (SPAS)*

The SPAS (Hart et al., 1989) is a 12-item, self-report scale designed to measure SPA. Respondents are asked to indicate the degree to which each of the 12 statements is characteristic or true of them. Answers are indicated on a 5-point Likert-type scale, anchored by 1 (*not at all*) and 5 (*extremely*). Numerical values are summed to produce a total SPAS score with scores ranging from 12 to 60.

Based on the recommendation of Martin, Rejeski, Leary, McAuley, and Bane (1997), a 9-item SPAS, which excludes items 1 (“I am comfortable with the appearance of my physique/figure”), 2 (“I would never worry about wearing clothes that might make me look too thin or overweight”), and 5 (“When I look in the mirror I feel good about my physique/figure”) from the original scale, was used in this study. The three items were excluded because they adversely affect the unidimensionality of the SPAS (Martin et al., 1997). Martin et al. (1997) demonstrated concurrent validity of the 9-item SPAS with their finding that the original 12-item SPAS and the 9-item version were highly correlated ( $r = .98$ ). Martin et al. (1997) found the internal consistency of the 9-item SPAS to be .89. The internal consistency of the 9-item SPAS for the current study ranged from .89 to .90 across the three environmental conditions.

### *Demographic questionnaire*

Items on a demographic questionnaire assessed participants' age, class year, ethnicity, and number of hours of participation in physical activity per week.

## Procedure

After participants gave informed consent to participate in the study, they were asked to close their eyes and listen to (or read along with) an audiotape describing one of three typical college campus environments. Audiotape and written descriptions were used to help participants imagine themselves in particular attire (a t-shirt and shorts) being looked at by two people per environment. T-shirt and shorts was selected as typical attire for both male and female participants. The specific details of the scenarios (i.e., skimpy clothing, being noticed by others) were included to ensure that participants imagined key environmental factors related to SPA in similar ways. The environments were: (a) in the campus fitness center exercising during peak hours; (b) in a campus dining hall during lunch hour walking with a tray of food; and (c) in the campus library after lunch when the library is relatively crowded. The order of presentation of the three environment scenarios was counterbalanced across participants.

After the first environment was imagined, participants completed the 9-item SPAS (Martin et al., 1997) and a manipulation check item asking them how well they were able to imagine themselves in that environment on a 5-point Likert-type scale from 1 (*not at all*) to 5 (*extremely*). An audiotape of a second environment was then played and the 9-item SPAS and manipulation check were completed again. Next, participants listened to the third environment on audiotape and completed the 9-item SPAS and manipulation check. Finally, participants completed the demographic questionnaire.

## RESULTS

### *Manipulation check*

A repeated-measures ANOVA was used to analyze the manipulation check item. The main effect was not statistically significant. Participants found it equally easy to imagine themselves in the fitness center ( $M = 3.96$ ,  $SD = 0.95$ ), dining hall ( $M = 3.87$ ,  $SD = 0.99$ ) and library ( $M = 3.84$ ,  $SD = 1.02$ ) environments.

### *Main analyses*

The purpose of this study was to examine the effect of various environmental settings on SPA. A repeated-measures ANOVA indicated a significant main effect for environment,  $F(2, 444) = 28.30$ ,  $p < .05$ . Follow up Bonferroni comparisons revealed that participants experienced significantly higher SPA ( $p < .05$ ) when imagining themselves in the fitness center ( $M = 24.87$ ,  $SD = 5.74$ ) as compared to the library ( $M = 23.30$ ,  $SD = 5.43$ ). SPA experienced when imagining the dining hall environment ( $M = 24.40$ ,  $SD = 6.07$ ) was also significantly higher than when imagining the library. The SPA levels in the fitness center and dining hall environments were not significantly different.

Table 1: Study 1 descriptive statistics of social physique anxiety scores by location

Source	<i>n</i>	<i>M</i>	<i>SD</i>
Fitness Center	224	24.87	5.74
Library	224	23.30	5.43
Dining Hall	224	24.40	6.08

## DISCUSSION

This study examined the effects of environmental factors on the SPAS scores of a group of female college students. As hypothesized, results indicated that SPAS scores were high in the imagined fitness center environment. Further, SPAS scores were higher in dining hall environment than they were in the imagined library environment. Although SPA has typically been considered to be trait-like (Hart et al., 1989; Lantz, Hardy, & Ainsworth, 1997; Leary, & Kowalski, 1995), the results of this study support findings that SPA is malleable and suggest that environmental parameters contribute to SPA (Bane, 1996; Bartlewski et al., 1996; Martin, Engels, & Wirth, 1994; McAuley & Burman, 1993; Williams & Cash, 2001).

One limitation of Study 1 is that participants imagined themselves in the environments. Conducting an imagination study allowed for control over the imagined attire (all participants imagined themselves wearing shorts and t-shirts) and number of observers in each environment (two), and made it easy to ensure that participants rated their SPA in all three environments on the same day. The benefits of imagination studies in psychology in general and in exercise environments in particular have been highlighted elsewhere (Carron et al., 1999). Nevertheless, relying upon imagination alone may have caused participants to underestimate or overestimate their levels of SPA in the three environments. The possibility that imagined SPA differs from actual SPA seems somewhat unlikely in light of the fact that the SPA of participants in this study did not differ significantly from that of college students in SPA research where actual SPA of athletes ( $M = 22.76$ ,  $SD = 8.05$ ),  $t(309) = -1.23$ ,  $p > .05$  (Van Raalte, Schmelzer, Smith, & Brewer, 1998) and of

exercisers ( $M = 24.36$ ,  $SD = 7.82$ ),  $t(195) = 0.66$ ,  $p > .05$  (Joshua, 1997) were assessed. Indeed, it seems that college students are able to effectively imagine what their SPA would be in a particular environment. Also, participants in Study 1 reported that it was easy to imagine themselves in the environments on the manipulation check items. Although ease of imagining does not guarantee accuracy, it probably makes accurate imagining more likely. Thus, the imagination task used in this study seems to have produced meaningful results. Nevertheless, it seems useful to assess SPA in the actual environments being studied. The purpose of Study 2 was to examine participants' SPA in actual environments. Although SPA has been found to be higher for women than men (Lantz, Hardy, & Ainsworth, 1997), it was decided to include men in this study to enhance the generalizability of the results.

## Study 2

### METHOD

#### Participants

The participants were 120 college students (70 females, 50 males) from the northeastern United States who ranged from 17 to 23 years of age ( $M = 18.69$ ,  $SD = 1.16$ ). Participants reported that they had been involved in regular sport or exercise for an average of 8.57 ( $SD = 4.11$ ) years, and currently exercised an average of 11.57 hours per week ( $SD = 6.24$ ). The racial/ethnic breakdown of participants was as follows: White, not of Hispanic origin ( $n = 111$ ); Black, not of Hispanic origin ( $n = 4$ ); Asian or Pacific Islander ( $n = 2$ ); and Other or unknown ( $n = 3$ ). Participants reported involvement in a wide variety of sports and exercise activities including football ( $n = 14$ ), soccer ( $n = 12$ ), and track ( $n = 9$ ), but also participated in baseball ( $n = 5$ ), basketball ( $n = 7$ ), cheerleading ( $n = 1$ ), rowing ( $n = 1$ ), dance ( $n = 3$ ), field hockey ( $n = 5$ ), golf ( $n = 1$ ), gymnastics ( $n = 2$ ), horseback riding ( $n = 2$ ), lacrosse ( $n = 4$ ), rugby ( $n = 4$ ), running ( $n = 2$ ), skiing ( $n = 2$ ), softball ( $n = 3$ ), swimming ( $n = 7$ ), Tae Kwan-do ( $n = 1$ ), tennis ( $n = 3$ ), ultimate Frisbee ( $n = 1$ ), volleyball ( $n = 4$ ), weightlifting ( $n = 1$ ), and wrestling ( $n = 2$ ).

#### Procedures

Participants were recruited from college classes. Those interested in participating in this study gave informed consent and completed a demographic questionnaire requesting information on their age, gender, year in school, ethnicity, hours spent in athletic activity per week, primary sport/athletic activity, and years involved in that sport/activity. Participants then proceeded to the dining hall, library, and fitness center in a counterbalanced order. An effort was made to control as many extraneous variables as possible to reduce the variability that often plagues field research. Specifically, participants were all exercisers and were sent to all three locations on the same day to control day of the week, time of day, and weather effects. Participants were directed to enter each location alone and had a few moments to experience the environment before completing the SPAS (see description of SPAS in Study 1). Participants went to the locations in a counterbalanced order. The internal consistency of the SPAS ranged from .87 to .89 across the three environmental conditions.

To ensure that effects were not due to unfamiliar, uncomfortable, or distracting attire, participants wore their own clothing when data were collected. Participants were asked to indicate what they were wearing so that the relationship between clothing concealingness and SPA could be assessed. Researchers have hypothesized that some people select clothing as a form of protective



self-presentation, wearing concealing attire when it is likely that their physiques will be observed by others (Kenen, 1987; Warrick & Tinning, 1989a, 1989b).

## RESULTS

### *Order effect check*

To test for order effects, a 6 (order) X 3 (environment: fitness center, dining hall, library) mixed ANOVA was conducted. Results indicated that participants' SPAS scores were not significantly affected by the assigned order of presentation of environments in which participants completed the SPAS,  $F(10, 228) = 1.10, p > .05$ .

### *Main analyses*

Results of a 2 (gender) x 3 (environment: fitness center, dining hall, library) mixed ANOVA performed on SPAS scores revealed no significant interaction,  $F(2,236) = 2.10, p > .05$ . There was, however, a significant gender main effect,  $F(1,118) = 27.13, p < .001$ . Females ( $M = 25.53, SD = 6.61$ ) reported significantly higher SPA than males ( $M = 19.68, SD = 5.25$ ). There was also a significant main effect for environment,  $F(2,236) = 23.29, p < .01$ . Tukey's post-hoc tests for the difference in SPAS scores across environments showed that participants' SPAS scores were significantly greater ( $p < .01$ ) when they were in the fitness center ( $M = 23.47, SD = 6.70$ ) than when they were in the library ( $M = 22.67, SD = 6.91$ ). The SPAS scores for the dining hall ( $M = 23.20, SD = 7.06$ ) were not significantly different from SPAS scores for either of the other two environments. Thus, participants reported experiencing the highest SPA in the fitness center and the lowest SPA in the library.

The clothing worn by participants on the day they participated in the study was not controlled to maintain the naturalistic focus of the study. The relationship between participants' attire and SPA was examined by having participants indicate what they were wearing when they completed the SPAS. Each of the 120 clothing combinations reported by participants was evaluated by seven raters on a scale from 1 (*most revealing*) to 5 (*most concealing*). The participants' clothing combinations were assigned a concealingness score based on the mean value of the panel's ratings for each combination. Across two pilot studies with different panels of raters, the concealingness ratings for 7 identical clothing combinations were highly correlated ( $r = .96, p < .05$ ). The Rater Agreement Index (RAI: Burry-Stock, Shaw, Laurie, & Chissom, 1996) for the concealingness scores in this study was .91, which indicates a high level of agreement among the seven raters. A *t*-test comparing the concealingness of men's and women's clothing approached statistical significance,  $t(118) = 1.72, p = .09$ , with women tending to wear more concealing clothing ( $M = 4.60, SD = 0.44$ ) than men ( $M = 4.45, SD = 0.51$ ).

The relationship between SPA and the concealingness of participants' clothing in each of the three environments was also assessed. Clothing concealingness was significantly correlated ( $p < .05$ ) with SPA in the library ( $r = .23$ ), the fitness center ( $r = .21$ ), and the dining hall ( $r = .18$ ).

## DISCUSSION

The study was designed to examine the effect of three physical environments on SPA responses of male and female exercisers. Participants went to three typical college environments on the

same day and rated their SPA. Results indicated that SPA was highest in the fitness center and lowest in the library. In accord with previous research, females reported significantly higher SPA than males. The results of Study 1 and Study 2 taken together indicate that SPA is subject to environmental influence.

Perhaps due to cultural norms or expectations about body focus, most research on SPA has included only women who are seen as having greater body concerns. The results of Study 2, involving both males and females showed that female exercisers report greater SPA than males across environments. Because much past research on SPA has excluded male participants, the results of these studies are particularly useful in documenting the relationship between SPA and exercise environment for both female and male exercisers.

From a self-presentational perspective, people who experience elevated SPA can take steps to present their desired self-image. Such steps might include avoiding environments in which evaluation might occur and wearing concealing clothing to protect themselves from being evaluated by others. In this study, participants went to several public settings. As predicted by self-presentational theory (Crawford & Eklund, 1994), clothing concealingness was positively correlated with SPA. That is, the most physique anxious people wore the most concealing clothing. However, more concealing clothing did not alleviate the body concerns of these participants. Perhaps their SPA was so high that even when covered in clothing their SPA was still elevated relative to their less physique anxious classmates.

In the current study, SPA was highest in the fitness center and lowest in the library for both men and women. The greater levels of physique anxiety experienced in the fitness center may be a reflection of body evaluation that is emphasized in such places. Exercise environments typically include people "checking out" others' physiques. It seems likely that minimizing some of the evaluative aspects that are a regular part of many exercise settings (e.g., mirrors, open viewing areas) and perhaps even incorporating some of the anxiety reducing aspects of the library (e.g., private nooks, less extreme lighting) could help reduce the SPA of participants and possibly enhance their exercise experiences.

Although statistically significant, the differences in SPAS scores among environments were relatively small in an absolute sense. That is, participants' SPAS scores did not vary dramatically across environments. On the other hand, it should be noted that participants' SPAS scores did differ significantly across environments. By simply walking into the library, participants' SPAS scores were found to be lower than the SPAS scores that they reported in the fitness center. These statistically significant effects in a challenging naturalistic field research setting suggest that the relationship between SPA and environmental effects may be powerful enough to be of practical significance.

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