

# **Social Physique Anxiety, Body Dissatisfaction, and Self-Esteem in College Females of Differing Exercise Frequency, Perceived Weight Discrepancy, and Race**

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*Social physique anxiety (SPA; Hart Leary, & Rejeski, 1989) has been shown to reduce exercise motivation and is associated with both low (Lantz, Hardy, & Ainsworth, 1997) and excessive (Fredrick & Morrison, 1996; Imm & Pruitt, 1991) exercise levels. While SPA has been shown to be related to body dissatisfaction (Bartlewski, Van Raalte, & Brewer, 1996; Lantz et al., 1997, McAuley, Bane, & Mihalko, 1995), less is known regarding the influence of self-perceived weight discrepancies and their impact on SPA. In addition, it has also been proposed that body image-related concerns be considered in a cultural context (Abood & Chandler, 1997) yet examination of SPA as a function of race has been limited. The purposes of this study were to (a) examine the degree to which body-image related constructs of SPA, body dissatisfaction, and self-esteem could be significantly differentiated by females' race and (b) to examine whether college females' SPA, body dissatisfaction, and self-esteem could be predicted across race by actual weight, self-reported weight discrepancy, and exercise frequency, after controlling for body mass index. Results of a one-way MANOVA and follow-up discriminant analysis indicated that African-American females had significantly lower SPA, body dissatisfaction, and higher self-esteem compared to Caucasian females. Regression analyses on SPA, body dissatisfaction, and self-esteem indicated that perceived weight discrepancy was relatively more predictive for SPA in Caucasian females compared to African-American females yet was equally significant in predicting body dissatisfaction across racial background. These results support the importance of self-perceived weight discrepancy in females as an important perceptual antecedent of SPA. In addition, results suggest preliminary evidence that researchers examining SPA may need to consider self-presentational exercise behavior within the context of one's ethnic background.*

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Social physique anxiety (SPA; Hart Leary, & Rejeski, 1989) may reduce exercise motivation (Eklund & Crawford, 1994; McAuley, Bane, & Mihalko, 1995) and has been associated with both low (Lantz, Hardy, & Ainsworth, 1997) and excessive exercise (Frederick & Morisson, 1996; Imm & Pruitt, 1991). Crawford and Eklund (1994) found that college women with high in SPA preferred exercise settings that did not emphasize physical features. In addition, SPA has been shown to be correlated with increased body fat percentage (Eklund & Crawford, 1994; Hart, Rejeski, & Leary, 1989) preferred exercise setting (Spink, 1992) and lower self-esteem and body satisfaction in females (Martin, Engels, Wirth, & Smith, 1997) and males (Russell, 2002). Recently, Martin et al (1997) examined predictors of SPA in elite female athletes. Regression results indicated that when controlling for body fat %, self-esteem, weight control, and perceived body consciousness accounted for 57% of the variance in SPA, with global self-esteem contributing the most (45%). Specifically, it was concluded that females who disliked their bodies had higher SPA and that % body fat did not contribute to the prediction of SPA. Yet the path model derived from self-presentational theory (Leary & Kowlaski, 1995) indicates that people with higher body mass index would be expected to experience greater social physique anxiety. Support was recently provided for this model (Diehl, Brewer, Cornelius, Van Raalte, & Shaw, 2000), indicating that body mass index influences SPA, which in turn affects protective self-presentational motives and ultimately protective self-presentational behaviors.

While SPA has been shown to be closely related to body dissatisfaction (Bartlewski, Van Raalte, & Brewer, 1996; Lantz et al., 1997; McAuley et al., 1995), less is known regarding self-perceived weight discrepancies and their impact on SPA. Specifically, research has indicated that women show higher dissatisfaction for weight, hip, thigh, body fatness, and weight, and regular exercise has improved body cathexis (Salusso-Deonier & Schwarzkopf, 1991). The relationship between exercise and body satisfaction is surely a dynamic one. For example, regular involvement in an exercise program may, at the onset, produce biologic reinforcers like improved muscle tone, increased stamina, and reduction of body weight and fat content. Together, these factors may, at least in the short term, enhance one's body esteem. However, diligent exercise involvement can also have negative consequences, particularly among emotionally susceptible, highly critical or fiercely competitive exercisers. Comparison between one's own shape and that of ultra-slender models may also foster a critical view of one's physical appearance and an increasing sense of disenchantment (Davis, 1997). Furthermore, it may be that although exercise enhances a women's perceived body image, her idealized body image begins to shift toward a thinner standard, with the resultant dissatisfaction remaining the same regardless of objective improvement.

Lantz et al (1997) proposed that the discrepancy between females' perceived ideal body image and their actual physique may also be a primary mediator of SPA. In fact, the very nature

of such a perceived discrepancy describes the construct of SPA, in that those who view their body favorably may not be concerned with exercising under social evaluation. However, individuals who are dissatisfied with their appearance may not present themselves in situations where their body may be evaluated. In support of this contention, Leary and Kowalski (1990) argued that a factor that motivates impression management involves the degree of discrepancy between the image one would like others to hold of oneself and the image one believes others already hold. Perceived actual-ideal weight similarity has been shown (Seggar, McCannon, & Cannon, 1988) to be positively related to body satisfaction, and since this satisfaction is associated with SPA (Bartlewski et al., 1996; Krane, Stiles-Shipley, & Michalenok, 2001), perceived weight discrepancy may be an important perceptual antecedent of SPA.

Within exercise settings, it may be that body mass as well as one's appraisal of actual versus ideal body weight may be primary factors in determining SPA. Schlenker and Leary (1982) indicated that two primary antecedents of social anxiety were image centrality and self attention, in that, people are more motivated to create a preferred impression when public interaction focuses on images that are more central to their identities, and that greater self-attention plays a crucial role in activating concern about one's identity. It is likely, then, that weight discrepancy, both in terms of image centrality and physique-driven self-attention, might be an antecedent of SPA. Therefore, measurement of exercisers' perceived weight discrepancy is distinct from physiological indicators of body esteem and may prove more meaningful, because it addresses the individual's perceptions and cognitive evaluation of personal inadequacies viewed as central to self-presentational anxiety.

Another construct that deserves closer examination within the SPA literature is racial background. Ethnicity and race have been shown to be contributing factors affecting body image (Abood & Chandler, 1997; Altabe, 1998). Cultural ideals can influence one's body image experiences and the extent to which one exercises to meet that ideal standard. In the US, African-American females develop body image problems less often than Caucasian females (Rand & Kuldau, 1992; Striegel-Moore, McVay, & Rodin, 1986). African-American women also exhibit less pathogenic eating behaviors, have greater acceptance of large body size (Gray, Ford, & Kelly, 1987) and experience less body dissatisfaction (Rand & Kuldau, 1992). A consistent explanation for this difference has been that African-American females are more positive and flexible in their ideal body image than Caucasians. Lab studies have found that bogus negative body feedback decreased body satisfaction in Caucasian females but had no such effect for African-American females (Henriques, Calhoun, & Cann, 1996). Parker, Nichter, Vuckovic, Sims, & Ritenbaugh (1995) examined body image and weight concerns in African-American and white adolescent females and found that cultural differences in body image appraisal were reasons for the racial differences. They noted that African-American women

did not evaluate their body in relation to the white ideal in the media, but in comparison to other African-American women. Compared to Caucasian women then, African-American women report a greater flexibility in ideal body image appraisal and more often report that "looking good" is related to public image and personality than to weight. It has been noted that women with low self-esteem may be more likely to see changing their appearance as a way to meet societal standards and improve self-esteem, and changes in body esteem have been shown to be more closely associated with changes in self-esteem in white women compared to African-American women (Henriques & Calhoun, 1999).

Rosenberg (1979), studying global self-esteem, indicated that minority groups' value standards of reference for social comparison are typically based on their own minority groups' values and not those of the majority. Previous SPA study has examined mainly Caucasian females and recently, researchers (Lantz et al., 1997) have advocated the need to examine potential moderator variables on SPA such as race. While SPA investigations have expanded to older females (McAuley et al., 1995b; Hausenblas & Martin, 2000) and males (Russell, 2002), variables such as racial background has been limited. In a recent exception, Russell (2002) examined self-esteem, body dissatisfaction, and SPA in males across various exercise frequency and racial background and found that African-American males had lower SPA than Caucasian males. Results also indicated that while self-esteem and body dissatisfaction predicted SPA across both races, BMI was only predictive of SPA in Caucasian males. Body dissatisfaction has been shown to be related to SPA (Bartlewski et al., 1996; Crawford & Eklund, 1994; Eklund & Crawford, 1994; Hart et al., 1989), and because the general body image literature has found consistent differences across racial background, it may be that this racial difference may explain differences in SPA and body dissatisfaction.

The purpose of this study was to assess the degree to which body-image related constructs of SPA, body dissatisfaction, and self-esteem could be differentiated by racial background. Based on findings that women with distorted weight and body size distortion experience greater negative affect (Fallon & Rozin, 1985) and Caucasian women experience higher body dissatisfaction than African-American women (Abood & Chandler, 1997; Cash & Henry, 1995), we hypothesized that within an exercise context, African-American females would have significantly lower SPA, body dissatisfaction and higher self-esteem compared to Caucasian females. A second purpose was to study whether females' SPA, body dissatisfaction, and global self-esteem could be predicted across race by actual weight, self-reported weight discrepancy, and exercise frequency, after controlling for body mass index. Because recent work has posited that body mass index is a primary physiological correlate to SPA (Diehl et al., 2000), it was deemed important to control for this variable. Also, since self-esteem (Martin et al., 1997) and body dissatisfaction (Bartlewski et al., 1996; Lantz et al., 1997; McAuley et al., 1995a)

have been closely associated with SPA, an a priori decision was made to integrate them as criterion variables. Based on literature indicating that greater perceived weight discrepancy is associated with lower psychological well-being (Bezner, Adams, & Steinhardt, 1997; Seggar et al., 1988), we hypothesized that perceived weight discrepancy and actual weight would be predictive of SPA and body dissatisfaction and lower self-esteem, particularly in Caucasian females (Abood & Chandler, 1997; Salusso-Deonier & Schartzkopf, 1991; Seggar et al., 1988). Since perceived weight discrepancy has not been previously examined with SPA, this hypothesis was considered exploratory.

## Method

### *Participants*

Data were collected on a total of 168 college-age females (63 African-Americans, 105 Caucasians) from a large mid-western university ( $M$  age = 20.69,  $SD$  = 2.41;  $M$  weight = 138.37 lb,  $SD$  = 22.83).

### *Measures*

**Social Physique Anxiety.** Social physique anxiety (SPA) was measured using the Social Physique Anxiety Scale (Hart et al., 1989). The SPAS is a 12-item self-report inventory. Participants responded to a five-point Likert type scale with anchors of not at all (1) to extremely (5). Scores on the SPAS can range from 12-60, with higher scores indicating greater social physique anxiety. Hart et al (1989) provided evidence for internal consistency of the scale ( $\alpha$  = .90). Construct validity has also been demonstrated by Hart et al. (1989), who showed SPAS scores correlated with other measures involving evaluative concerns. While recent investigation of the SPAS has provided evidence for a unidimensional model using nine items (Martin, Rejeski, Leary, McAuley, & Bane, 1997) the issue continues to be debated (Eklund, 1998, Eklund, Kelley, & Wilson, 1997). Therefore, an a priori decision was made to maintain the original factor structure by keeping the 12 items and modifying item 2 as has been suggested (Eklund, Kelley, & Wilson, 1997).

**Self-Esteem.** Global self-esteem was assessed by Rosenberg's (1965) 10-item self-esteem scale which is a widely used measure with strong validity and reliability. Participants responded to a four-point Likert type scale varying from strongly agree (1), to strongly disagree (4). Scores can range from 10-40 with lower scores indicative of lower global self-esteem. Adequate internal consistency ( $r$  = .92), test-retest reliability ( $r$  = .85) and convergent validity and discriminant validity have been demonstrated (Wylie, 1974). An a priori decision was made to assess global self-esteem because of its strong psychometric characteristics and

because previous research examining self-esteem and body image constructs has also assessed global self-esteem (Silberstein et al., 1988; Bezner et al., 1997). Finally, SPA has been found to correlate with global self-esteem (Crawford & Eklund, 1994; Eklund & Crawford, 1994; Hart et al., 1989) and Martin et al (1997a) found that global self-esteem accounted for the greatest % of variance in SPA after controlling for % body fat.

*Body Satisfaction.* Body dissatisfaction was measured using the Body Cathexis Scale (Secourd & Jourard, 1953). This scale measures the degree of satisfaction an individual maintains for specific body parts and is a 24-item Likert scale with anchors of (1) very satisfied to (5) very dissatisfied. Scores can range from 24-120 with higher scores indicating a higher level of body dissatisfaction. For this study, scores were summed and the total score was used as a global measure of dissatisfaction. Adequate internal consistency and test-retest reliability have also been demonstrated (Seggar, McCammon, & Cannon, 1988).

*Weight Discrepancy Scores.* In addition to asking participants their current actual weight, they were also asked to identify their perceived ideal weight. Females' weight discrepancy scores for the data analysis were their actual weight minus their self-reported ideal weight. Self-reported weight was assessed to minimize the intrusiveness of data collection and willingness of female volunteers.

*Exercise Frequency.* The exercise variable of interest in this study was exercise frequency, thus participants were asked in the demographic questions to indicate, on average, how many days per week they engaged in aerobic exercise for at least 20 minutes in duration and how many days per week they engaged in resistance training.

### *Procedure*

Prior to data collection, human subjects approval was obtained from a university institutional review board. Instructors from randomly selected university classes were contacted and asked for permission to collect data on the aforementioned variables in their class. Classes of instructors who agreed to participate were visited and data collected during class periods. Females who volunteered met with the principle investigator after their class and completed the inventories. Data were collected by administration of a questionnaire packet, which included demographic information, Rosenberg's Self-Esteem Scale (Rosenberg, 1965), The Body Cathexis Scale (Secourd & Jourard, 1953) and the Social Physique Anxiety Scale (Hart et al., 1989). Order of scales was systematically counterbalanced to control for response bias, with one third receiving the SPAS first, one third receiving self-esteem scale first, and one third receiving the Body Cathexis scale first.

### *Data Analysis*

In order to examine whether SPA, body dissatisfaction, and self-esteem differed as a function of racial background, a one-way MANOVA was performed using racial background (Caucasian, African-American) as the independent variable and SPA, BCS, and SE as dependent variables. Second, three two-step hierarchical multiple regression analyses were performed across race, to determine if actual weight, weight discrepancy, and aerobic frequency and anaerobic frequency predicted separate criterion variables of SPA, body dissatisfaction, and self-esteem, respectively, after first controlling for body mass index as a primary physiological correlate. For all statistical tests, an *a priori* alpha level of .05 was selected.

### **Results**

Descriptive results for the final sample ( $N=168$ ) broken into racial background are shown in Table 1. The current overall sample had a mean aerobic exercise frequency of 2.76 days/week ( $SD=1.60$ ) and did not meet the minimum frequency guideline as proposed by the American College of Sports Medicine (ACSM, 1998). The overall current sample had SPA scores ( $M=38.07$ ,  $SD=8.62$ ) consistent with average values ( $M=37.9$ ,  $SD=9.78$ ;  $M=37.0$ ,  $SD=10.1$ ) obtained across two samples of college women (Hart et al., 1989). A cursory examination of means across racial background showed slightly higher actual weight and perceived weight discrepancy for African-American females. In addition, African-American female means were lower than Caucasian females on SPA and body dissatisfaction, while also slightly higher on self-esteem. Table 2 provides bivariate correlations for study variables, across racial background. A comparison of the correlations across race indicates significant correlations for both groups among SPA, body dissatisfaction, and self-esteem. Interestingly however, weight discrepancy and actual weight were significantly correlated with body dissatisfaction in African-American females ( $r=.36$ ,  $r=.33$ , respectively), yet were not correlated for Caucasian females.

**Table 1**  
**Means and Standard Deviations for Study Variables**

| Measure                       | Racial Background |         |                         |         |
|-------------------------------|-------------------|---------|-------------------------|---------|
|                               | Caucasian (n=105) |         | African-American (n=63) |         |
| Age                           | 20.33             | (2.11)* | 21.14                   | (2.73)  |
| Actual Weight                 | 137.18            | (19.15) | 140.34                  | (27.02) |
| Ideal Weight                  | 128.31            | (18.11) | 130.08                  | (21.01) |
| Weight Discrepancy            | 8.86              | (9.23)  | 10.26                   | (13.04) |
| Resistance Training Frequency | 1.32              | (1.57)  | 1.11                    | (1.63)  |
| Aerobic Training Frequency    | 2.97              | (1.93)  | 2.41                    | (2.06)  |
| Social Physique Anxiety       | 39.40             | (8.34)  | 35.87                   | (8.69)  |
| Body Dissatisfaction          | 65.47             | (18.34) | 62.46                   | (17.84) |
| Self-Esteem                   | 32.28             | (5.09)  | 34.87                   | (4.01)  |

\* Standard deviations are in parentheses

*Racial Background and Social Physique Anxiety, Body Dissatisfaction, and Self-Esteem*

Results of a one-way MANOVA revealed a significant difference between racial background for the three dependent variables of SPA, BCS, and SE (*Wilk's Lambda* = .94,  $R^2 = .06$ ,  $F(3,164) = 3.01$ ,  $p < .03$ ). So, while a relationship between racial background and the three dependent variables does exist, it accounts for only 6% of the variance. In order to estimate the relative contribution of the dependent variables, descriptive discriminant analysis procedures were used. Structure coefficients for SPA, self-esteem, and body dissatisfaction were .87, -.71, and .35, respectively, indicating that while SPA and self-esteem contributed to discriminating between race, body dissatisfaction contributed the least in discriminating between racial background. A follow-up one-way ANOVA on SPA was significant,  $F(1,167) = 6.82$ ,  $p < .01$  and SPA means indicated that African-American females had significantly lower SPA ( $M = 35.87$ ,  $SD = 8.69$ ) compared to Caucasian females ( $M = 39.40$ ,  $SD = 8.34$ ). Follow-up ANOVA results for global self-esteem were also significant,  $F(1,167) = 4.50$ ,  $p < .05$ , indicating that African-American females had higher global self-esteem ( $M = 34.87$ ,  $SD = 4.01$ ) than Caucasian females ( $M = 32.28$ ,  $SD = 5.09$ ). Finally, follow-up ANOVA results on body dissatisfaction were not significant  $F(1,167) = 1.09$ ,  $p = .30$ , indicating that, while the structure coefficient was above .30, the differences in general body dissatisfaction were not significantly different across African-American females ( $M = 62.46$ ,  $SD = 17.85$ ) and Caucasian females ( $M = 65.48$ ,  $SD = 18.34$ ).

**Table 2**  
**Intercorrelations for Study Variables by Racial Background**

| <i>African-American Females</i> |       |        |        |        |          |         |       |       |     |     |
|---------------------------------|-------|--------|--------|--------|----------|---------|-------|-------|-----|-----|
|                                 | Age   | Height | Weight | Actual | Strength | Aerobic | SPAS  | BCS   | SE  | BMI |
| Age                             | —     |        |        |        |          |         |       |       |     |     |
| Height                          | -.09  | —      |        |        |          |         |       |       |     |     |
| Weight                          | .08   | .43*   | —      |        |          |         |       |       |     |     |
| Actual                          | -.08  | .49*   | .77*   | —      |          |         |       |       |     |     |
| Strength                        | -.13  | .18    | .10    | .19    | —        |         |       |       |     |     |
| Aerobic                         | -.26  | .02    | .14    | .24    | .49*     | —       |       |       |     |     |
| SPAS                            | .02   | .04    | .11    | .09    | .06      | .04     | —     |       |     |     |
| BCS                             | .09   | .07    | .36*   | .33*   | .05      | .03     | .51*  | —     |     |     |
| SE                              | -.07  | .14    | .22    | .15    | .11      | .13     | -.51* | -.44* | —   |     |
| BMI                             | .18   | -.09   | .91*   | .65*   | .02      | .15     | .11   | .40*  | .17 | —   |
| <i>Caucasian Females</i>        |       |        |        |        |          |         |       |       |     |     |
|                                 | Age   | Height | Weight | Actual | Strength | Aerobic | SPAS  | BCS   | SE  | BMI |
| Age                             | —     |        |        |        |          |         |       |       |     |     |
| Height                          | .02   | —      |        |        |          |         |       |       |     |     |
| Weight                          | .07   | .49*   | —      |        |          |         |       |       |     |     |
| Actual                          | .05   | .48*   | .97*   | —      |          |         |       |       |     |     |
| Strength                        | -.21* | .08    | .14    | .14    | —        |         |       |       |     |     |
| Aerobic                         | -.14  | .09    | .16    | .15    | .14      | —       |       |       |     |     |
| SPAS                            | -.03  | .04    | .19    | .17    | .01      | .11     | —     |       |     |     |
| BCS                             | .02   | -.12   | .12    | .13    | -.13     | -.14    | .67*  | —     |     |     |
| SE                              | .02   | .08    | .06    | .08    | -.01     | .02     | -.35* | -.38* | —   |     |
| BMI                             | .08   | -.14   | .78*   | .76*   | .09      | .11     | .16   | .21*  | .06 | —   |

\*  $p < .05$

*Note.* Weight = Weight Discrepancy, Actual = Actual Weight, Strength = Strength training frequency, Aerobic = Aerobic training frequency, SPAS = Social physique anxiety, BCS = body dissatisfaction, SE = Self-esteem, BMI = Body mass index.

### *Regression Analyses on Social Physique Anxiety, Body Dissatisfaction and Self-Esteem*

Since MANOVA results revealed a significant overall effect for racial background on SPA, body dissatisfaction, and self-esteem, regression analyses were performed to control for racial differences in the prediction of criterion variables and separate two-step hierarchical regressions were performed on SPA, body dissatisfaction, and self-esteem across race. In each analysis, the first model provided information on the effect of BMI as the primary physiological correlate of SPA and body dissatisfaction (Diehl et al., 2000). The second model provided information on the effect of each predictor while controlling for all other variables. The difference between  $R^2$  in the first and second model indicated whether perceived weight discrepancy, actual weight, aerobic exercise frequency, and strength training frequency significantly added to the model. Summary tables on regression analyses for African-American and Caucasian females on SPA, body dissatisfaction, and self-esteem are reported in Tables 3, 4, and 5, respectively.

### *Regression Results for Social Physique Anxiety*

*African-American Females.* Model 1 resulted in an insignificant squared multiple correlation (SMC),  $F(1,62) = .71, p = .40, R^2 = .01$ , as did model 2,  $F(5,62) = .82, p = .54, R^2 = .07$ . This indicates that neither BMI nor BMI in concert with the other four independent variables are significant predictors of SPA. In addition, the change in  $R^2$  from model 1 to model 2 was not significant,  $F(4,57) = .92, p > .05, R^2_c = .06$ .

*Caucasian Females.* Model 1 was not significant,  $F(1,104) = 2.62, p = .11, R^2 = .03$ , indicating that BMI by itself does not predict SPA. Model 2 was significant, indicating that the full model was predictive of SPA in Caucasian females,  $F(4,105) = 4.82, p < .001, R^2 = .20$ . The change in  $R^2$  from model 1 to model 2 was significant, indicating that after controlling for BMI, the inclusion of perceived weight discrepancy (WD), actual weight, aerobic and strength training frequency significantly added to model 1,  $F(4,99) = 21.25, p < .05, R^2_c = .17$ . Results for model 2 show that perceived weight discrepancy (WD) is the only significant predictor of SPA, after controlling for all other variables in the model ( $p = .0001$ ).

### *Regression Results for Body Dissatisfaction*

*African-American Females.* Model 1 resulted in a significant squared multiple correlation (SMC),  $F(1,62) = 11.46, p < .001, R^2 = .16$ . This indicates that BMI by itself was a significant predictor of body dissatisfaction. Model 2 was also significant, indicating that the full model was predictive of body dissatisfaction in African-American females,  $F(5,62) = 3.24, p < .01, R^2 = .22$ . The  $R^2$  change from model 1 to model 2 was nonsignificant however,  $F(4,57) = 1.15, p > .05$ , indicating that the inclusion of WD, actual weight, aerobic and strength training frequency did not significantly add to BMI as a predictor of body dissatisfaction.

*Caucasian Females.* Model 1 resulted in a significant squared multiple correlation (SMC),  $F(1, 104) = 4.95, p < .05, R^2 = .05$ . This indicates that BMI itself was a significant predictor of body dissatisfaction. Model 2 was also significant, indicating that the full model was predictive of body dissatisfaction in Caucasian females,  $F(1, 104) = 7.00, p < .0001, R^2 = .26$ . The change from model 1 to model 2 was significant, indicating that after controlling for BMI, the inclusion of WD, actual weight, aerobic and strength training frequency significantly added to model 1,  $F(4, 99) = 7.57, p < .05, R^2 = .21$ . Results for model 2 show that perceived weight discrepancy (WD) is the only significant predictor of body dissatisfaction, after controlling for all other variables in the model ( $p = .0001$ ).

#### *Regression Results for Self-Esteem*

*African-American Females.* Model 1 resulted in an insignificant squared multiple correlation (SMC),  $F(1, 62) = 1.75, p = .19, R^2 = .03$ , as did model 2,  $F(5, 62) = 1.90, p = .11, R^2 = .14$ . This indicates that neither BMI nor BMI in concert with the four independent variables are significant predictors of self-esteem. In addition, the change in  $R^2$  from model 1 to model 2 was not significant,  $F(4, 57) = 1.50, p > .05, R^2_c = .11$ .

*Caucasian Females.* Model 1 resulted in an insignificant squared multiple correlation (SMC),  $F(1, 104) = .32, p = .57, R^2 = .003$ , as did model 2,  $F(5, 104) = .86, p = .51, R^2 = .04$ . This indicates that neither BMI nor BMI in concert with the four independent variables are significant predictors of self-esteem. In addition, the change in  $R^2$  from model 1 to model 2 was not significant,  $F(4, 99) = .10, p > .05, R^2_c = .04$ .

**Table 3**  
**Regressions Results on Social Physique Anxiety**

*African-American Females*

| Model   | Variable | beta | Beta | T    | p   | Unique Var. | Correlations |           |               |                |                 |
|---------|----------|------|------|------|-----|-------------|--------------|-----------|---------------|----------------|-----------------|
|         |          |      |      |      |     |             | <u>BMI</u>   | <u>WD</u> | <u>Actual</u> | <u>Aerobic</u> | <u>Strength</u> |
| Model 1 | BMI      | .19  | .11  | .84  | .40 | .01         | —            |           |               |                |                 |
| Model 2 | BMI      | .02  | .56  | .03  | .97 | .00         | —            |           |               |                |                 |
|         | WD       | .18  | .10  | 1.78 | .08 | .05         | .55          | —         |               |                |                 |
|         | Actual   | -.04 | .19  | -.19 | .85 | .00         | .91          | .55       | —             |                |                 |
|         | Aerobic  | .05  | .63  | -.07 | .94 | .00         | .14          | .11       | .14           | —              |                 |
|         | Strength | .04  | .40  | .50  | .62 | .00         | .03          | -.01      | .10           | .49            | —               |

Y-intercept = 35.52

*Caucasian Females*

| Model   | Variable | beta | Beta | T    | p     | Unique Var. | Correlations |           |               |                |                 |
|---------|----------|------|------|------|-------|-------------|--------------|-----------|---------------|----------------|-----------------|
|         |          |      |      |      |       |             | <u>BMI</u>   | <u>WD</u> | <u>Actual</u> | <u>Aerobic</u> | <u>Strength</u> |
| Model 1 | BMI      | .46  | .61  | 1.62 | .11   | .02         | —            |           |               |                |                 |
| Model 2 | BMI      | -.32 | .43  | -.73 | .47   | .00         | —            |           |               |                |                 |
|         | WD       | .39  | .09  | 4.27 | .0001 | .15         | .44          | —         |               |                |                 |
|         | Actual   | .08  | .14  | .56  | .58   | .00         | .78          | .41       | —             |                |                 |
|         | Aerobic  | .37  | .43  | .87  | .38   | .00         | .11          | .08       | .17           | —              |                 |
|         | Strength | -.15 | .53  | -.27 | .79   | .00         | .09          | -.05      | .14           | .44            | —               |

Y-intercept = 37.70

BMI = Body mass index, WD = Weight Discrepancy, Actual = Actual weight, Aerobic = Aerobic frequency, Strength = Strength training frequency

**Table 4**  
**Regression Results on Body Dissatisfaction**

*African-American Females*

| Model   | Variable | beta | Beta | T    | p    | Unique Var. | Correlations |      |        |         |          |
|---------|----------|------|------|------|------|-------------|--------------|------|--------|---------|----------|
|         |          |      |      |      |      |             | BMI          | WD   | Actual | Aerobic | Strength |
| Model 1 | BMI      | 1.42 | .40  | 3.24 | .005 | .16         | —            |      |        |         |          |
| Model 2 | BMI      | 1.27 | .35  | 1.20 | .24  | .02         | —            |      |        |         |          |
|         | WD       | .40  | .29  | 2.07 | .04  | .06         | .55          | —    |        |         |          |
|         | Actual   | -.14 | -.12 | -.41 | .12  | .00         | .91          | .55  | —      |         |          |
|         | Aerobic  | -.73 | -.09 | -.63 | .09  | .00         | .14          | .11  | .14    | —       |          |
|         | Strength | 1.05 | .10  | .70  | .49  | .00         | .03          | -.01 | .10    | .49     | —        |

Y-intercept = 38.22

*Caucasian Females*

| Model   | Variable | beta  | Beta | T     | p     | Unique Var. | Correlations |      |        |         |          |
|---------|----------|-------|------|-------|-------|-------------|--------------|------|--------|---------|----------|
|         |          |       |      |       |       |             | BMI          | WD   | Actual | Aerobic | Strength |
| Model 1 | BMI      | 1.58  | .21  | 2.23  | .03   | .15         | —            |      |        |         |          |
| Model 2 | BMI      | .94   | .14  | 1.00  | .01   | .01         | —            |      |        |         |          |
|         | WD       | .95   | .48  | 4.48  | .0001 | .18         | .44          | —    |        |         |          |
|         | Actual   | -.32  | -.15 | -1.08 | .28   | .01         | .78          | .41  | —      |         |          |
|         | Aerobic  | -1.45 | -.16 | -1.61 | .11   | .02         | .11          | .08  | .17    | —       |          |
|         | Strength | -.37  | -.03 | -.33  | .74   | .00         | .09          | -.05 | .14    | .44     | —        |

Y-intercept = 61.24

BMI = Body mass index, WD = Weight Discrepancy, Actual = Actual weight, Aerobic = Aerobic frequency, Strength = Strength training frequency

**Table 5**  
**Regression Results for Self-Esteem**

*African-American Females*

| Model   | Variable | beta | Beta | T     | p   | Unique Var. | Correlations |      |        |         |          |
|---------|----------|------|------|-------|-----|-------------|--------------|------|--------|---------|----------|
|         |          |      |      |       |     |             | BMI          | WD   | Actual | Aerobic | Strength |
| Model 1 | BMI      | .19  | .17  | 1.32  | .19 | .03         | —            |      |        |         |          |
| Model 2 | BMI      | -.12 | -.14 | -.46  | .64 | .00         | —            |      |        |         |          |
|         | WD       | -.10 | -.33 | -2.22 | .04 | .07         | .55          | —    |        |         |          |
|         | Actual   | .14  | .52  | 1.68  | .09 | .04         | .91          | .55  | —      |         |          |
|         | Aerobic  | .20  | .10  | .73   | .47 | .00         | .14          | .11  | .14    | —       |          |
|         | Strength | .00  | .00  | .01   | .99 | .00         | .03          | -.01 | .10    | .49     | —        |

Y-intercept = 29.17

*Caucasian Females*

| Model   | Variable | beta | Beta | T     | p   | Unique Var. | Correlations |      |        |         |          |
|---------|----------|------|------|-------|-----|-------------|--------------|------|--------|---------|----------|
|         |          |      |      |       |     |             | BMI          | WD   | Actual | Aerobic | Strength |
| Model 1 | BMI      | .10  | .06  | .57   | .57 | .003        | —            |      |        |         |          |
| Model 2 | BMI      | .16  | .09  | .56   | .58 | .00         | —            |      |        |         |          |
|         | WD       | -.12 | -.22 | -1.94 | .06 | .04         | .44          | —    |        |         |          |
|         | Actual   | .05  | .08  | .50   | .62 | .002        | .78          | .41  | —      |         |          |
|         | Aerobic  | .12  | .05  | .41   | .68 | .001        | .11          | .08  | .17    | —       |          |
|         | Strength | -.21 | -.06 | -.58  | .56 | .003        | .09          | -.05 | .14    | .44     | —        |

Y-intercept = 27.74

BMI = Body mass index, WD = Weight Discrepancy, Actual = Actual weight, Aerobic = Aerobic frequency, Strength = Strength training frequency

## Discussion

One purpose of this study was to examine whether SPA, body dissatisfaction, and self-esteem could be differentiated by racial background. The first hypothesis was supported in that all three structure coefficients for SPA (.87), body dissatisfaction (.35), and self-esteem (-.71) indicated that females' racial background could be distinguished as a function of these constructs. Specifically, African-American females had lower SPA and lower body dissatisfaction than Caucasian females and higher global self-esteem than Caucasian females. These results partially extend results from males across different racial background indicating that African-American males have lower SPA than Caucasian males (Russell, 2002). Thus, while not examining the direct impact of exercise, current findings provide support for the importance of racial influences (Lantz et al., 1997) as an important consideration in females' SPA, regardless of their current exercise patterns. Previous research (Eklund & Crawford, 1994) has indicated SPA be examined while controlling for body composition. These results suggest that regardless of exercise patterns or body composition, racial differences in perceived weight discrepancy and body dissatisfaction may be reflected in self-presentational concerns.

The second purpose was to examine whether females' SPA, body dissatisfaction, and self-esteem could be predicted across race by actual weight, self-reported weight discrepancy, and self-reported exercise frequency, after controlling for body mass index. There was partial support for this hypothesis in that while weight discrepancy did not predict SPA in African-American females, it did predict SPA in Caucasian females. Perceived weight discrepancy was more predictive of SPA in Caucasian females compared to African-American females, yet was equally important across race in predicting body dissatisfaction. While perceived weight discrepancy was reflective of body dissatisfaction in both groups, this discrepancy was only predictive of SPA and body dissatisfaction for Caucasian females. In fact, when controlling for all other variables in the model, Caucasian females' perceived weight discrepancy was the only significant predictor for both SPA and body dissatisfaction. Taken together, these results extend previous racial differences in SPA (Russell, 2002) indicating that African-American and Caucasians have differential physique appraisals that result in higher SPA in Caucasians compared to African-Americans. These findings provide support for the contention that while African-American females may also have body dissatisfaction, they are less vulnerable to self-presentation concerns, potentially because they have not adopted a larger cultural stereotype and internal standard of the ideal body as Caucasian females (Aboud & Chandler, 1997). In the body image literature, a common underlying theme is that a reason for more positive body image appraisal for African-American is that they do not identify as closely with the majority culture, media-model of an ideal body which may afford them a protective effect

against negative body dissatisfaction (Flynn & Fitzgibbon, 1998; Ogden & Elder, 1998; Parker et al., 1995). Within an exercise context, this protective effect might extend to self-presentational concerns and SPA.

Schlenker and Leary (1982) discussed antecedents of social anxiety, two of which seem particularly relevant to the influence of perceived weight discrepancy on SPA. One proposition is that, given the goal of impressing others, social anxiety will depend on the perceived discrepancy between others' reactions and one's standard. Second, given a perceived discrepancy, one's amount of social anxiety depends on the importance of the goal or standard. If that standard is more lenient or "flexible" as has been reported in relation to African-American females' body image (Parker et al., 1995), this type of body appraisal might account for why African-American females might be dissatisfied with their bodies, yet not manifest this dissatisfaction in physique-related apprehension regarding their appearance. The different perceived weight discrepancy - SPA relationship across race may also have been due to different exercise patterns, as the current African-American sample was less aerobically active than the Caucasian group.

These results support the importance of self-perceived weight discrepancy in females as an antecedent to SPA. Previous SPA studies have indicated that measures such as public body consciousness (Martin et al., 1997a) and body fat % (Eklund & Crawford, 1994; Hart et al., 1989) are important antecedents to SPA. However, perceived weight discrepancy provides information regarding perceptual dissatisfaction over one's body, regardless of current actual weight and exercise behavior and may be more meaningful in exploring psychological constructs related to SPA. In addition, one's weight discrepancy may be a function of their internalized ideal and African-Americans may be more likely to have a different idealized standard. The present results indicated there was no relationship between exercise frequency and SPA, body-dissatisfaction, or self-esteem, supporting previous work indicating that exercise frequency is not related to SPA (McAuley et al., 1995a). Future research should examine longitudinal changes in SPA as a result of regular exercise. By examining both exercise behavior and longitudinal changes in perceived weight discrepancy, researchers may be able to determine whether exercise has the capability of reducing SPA and over time, or whether with regular exercise, this rigid ideal body standard may shift toward a thinner standard. Repeated longitudinal assessment of weight discrepancy and SPA would allow for answers to this question.

One limitation may have been the manner in that weight discrepancy was measured. A more informative relationship between weight discrepancy and SPA may have been obtained by asking females to compare their current body size to the body size they would ideally like to have (Stunkard, Sorenson, & Schlusinger, 1980) or by asking females what specific body parts they were most dissatisfied with (Salusso-Deonier & Schwartzkopf, 1994). Another acknowl-

edged limitation was the potential for social desirability in self-reported exercise frequency. The intent was to examine SPA, body dissatisfaction, and self-esteem in females who provided self-reported estimates of ideal weight and current exercise patterns. However, it is acknowledged that actual exercise patterns and inclusion of intensity and duration may have provided more reliable data, as females may have over or under-estimated their weekly aerobic exercise frequency. An additional limitation may have been that global self-esteem was assessed instead of physical self-esteem. An a priori decision was made to assess global self-esteem because it has been found to correlate with SPA (Crawford & Eklund, 1994) and has accounted for a substantial % of SPA variance after controlling for % of body fat (45%; Martin et al., 1997a). However, a limitation may have been that physical self-esteem or self-presentation confidence may have been more appropriate constructs since they are multidimensional and contain dimensions more relevant to physical concept assessment (i.e., sports competence, physical strength, body attractiveness, and physical conditioning; Fox & Corbin, 1989). As such, it would make sense that future SPA research with females combine measures of physical self-esteem with a measure assessing self-presentational tendencies in exercise. A measure like the Self-Presentation in Sport Questionnaire (SPEQ; Conroy, Motl, & Hall, 2000) would be appropriate because it is based on Leary and Kowalski's (1990) two-component model of impression management and contains theoretically relevant constructs such as body surveillance, perceived physical ability, physical self-presentation confidence, social desirability, and SPA.

Cultural variables may need to be examined with reasons why females exercise in order to clarify the exercise-SPA relationship. Exercise performed for health reasons has been shown to be negatively associated with SPA (Eklund & Crawford, 1994) yet many females exercise to improve attractiveness (Eklund & Crawford, 1994; Seggar et al., 1988), which may actually increase SPA if one's social comparison of weight discrepancy remains unfavorable. Therefore, future SPA research needs to examine how variables such as weight discrepancy interact with self-reported reasons why one exercise (Silberstein, Striegel-Moore, Timko, & Rodin, 1988).

In summary, these results, along with work examining racial differences on SPA (Russell, 2002), indicate that African-American exercisers are lower in their SPA compared to Caucasian exercisers. Results for both females in the present study and previously with males (Russell, 2002) indicate that across racial background, SPA is unrelated to exercise frequency. However, regardless of exercise patterns or race, one's body dissatisfaction is predictive of SPA in males (Russell, 2002), whereas greater perceived weight discrepancy is predictive of SPA in females. These relationships infer that a sense of physical dissatisfaction (which appears closely associated to weight in females) may be an underlying reason for higher SPA, regardless of one's race.

Since research on sociocultural effects of body image indicates the importance of ethnic identity (Makkur & Strube, 1995; Petersons et al., 2000), it may be that SPA is a function of ethnic identity instead of race per se. Phinney (1992) contends that knowing the race of an individual does not specifically explain social, emotional, and mental health outcomes and has indicated that ethnic identity is that part of an individual's self-concept that derives from one's knowledge of and emotional value attached to membership in a group. While culture may afford some protection to African-Americans in general regarding SPA, it does not specifically protect specific individuals. Thus, in the context of upward mobility in which acceptance may be sought from the larger mainstream culture, self-imposed pressure to attain the majority-culture "ideal body" standard may increase even in ethnically diverse individuals, making them more vulnerable to negative body image, self-presentational anxiety, and eating disorders (Root, 1992). Since media-presented images of women have the ability to negatively affect mood and appearance satisfaction through a social comparison process (Cattarin, Thompson, Thomas, & Williams, 2000), individuals who identify more with the social standard of an ideal body might be more vulnerable to physique anxiety. This would account for the importance of weight discrepancy on females' SPA and body dissatisfaction in males' SPA (Russell, 2002), regardless of race. It is therefore recommended that research should examine the influence of ethnic identity on SPA as it may be a useful construct to help explain self-presentational efficacy and resultant apprehension that occur within exercise contexts according to the self-presentational model.

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