

Self-Presentational Cognitions for Exercise in Female Adolescents

Cumming, Jennifer; Thogersen-Ntoumani, Cecilie

DOI:

[10.1111/j.1559-1816.2010.00720.x](https://doi.org/10.1111/j.1559-1816.2010.00720.x)

Document Version

Peer reviewed version

Citation for published version (Harvard):

Cumming, J & Thogersen-Ntoumani, C 2011, 'Self-Presentational Cognitions for Exercise in Female Adolescents', *Journal of Applied Social Psychology*, vol. 41, no. 2, pp. 429-444. <https://doi.org/10.1111/j.1559-1816.2010.00720.x>

[Link to publication on Research at Birmingham portal](#)

Publisher Rights Statement:

The definitive version is available at www3.interscience.wiley.com. *Journal of Applied Social Psychology* Volume 41, Issue 2, pages 429–444, February 2011. DOI:10.1111/j.1559-1816.2010.00720.x

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.

1 Running Head: SELF-PRESENTATIONAL COGNITIONS FOR EXERCISE

2

3

4

5 Self-Presentational Cognitions for Exercise in Female Adolescents

6

7

8

9

10

11

12 Date of Submission: 01/07/2008

13 Date of Resubmission: 30/01/2009

14 Date of Acceptance: 09/04/2009

15

1 Abstract

2 The main purpose was to clarify the role of a range of self-presentational cognitions in the
3 relationship between social physique anxiety and exercise behavior. 331 female participants
4 ($M_{age} = 14.48$, $SD = 1.53$) reported their exercise frequency and completed measures of self-
5 presentation. Exercise frequency was positively predicted by self-presentational efficacy
6 expectations (SPEE) and self-presentational outcome value (SPOV). Moreover, SPEE
7 moderated the relationship between social physique anxiety (SPA) and exercise frequency.
8 SPA was negatively related to exercise frequency when levels of SPEE were high, but
9 positively related to exercise frequency when SPEE was low. Interventions designed to
10 increase exercise frequency among adolescent girls should therefore include strategies that
11 both reduce social physique anxiety and enhance SPEE and SPOV.

12

1 Self-Presentational Cognitions for Exercise in Female Adolescents

2 When individuals engage in self-presentational strategies they do so as an attempt to
3 control the perceptions they give of themselves to people around them (Leary & Kowalski,
4 1990). Not surprisingly, most people are concerned with relaying a desirable impression as
5 other people's perceptions affect the way in which others think, feel and behave towards
6 them. As a result, a number of behaviors are guided by the wish to convey a desired image to
7 others. Unfortunately, many of these behaviors are highly maladaptive and pose threats to
8 human health (e.g., the initiation of smoking and disordered eating; Martin Ginis & Leary,
9 2004).

10 The exercise setting represents a useful context in which to study self-presentational
11 processes, as self-presentational concerns can affect motivation, behavioral choices and
12 emotional outcomes associated with exercise participation (Leary, 1992). Self-presentational
13 concerns largely arise from the body being "on display" across different exercise situations
14 and people feeling that they come up short in relation to the increasingly unattainable ideal
15 physique. Consequently, some researchers have argued that a "normative discontent"
16 regarding the body's appearance has developed in Western populations (Levine & Smolak,
17 2002).

18 Social physique anxiety, defined as anxiety arising from (the perception of) any
19 evaluation of the physique in social settings, has been one of the most extensively examined
20 self-presentational constructs in the exercise context. In a review of literature, Hausenblas,
21 Brewer and Van Raalte (2004) revealed that, taken together, there was evidence of a small
22 negative effect of social physique anxiety on exercise behavior. This finding suggests that
23 high levels of social physique anxiety tend to serve as a deterrent of physical activity
24 participation probably due to many people feeling embarrassed about displaying their
25 physique in public exercise settings (Hausenblas et al., 2004). However, the review also

1 revealed that other studies have identified a positive association between social physique
2 anxiety and exercise behavior, indicating that for some people, the presence of social
3 physique anxiety may act as source of motivation for exercise engagement. Indeed, much
4 anecdotal and scientific evidence suggest that one of the most common motives for exercise
5 participation is appearance management (e.g., Ingledew, Hardy, & DeSousa, 1995;
6 Thøgersen-Ntoumani, Lane, Biscomb, Jarrett, & Lane, 2007).

7 These conflicting findings point to the existence of a potential moderating relationship
8 between social physique anxiety and exercise behavior (Martin Ginis, Lindwall, &
9 Prapavessis, 2007). Age appears to play an important role in this relationship. For example,
10 Treasure, Lox, and Lawton (1998) found that the influence of social physique anxiety on
11 exercise adherence decreased with age in an obese female population. Specifically, higher
12 levels of social physique anxiety predicted lower levels of exercise adherence in younger
13 women (those less than 45 years of age) but not in older women. Social physique anxiety
14 therefore seems to have a much more pronounced effect on adherence to exercise for younger
15 individuals. The participants in Treasure et al.'s sample, however, were all adult women (M
16 $age = 37.71$, $SD = 13.78$) and adolescent girls were not included. Given that self-presentation
17 concerns are particularly prominent in adolescent girls (Levine & Smolak, 2002), it is indeed
18 surprising that most research examining the role of self-presentation in exercise behavior has
19 been conducted with middle-aged women and female college students (please see Hausenblas
20 et al., 2004 for a review). The limited amount of research that has been conducted with
21 adolescent girls in this general area of work has focused on social physique anxiety and
22 motives underlying exercise behavior. For example, social physique anxiety is positively
23 related to both adolescent girls' endorsement of self-presentational motives for both exercising
24 (e.g., to look healthy and fit) and not exercising (e.g., I am uncomfortable exercising because
25 of how my body looks) among an Irish sample (Martin, Leary & O'Brien, 2001). More

1 recently, Kowalski, Mack, Crocker, Niefer, and Fleming (2006) revealed that behavioral
2 avoidance (i.e., conscious and deliberate attempts to avoid salient stressors) is the most
3 commonly reported strategy for adolescent girls faced with situations that might exacerbate
4 social physique anxiety. Further examination of the factors which determine whether social
5 physique anxiety is associated with increased or decreased levels of physical activity among
6 adolescent girls has important public health implications in view of the declining levels of
7 physical activity and their associated negative health consequences among this segment of the
8 population (Troost, Owen, Bauman, Sallis, & Brown, 2002).

9 There is some evidence to suggest that the inclusion of situation-specific efficacy
10 judgments related to self-presentation in exercise settings can further understanding of the
11 relationship between social physique anxiety and exercise behavior (Gammage, Hall, &
12 Martin Ginis, 2004; Woodgate, Martin Ginis, & Sinden, 2003). Specifically, self-
13 presentational efficacy (Maddux, Norton & Leary, 1988) refers to people's judgment about
14 their confidence in conveying the desired images to significant others in a particular
15 encounter. It consists of self-presentational efficacy expectations (SPEE; i.e., the belief that
16 one is able to convey the desired images to others, i.e., akin task self-efficacy), self-
17 presentational outcome expectancy (SPOE; i.e., the belief that one can create a favourable
18 impression if performing a certain behavior), and self-presentational outcome value (SPOV;
19 i.e., the importance afforded to the outcome; Leary, 1983). In a MANCOVA analysis
20 (controlling for social physique anxiety), Gammage, Hall, and Martin Ginis found high
21 frequency exercisers (3 or more times of exercise per week) to have significantly higher levels
22 of both SPEE and SPOV than low frequency exercisers (1-2 exercise sessions per week).
23 Moreover, their results indicated that exercise frequency explained 11% of the variance in
24 SPEE and only 1.8% variance in SPOV among a sample of young adult women exercisers (M
25 age = 20.60, $SD = 5.60$) from a University community. However, in examining these

1 differences, Gammage, Hall, and Martin Ginis might have lost important information due to
2 their dichotomization of exercise frequency (high versus low).

3 Another self-presentation construct that is relevant to the physical domain is impression
4 motivation (IM). According to Leary and Kowalski's (1990) impression management model,
5 self-presentation is made up of two components, IM denoting the desire to portray oneself
6 positively to others and impression construction referring to the extent that individuals change
7 their behavior to affect others' impressions of them (Leary & Kowalski, 1990). While
8 findings have demonstrated significant and positive links between IM and exercise frequency
9 in approximate equal numbers of both male and female University students, findings with
10 regard to the relationship between impression construction and exercise engagement are less
11 consistent, although this could be due to the lack of an all-encompassing IC measure (Conroy,
12 Motl, & Hall, 2000). However with regard to IM, in the study carried out by Gammage, Hall,
13 and Martin Ginis (2004), IM was not significantly related to exercise frequency when
14 controlling for social physique anxiety. However, IM might play a role in the relationship
15 between social physique anxiety and exercise behavior among adolescents who engage in
16 behaviors that improve body image (Fox, 1997). Adolescent girls may be particularly prone to
17 frequently engage in such behaviors as a result of body image concerns due to the salience of
18 self-presentation among this population segment (Levine & Smolak, 2002). Such a suggestion
19 highlights a need to examine the role of IM in exercise frequency among adolescent girls.
20 There also appears to be a lack of studies examining the relative contribution of all of the
21 above self-presentation cognitions in explaining exercise behavior.

22 Moderators specify under which conditions two variables relate to one another, and may
23 be useful to examine when the relationships between two variables are weak or inconsistent
24 (Baron & Kenny, 1986). Woodgate et al. (2003) examined whether SPEE moderated the

1 relationship between social physique anxiety and moderate intensity physical activity in a
2 sample of older women (M age = 70.85, SD = 6.46). The authors expected that SPEE might
3 help explain the inconsistent relationship previously reported between social physique anxiety
4 and exercise behavior. This suggestion was made based on the rationale, in line with Social
5 Cognitive Theory (Bandura, 1986), that women who feel confident in their abilities to self-
6 present as competent exercisers are more likely to engage in exercise behaviors. Indeed,
7 Woodgate et al. identified a significant interaction effect, such that older women with low
8 levels of social physique anxiety were likely to exercise more frequently than those with high
9 levels of social physique anxiety only if they also had moderate (i.e., mean) or high levels of
10 SPEE. In contrast, social physique anxiety was not related to exercise frequency for those
11 individuals who did not believe in their ability to self-present as exercisers. To our
12 knowledge, Woodgate et al's (2003) study is the only one to examine the moderating role of a
13 self-presentational cognition in the relationship between social physique anxiety and exercise
14 behavior. However, the extent to which the above findings generalize to samples of female
15 adolescents remains to be tested, as well as the potential moderating effects of other self-
16 presentational cognitions. We do not see any conceptual reasons why SPOE, SPOV, and IM
17 might not also similarly moderate the relationship between social physique anxiety and
18 exercise behavior.

19 In view of the above, the overarching aim of this study was to clarify the role of
20 different self-presentational cognitions to exercise in female adolescents. Adopting a
21 continuous measure of exercise frequency, we examined a) whether existing findings
22 concerning the relationships between a range of self-presentational cognitions and exercise
23 behavior could be extended to female adolescents, and b) whether the different types of self-
24 presentational cognitions moderated the relationship between social physique anxiety and
25 exercise frequency. First, it was hypothesized that SPEE, SPOE, SPOV, and IM would

1 explain variance in exercise frequency above and beyond levels of social physique anxiety.
2 Second, we hypothesized that all self-presentational cognitions would act as significant
3 moderators in the relationship between social physique anxiety and exercise frequency. Based
4 on previous findings reported by Woodgate et al. (2003), we expected that for participants
5 with high levels of self-presentational cognitions (i.e., SPEE, SPOE, SPOV and IM) social
6 physique anxiety would be significantly and negatively related to exercise frequency. In
7 contrast, social physique anxiety would not be significantly related to exercise frequency for
8 participants with low levels of self-presentational cognitions.

9 Method

10 *Participants*

11 Following ethical approval, investigators sought permission from administrators and
12 staff to carry out the study at a private female-only secondary school in Montreal, Canada.
13 The participants were 331 English-speaking female adolescents who ranged in age from 12 to
14 17 years ($M = 14.48$, $SD = 1.53$). Because the students were under the age of 18, both parental
15 and participant informed consent was also obtained prior to the start of the study. The students
16 reported engaging in a variety of physical activities with the most popular being soccer ($n =$
17 52), dance ($n = 44$), swimming ($n = 31$), running ($n = 24$), basketball ($n = 24$), and tennis ($n =$
18 19).

19 *Measures*

20 *Demographic information.* The participants were asked to provide information about
21 their age and main form of physical activity participated in over the last 6 months. Similar to
22 Gammage, Hall, and Martin Ginis (2004), they were also asked to indicate the number of
23 times per week they typically engaged in moderate (e.g., not exhausting, light sweating) to
24 vigorous (e.g., heart beats rapidly, working up a sweat) intensity physical activity outside of
25 their compulsory physical education classes. A range of sport and exercise examples were

1 provided to the participants to help them understand what was meant by the term “physical
2 activity”.

3 *Impression motivation.* Impression motivation (IM) was measured using four items
4 from Conroy et al.’s (2000) two-factor Self-Presentation in Exercise Questionnaire (SPEQ) to
5 assess an individual’s desire to be seen by others as being fit, toned, or an exerciser.
6 Gammage, Hall, Prapavessis et al. (2004) favor using these items over the original version of
7 the SPEQ due to both empirical and conceptual issues (also see Conroy & Motl, 2003;
8 Lindwall, 2005). More specifically, they found improved factorial validity when the SPEQ
9 was reconstituted with only four IM items, and identified conceptual problems with the
10 wording of items from the impression construction subscale. Consequently, we have chosen
11 to follow Gammage, Hall, and Martin Ginis’ (2004) example to only use the four-item version
12 of the IM subscale. Each item (e.g., “I value the attention and praise of others when they
13 regard me as being in good shape”) is rated on a five-point Likert-type scale, ranging from 1
14 (*not at all*) to 5 (*extremely*). A higher score therefore indicates a greater desire to present
15 oneself as an exerciser.

16 *Self-presentational efficacy.* Three aspects of self-presentational efficacy in exercise
17 settings were assessed using the scale developed by Gammage, Hall, and Martin Ginis (2004).
18 Five items tapped into self-presentational efficacy expectancy (SPEE) by asking participants
19 to rate on a scale from 0% (*not at all*) to 100% (*completely*) how confident they were of
20 performing behaviors and presenting images that would lead to specific self-presentational
21 outcomes (e.g., “other people will think that you have good stamina”). Self-presentational
22 outcome expectancy (SPOE) was also measured by five items and assessed the extent to
23 which individuals believed that specific self-presentational outcomes would result from
24 regular exercise (e.g., “by exercising regularly, other people will think that I have good
25 physical coordination”). Finally, self-presentational outcome value (SPOV) was measured by

1 the last five items and assessed the extent to which individuals placed importance on
2 achieving these outcomes (e.g., “I place a lot of value on looking like I have good physical
3 coordination”). Items measuring SPOE and SPOV were rated on a 6-point Likert-type scale,
4 ranging from 1 (*strongly agree*) to 6 (*strongly disagree*), and then recoded so that higher
5 scores represented higher expectancy and value beliefs.

6 *Social physique anxiety.* The nine-item version of the Social Physique Anxiety scale
7 (SPAS; Martin, Rejeski, Leary, McAuley, & Bane, 1997) assessed the anxiety experienced by
8 individuals when perceiving their physique as being evaluated by others. After comparing
9 psychometric properties with the original 12-item version (Hart, Leary, & Rejeski, 1989) and
10 alternative seven-item versions, Smith (2004) recommended use of the nine-item version for
11 research with adolescents. Each item (e.g., “I wish I wasn’t so uptight about my physique or
12 figure”) was rated on a 5-point Likert-type scale, ranging from 1 (*not at all*) to 5 (*extremely*).
13 The two positively worded items were reverse-coded so that a higher score represented
14 greater social physique anxiety.

15 *Procedure*

16 Data collection occurred during a regularly scheduled physical education class.
17 Students who agreed to participate were informed that their participation was voluntary and
18 they were free to withdraw from the study at any time without repercussion. They were also
19 assured that their responses would remain confidential and their anonymity would be
20 protected. A member of the investigative team distributed the multi-section questionnaire and
21 was available to answer questions concerning the instructions or wording of certain items.
22 Completion of the questionnaires took approximately 20 minutes and was then immediately
23 returned to the investigator in an envelope.

24

1 Results

2 The data were first inspected for accuracy of data entry, missing values, and univariate
3 and multivariate outliers. No mistakes in data entry were found or departures from univariate
4 normality in the study variables (Table 1). Eight cases were removed for having missing data,
5 and a further 25 cases were evaluated to be multivariate outliers using a Mahalanobis distance
6 statistic and were also deleted. The remaining sample, consisting of 298 cases, was used in the
7 analyses. The mean, standard deviation, internal reliability, and correlations were next
8 calculated for each variable measured in the study (also Table 1). Satisfactory levels of
9 internal reliability ($> .70$) were found for all variables.

10 A hierarchical multiple regression (HMR) analysis examined whether self-
11 presentational cognitions (IM, SPEE, SPOE, and SPOV) accounted for unique variance in
12 exercise frequency over and above that accounted for by social physique anxiety. SPA was
13 entered on Step 1 of the analysis, and the self-presentational cognitions were entered as a
14 block on Step 2. Inspection of the condition index and variance proportions indicated that no
15 problems existed in multicollinearity among the variables (Belsley, Kuh, & Welsch, 1980).
16 That is, no variable had a condition index above 30 and contributes more than 50% of the
17 variance to two or more regressions. All variables were therefore retained for the regression
18 analysis. The overall model was significant, $F(5, 292) = 12.70, p < .001$, and accounted for
19 17.9% of the variance in exercise frequency ($\text{adj } R^2 = .17$). At Step 1, SPA was a significant
20 and negative predictor of exercise frequency, $\beta = -.15, t(292) = -2.59, p = .01$, accounting for
21 2.2% of the variance ($\text{adj } R^2 = .02$). The addition of the self-presentational cognitions at Step
22 2 represented a significant change in the regression equation, $\Delta R^2 = .16, F_{\text{change}}(4, 292) =$
23 $13.90, p < .001$, accounting for the majority of the explained variance. Of these cognitions,
24 only SPEE, $\beta = .28, t(292) = 4.45, p < .001$, and SPOV, $\beta = .18, t(292) = 2.71, p = .007$,
25 emerged as significant and positive predictors.

1 Four separate moderated HMR analyses were next carried out to determine whether
2 IM, SPEE, SPOE, and SPOV moderated the relationship between SPA and exercise
3 frequency. The data was first centered to reduce problems with multicollinearity by
4 subtracting each score from its subscale mean (Aiken & West, 1991). The predictor (SPA)
5 and moderator (e.g., SPEE) were then entered together on Step 1 of the analysis, and the
6 interaction term (e.g., SPA x SPEE) was entered on Step 2. Again, no problems in
7 multicollinearity were revealed by the collinearity diagnostics. A moderation effect was
8 considered to occur when the addition of the interaction term contributed significant variance
9 to the regression equation and a statistically significant beta weight was found (Cohen, 1992).
10 The only variable to meet these guidelines and reveal a moderation effect was SPEE. For this
11 analysis, the overall model was significant, $F(3,294) = 17.31, p < .001$, and accounted for
12 15% of variance in exercise frequency ($\text{adj } R^2 = .14$). The interaction term contributed unique
13 variance at Step 2 ($\Delta R^2 = .012, F_{\text{change}}(1, 294) = 3.98, p = .047$) and a statistically significant
14 beta weight was found, $\beta = -.11, t(294) = -2.00, p = .047$. The regression slope was plotted in
15 a graph using predicted values of exercise frequency (Figure 1). The predicted values were
16 found by calculating two regression equations using low ($M - 1 \text{ SD}$) and high values ($M + 1$
17 SD) of the predictor and moderator variables for the centered data (Cohen, Cohen, West, &
18 Aiken, 2003). The simple regressions indicate a negative relationship between SPA and
19 exercise frequency at high levels of SPEE, and a positive relationship between SPA and
20 exercise frequency at low levels of SPEE. As further post hoc probing of the interaction,
21 simple slope analysis via t-tests determined whether the slopes from the two regression
22 equations significantly differed from zero (Aiken & West, 1991). The relationships were
23 found to be significant for both high, $t = 29.19, p < .001$, and low SPEE, $t = 19.16, p < .001$.

1 Discussion

2 To address the paucity of literature surrounding self-presentational cognitions and
3 exercise behavior in female adolescents, the aims of the present study were to determine
4 whether existing findings relating to the relationships between a range of self-presentational
5 cognitions and exercise behavior extend to female adolescents, and whether the different
6 types of self-presentational cognitions moderate the relationship between social physique
7 anxiety and exercise frequency.

8 With respect to the first purpose of the study, it was predicted that SPEE, SPOE, SPOV,
9 and IM would explain variance in exercise frequency above and beyond that accounted for by
10 social physique anxiety. In support of this hypothesis, we found that the addition of these self-
11 presentational cognitions accounted for the majority of the explained variance in exercise
12 frequency. However, only SPEE and SPOV emerged as significant predictors. These findings
13 are consistent with those of Gammage, Hall, and Martin Ginis (2004), and suggest that female
14 adolescents who report greater exercise frequencies have a stronger belief in their ability to
15 create a desired image of being a regular exerciser and in good physical shape. Similar to
16 female college students, they also seem to place more value on creating these desired images
17 in the minds of others. Of these two variables, SPEE emerged as the more important predictor
18 as indicated by its larger Beta value. Again this finding is consistent with that of Gammage,
19 Hall, and Martin Ginis and suggests that a female adolescent's belief in her ability to create, "a
20 specific impression is more strongly related to exercise behavior than the value placed on this
21 impression" (p. 1646). Thus, for adolescent girls perceptions of confidence appear to be
22 particularly important predictors of behaviors in the physical domain. Indeed, according to
23 social cognitive theory, beliefs of personal efficacy constitute the strongest predictor of
24 behaviors (Bandura, 1986, 1997). Perhaps it is not surprising that SPOV may also

1 demonstrate a significant relationship with exercise behavior given society's and the media's
2 incessant focus on the display of bodily perfection and the highly valued social status
3 associated with such an image.

4 For the second purpose of the study, we hypothesized that all self-presentational
5 cognitions would act as significant moderators in the relationship between social physique
6 anxiety and exercise frequency. In line with the findings of Woodgate et al. (2003), we
7 expected that social physique anxiety would be significantly and negatively related to exercise
8 frequency for participants with high levels of self-presentational cognitions (i.e., SPEE,
9 SPOE, SPOV and IM). Conversely, no significant relationship was expected between social
10 physique anxiety and exercise frequency for participants with low levels of self-presentational
11 cognitions. In partial support of these hypotheses, SPEE, but not IM, SPOE or SPOV, was
12 found to moderate the relationship between social physique anxiety and exercise frequency.
13 Our findings therefore provide further evidence that self-presentational efficacy beliefs affect
14 the relationship between social physique anxiety and exercise frequency. We expanded the
15 number of potential moderators to consider other aspects of self-presentational cognitions for
16 exercise, but our results remained consistent with those of Woodgate et al. (2003). Thus,
17 SPEE appears to be a predictor of exercise frequency in both older and younger females.

18 In our study, however, SPA significantly predicted exercise frequency for female
19 adolescents with both low and high levels of SPEE. By comparison, Woodgate et al. (2003)
20 found that social physique anxiety only predicted physical activity levels for older women
21 with moderate to high levels of SPEE. In interpreting the significant interaction within the
22 current study it was apparent that SPA was negatively related to exercise frequency when
23 levels of SPEE were high. Similar to older women, female adolescents with low SPA report
24 greater exercise frequency than those with high SPA, but only when SPEE is also high.
25 Possessing a strong belief in one's ability to present oneself as an exerciser is therefore

1 important for women who are comfortable with their physique (i.e., have low SPA),
2 regardless of whether they are younger or older.

3 Unexpectedly, however, a positive relationship occurred between SPA and exercise
4 frequency for female adolescents with low levels of SPEE. In other words, those lacking
5 confidence in their abilities to present themselves as an exerciser use SPA as a motivator for
6 exercise. Hausenblas et al. (2004) pointed out that some individuals with high levels SPA may
7 use exercise as a means to improving their appearance. Although, appearance management is
8 a common motivator for exercise (e.g., Ingledeew et al., 1995; Thøgersen-Ntoumani et al.,
9 2007), it is an extrinsic form of motivation that is linked with lower well-being and
10 maladaptive patterns of exercise behavior (e.g., Edmunds, Ntoumanis, & Duda, 2006; Maltby
11 & Day, 2001; Thøgersen-Ntoumani & Ntoumanis, 2006). The quality of an individual's
12 exercise experience might therefore be hampered when exercise is undertaken to manage
13 anxiety related to one's appearance. Rather than using social physique as a motivator to
14 exercise, attempts should instead be made to reduce social physique anxiety while
15 simultaneously enhancing self-presentational efficacy beliefs in these female adolescents.

16 Overall, the significant interaction helped to illustrate why a consistent relationship
17 between social physique anxiety and exercise frequency is not always found in the literature
18 (Hausenblas et al., 2004; Martin Ginis et al., 2007). The correlations and HMR analysis in the
19 present study pointed to a negative relationship suggesting that high social physique anxiety
20 can be a barrier to exercise. The interpretation clarified, however, that this relationship only
21 occurred for female adolescents with high SPEE. Conversely, being uncomfortable with one's
22 physique was related to increased exercise behavior when SPEE was low. Whilst studies have
23 sometimes found SPA to be positively associated with exercise behavior (e.g., Martin et al.,
24 2001), our findings show the moderating role played self-presentational efficacy beliefs.

1 Aside from the cross-sectional design of the present study, which limits our ability to
2 make causal claims, other limitations should be borne in mind when interpreting the results of
3 the study. For example, along with exercise frequency it is possible that exercise intensity
4 and/or duration may also be influenced by social physique anxiety and self-presentational
5 efficacy. Although participants were asked to only consider activities performed at moderate
6 to vigorous levels when reporting their exercise frequency, activities performed at lower
7 intensities or of a specific duration were not considered. In addition, it is likely that certain
8 types of physical activity and the extent to which participants engaged in them on their own or
9 in groups could affect the results. The data we acquired on the types of physical activities
10 indicated that they consisted of a mix of solitary and group activities, although it is unclear for
11 activities such as running and swimming. Previous research has found that socially physique
12 anxious women prefer to exercise on their own (Spink, 1992). Social physique anxiety and
13 confidence in one's ability to self-present as an exerciser might be less important as a
14 predictor of exercise when performed individually given that self-presentational concerns is
15 more likely to prevent people from exercising in the *presence of other people* (Leary, 1992).
16 Finally, we had to rely on a measure of self-reported exercise behavior. It would be useful if
17 future research employed objective measures to examine the association between social
18 physique anxiety, self-presentational cognitions, and exercise behavior.

19 In conclusion, much of the research focus thus far has been focused on examining how
20 SPA relates to exercise behavior. However, the findings of the present study suggest that
21 other SP cognitions may be at least as important. Interventions should therefore not focus
22 exclusively on reducing SPA, but should also target enhancing SPEE, and, to a lesser extent,
23 SPOV. While social physique anxiety can be changed through longer-term exercise
24 engagement (e.g., Lindwall & Lindgren, 2005), it is essentially a trait (e.g., Gammage et al.,
25 2004). In contrast, SPEE is a situational/contextual cognition and therefore might be more

1 readily modifiable. Previous research has indicated that social physique anxiety may be
2 reduced in exercise environments that deemphasise the physique, for example in exercise
3 classes where instructors create a health-focused, as opposed to an appearance-based, class
4 atmosphere (Raedeke, Focht, & Scales, 2007). Less is known about strategies that can be
5 implemented to increase self-presentational cognitions such as self-presentational efficacy
6 expectations. However, social cognitive theory posits that performance accomplishments,
7 vicarious or modelling experiences, verbal persuasion and emotional states are sources of
8 self-efficacy expectations (Bandura, 1986, 1997). It seems reasonable to suggest that
9 modifications of the exercise environment to deemphasise one's physique and enable
10 participants to feel more competent might possibly help social physique anxious participants
11 to progressively build an exercise identity, thereby concurrently enhancing self-presentational
12 efficacy (also see Martin Ginis et al., 2007). Further, previous research conducted by Sinden,
13 Martin Ginis and Angove (2003) with older women showed that the use of perfect-looking
14 exercise models (i.e., those representing the cultural appearance ideal) had a negative effect
15 on the participants' confidence in their abilities to self-present as competent exercisers. It is
16 likely that the unattainable ideal represented in various exercise magazines undermine also
17 adolescent girls' confidence in their ability to present themselves as fit and physically
18 competent. Instead, it would appear to be important to include exercise models that are more
19 similar to the target audience thereby facilitating exercise behavior among physique anxious
20 girls.

21

References

- 1
2 Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting*
3 *interactions*. Thousand Oaks, CA: Sage.
- 4 Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*.
5 Englewood Cliffs, NJ: Prentice-Hall.
- 6 Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.
- 7 Baron, R. M. & Kenny, D. A. (1986). The moderator-mediator variable distinction in social
8 psychological research: Conceptual, strategic, and statistical considerations. *Journal of*
9 *Personality and Social Psychology*, 51, 1173-1182.
- 10 Belsley, D. A., Kuh, E., & Welsch, R. E. (1980). *Regression Diagnostics Identifying*
11 *Influential Data and Sources of Collinearity*. New York: Wiley
- 12 Cohen, J. (1992). Quantitative methods in psychology: A power primer. *Psychological*
13 *Bulletin*, 112, 155-159.
- 14 Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2002). *Applied multiple*
15 *regression/correlational analysis for the behavioral sciences*. Mahwah, NJ: Erlbaum.
- 16 Conroy, D. E. & Motl, R. W. (2003). Modification, cross-validation, invariance, and latent
17 mean structure of the Self-Presentation in Exercise Questionnaire. *Measurement in*
18 *Physical Education and Exercise Science*, 7, 1-18.
- 19 Conroy, D. E., Motl, R. W., & Hall, E. G. (2000). Progress towards construct validation of the
20 self-presentation in exercise questionnaire (SPEQ). *Journal of Sport and Exercise*
21 *Psychology*, 22, 21-38.
- 22 Edmunds, J., Ntoumanis, N., & Duda, J. L. (2006). Examining exercise dependence
23 symptomatology from a self-determination perspective. *Journal of Health Psychology*,
24 11, 887-903.

- 1 Fox, K.R. (1997). The physical self and processes in self-esteem development. In K.R. Fox
2 (Ed.), *The physical self: From motivation to well-being* (pp. 111-139). Champaign, IL:
3 Human Kinetics.
- 4 Gammage, K., Hall, C. R., & Martin Ginis, K. A. (2004a). Self-presentation in exercise
5 contexts: Differences between high and low frequency exercisers. *Journal of Applied*
6 *Social Psychology, 34*, 1638-1651.
- 7 Gammage, K., Hall, C. R., Prapavessis, H., Maddison, R., Haase, A., & Martin, K. A.
8 (2004b). Re-examination of the factor structure and composition of the self-
9 presentation in exercise questionnaire (SPEC). *Journal of Applied Sport Psychology,*
10 *16*, 82-91.
- 11 Hart, E., Leary, M. R., & Rejeski, W. J. (1989). The measurement of social physique anxiety.
12 *Journal of Sport and Exercise Psychology, 11*, 94-104.
- 13 Hausenblas, H. A., Brewer, B. W., & Van Raalte, J. L. (2004). Self-presentation and exercise.
14 *Journal of Applied Sport Psychology, 16*, 3-18.
- 15 Ingledew, D. K., Hardy, L., & De Sousa, K. (1995). Body shape dissatisfaction and exercise
16 motivations. *Journal of Sports Sciences, 13*, 60.
- 17 Kowalski, K. C., Mack, D. E., Crocker, P. R. E., Niefer, C. B., & Fleming, T. (2006). Coping
18 with social physique anxiety in adolescence. *Journal of Adolescent Health, 39*,
19 275.e9-275.e16.
- 20 Leary, M.R. (1983). *Understanding social anxiety*. Beverly Hills, CA: Sage.
- 21 Leary, M. R. (1992). Self-presentational processes in exercise and sport. *Journal of Sport and*
22 *Exercise Psychology, 14*, 339-351.
- 23 Leary, M. R. & Kowalski, R. M. (1990). Impression management: A literature review and
24 two-component model. *Psychological Bulletin, 107*, 34-47.

- 1 Levine, M. P., & Smolak, L. (2002). Body image development in adolescence. In T. F. Cash
2 & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical*
3 *practice* (pp. 74–82). New York: Guilford.
- 4 Lindwall, M. (2005). Examining the validity of a Swedish version of the Self-Presentation in
5 Exercise Questionnaire. *Measurement in Physical Education and Exercise Science*, 9,
6 113-134.
- 7 Lindwall, M., & Lindgren, E.-C. (2005). The effects of a 6-month exercise intervention
8 programme on physical self-perceptions and social physique anxiety in non-physically
9 active adolescent Swedish girls. *Psychology of Sport and Exercise*, 6, 643-658.
- 10 Maddux, J. E., Norton, L. W., & Leary, M. R. (1988). Cognitive components of social
11 anxiety: an integration of self-presentational theory and self-efficacy research. *Journal*
12 *of Social and Clinical Psychology*, 6, 180–190.
- 13 Maltby, J., & Day, L. (2001). The relationship between exercise motives and psychological
14 well-being. *The Journal of Psychology*, 135, 651-660.
- 15 Martin, K. A., Leary, M. R., & O'Brien, J. (2001). Role of self-presentation in the health
16 practices of a sample of Irish adolescents. *Journal of Adolescent Health*, 28, 259-262.
- 17 Martin, K. A., Rejeski, W. J., Leary, M. R., McAuley, W., & Bane, S. (1997). Is the Social
18 Physique Anxiety Scale really multidimensional? Conceptual and statistical arguments
19 for a unidimensional model. *Journal of Sport and Exercise Psychology*, 19, 359-367.
- 20 Martin Ginis, K. A. & Leary, M. R. (2004). Self-presentational processes in health-damaging
21 behaviour. *Journal of Applied Sport Psychology*, 16, 59-74.
- 22 Martin Ginis, K. A., Lindwall, M., & Prapavessis, H. (2007). Who cares what other people
23 think? Self-presentation in exercise and sport. In G. Tenenbaum & R. C. Eklund
24 (Eds.), *Handbook of sport psychology* (3 ed., pp. 136-157). New York: Wiley.

- 1 Raedeke, T. D., Focht, B.C., & Scales, D. (2007). Social environmental factors and
2 psychological responses to acute exercise for socially physique anxious females.
3 *Psychology of Sport and Exercise*, 8, 463-476.
- 4 Sinden, A. R., Ginis, K. A. M., & Angove, J. (2003). Older women's reactions to revealing
5 and nonrevealing exercise attire. *Journal of Aging and Physical Activity*, 11, 445-458.
- 6 Spink, R.S. (1992). Relation of anxiety about social physique to location of participation in
7 physical activity. *Perceptual and Motor Skills*, 74, 1075-1078.
- 8 Smith, A. L. (2004). Measurement of social physique anxiety in early adolescence. *Medicine
9 and Science in Sports and Exercise*, 36, 475-483.
- 10 Thøgersen-Ntoumani, C., Lane, H. J., Biscomb, K., Jarrett, H., & Lane, A. M. (2007).
11 Women's motives to exercise. *Women in Sport and Physical Activity Journal*, 16, 16-27.
- 12 Thøgersen-Ntoumani, C., & Ntoumanis, N. (2006). The role of self-determined motivation in
13 the understanding of exercise-related behaviors, cognitions and physical self-
14 evaluations. *Journal of Sports Sciences*, 24, 393-404.
- 15 Treasure, D. C., Lox, C. L., & Lawton, B. R. (1998). Determinants of physical activity in a
16 sedentary, obese female population. *Journal of Sport and Exercise Psychology*, 20,
17 218-224.
- 18 Trost, S. G., Owen, N., Bauman, A. E., Sallis, J. F., & Brown, W. (2002). Correlates of adults'
19 participation in physical activity: Review and update. *Medicine and Science in Sports
20 and Exercise*, 34, 1996-2001.
- 21 Woodgate, J., Brawley, L. R., & Weston, Z. J. (2005). Maintenance Cardiac Rehabilitation
22 Exercise Adherence: Effects of Task and Self-Regulatory Self-Efficacy. *Journal of
23 Applied Social Psychology*, 35, 183-197.
- 24

1 Table 1

2 *Means, standard deviations, internal reliabilities, and correlations of study variables*

	1	2	3	4	5	6
1. Exercise frequency	-					
2. IM	.21**	-				
3. SPA	-.15**	.17**	-			
4. SPEE	.37**	.20**	-.35**	-		
5. SPOE	.25**	.45**	.06	.35**	-	
6. SPOV	.27**	.49**	.09	.26**	.50**	-
<i>M</i>	3.35	2.98	3.13	60.79	4.34	3.70
<i>SD</i>	1.72	1.02	.88	20.07	.85	1.08
α		.83	.85	.87	.87	.85
Skewness		.08	-.06	-.71	-.09	-.12
Kurtosis		-.89	-.59	-.04	.77	-.22

3 Note: IM = impression motivation, SPA = social physique anxiety, SPEE = self-presentation
4 efficacy expectancy, SPOE = self-presentation outcome expectancy, SPOV = self-
5 presentation outcome value. * $p < .05$, ** $p < .01$

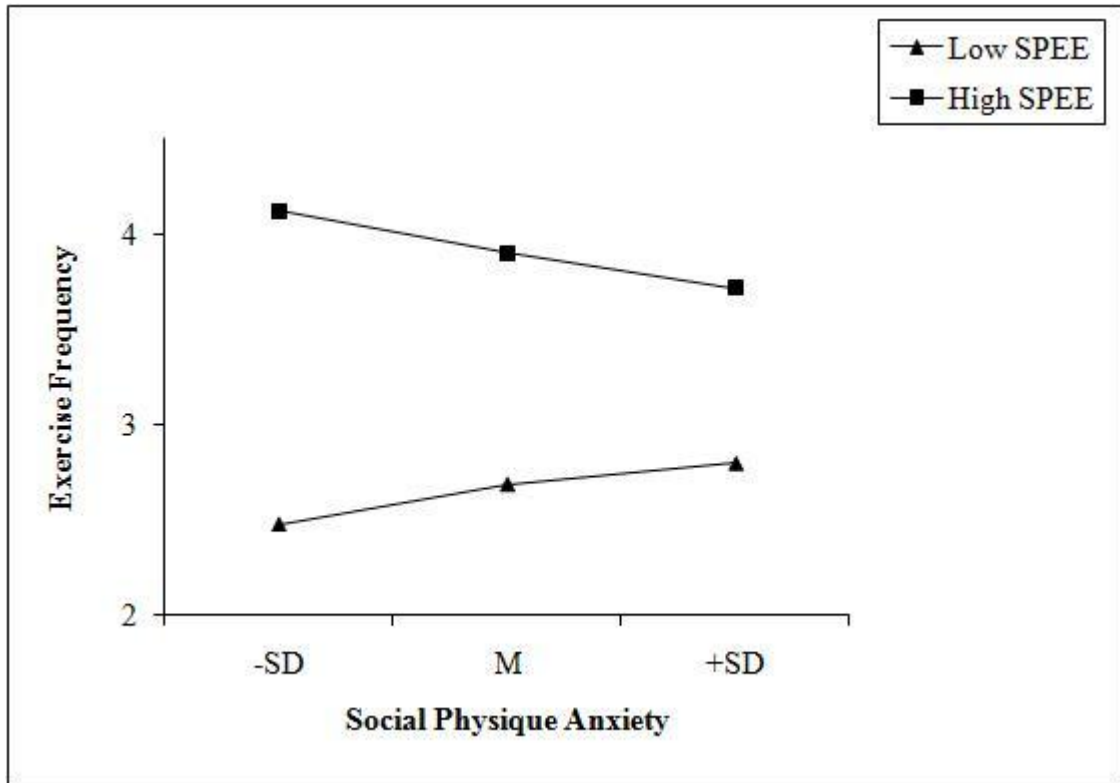
6

7

1 Figure Caption

2 *Figure 1.* Plot of the interaction effect of social physique anxiety (SPA) and self-
3 presentational efficacy expectations (SPEE) on exercise frequency.

4



1