

The Effect of the Social Self-efficacy on Frequency of Physical Activities: The Mediating Role of Social Physique Anxiety in Chinese University Students

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Abstract. This study examined how social physique anxiety (SPA) and social self-efficacy (SSE) relate to the frequency of physical activity (PAF) among students in Chinese universities. Data were collected from 490 students (145 male and 345 female) who completed the Perceived Social Self-Efficacy Scale and the Social Physique Anxiety Scale. The study assessed the associations among the three variables by regression analyses, while mediation effect of SPA was tested through the PROCESS procedure. Results demonstrated that SSE was significantly and positively associated with both SPA and PAF. Nevertheless, SPA showed no clear impact on physical activity participation, and the proposed mediating effect of SPA on the relationship between SSE and PAF was not supported.

Keywords: physical activity, self-efficacy, social physique anxiety, young adults

1. Introduction

Participating in physical activities can improve person's health. It worth to point that, actively participating in physical activity is beneficial to an individual's health in many ways, not just physically. Evidence from previous research suggests that increased participation in physical exercise is associated with reduced depressive and anxious symptoms, along with higher overall levels of psychological well-being [1]. Physiological studies have shown that physical activity can help to reduce stress hormones like cortisol and adrenaline in the body. This, in turn, can promote the release of dopamine and endorphins, which have the potential to reduce stress, alleviate anxiety and maintain a positive mood [1,2]. In addition, Social interaction during physical activity is also a key factor in promoting mental health. Taking part in group activities can foster a sense of community and belonging, which is important for alleviating the loneliness and isolation that are associated with depression and anxiety. Furthermore, achieving exercise goals through physical activity can help individuals to gain a sense of accomplishment and self-worth, thereby enhancing self-esteem and self-efficacy. This has a positive impact on emotional regulation and quality of life [1]. Previous research indicates a positive correlation of self-efficacy and social support on physical activity participation. Self-efficacy and social support both were significant predictors on participant in physical activities. Specifically, individuals with greater self-efficacy are likely to engage in

physical activities proactively, and for social support mitigate the negative effects of low self-efficacy and increase their intention to participate in physical activities [3].

1.1. Social Self-Efficacy (SSE) and Physical Activities (PA)

Social self-efficacy is a subset of self-efficacy. Self-efficacy, defined as the confidence in one's ability to meet goals and obtain expected outcomes [4], can be categorized into several domains. Social self-efficacy, reflecting an individual's perceived confidence in initiating social contact, sustaining interactions, and creating new relationships [5]. High social self-efficacy promotes positive social behaviour. It also benefits various social-related mental health indicators. These include increased happiness, self-confidence, and reduced social anxiety and loneliness [6]. People with high social self-efficacy tend to be more confident in social situations and more willing to initiate social interactions and develop new social connections. For example, positive experiences such as successfully developing social relationships or being well-liked within a group can enhance social self-efficacy and increase confidence in social activities [7]. For students studying in Turkey and the UK, relevant research has reported actively participate in physical activities is consistently linked to higher social self-efficacy [8]. This aligns with the finding that self-efficacy and social support are positive predictors of sports activity participation [3]. Alemdag [8] suggests that enhancing the public's perceived social self-efficacy is a potential method of increasing citizen participation in sports activities.

2. Social Physique Anxiety (SPA)

Social anxiety is typically defined as the fear and anxiety experienced in social situations due to concerns about being noticed and judged by others. People with social anxiety will avoid social environments where they feel they are being evaluated because they are afraid of receiving negative evaluations from others [9]. For Individuals with negative self-perceptions about a particular aspect of themselves, they may avoid related social environments to prevent receiving negative evaluations. This avoidance behaviour is effective in reducing and eliminating social anxiety feeling [10]. Individuals with unfavorable views of their body image may experience discomfort and anxiety in situations that involve physical exposure, leading them to withdraw from social settings where they anticipate negative judgments. This emotion is identified as social physique anxiety (SPA) [11], a specific category of social anxiety that centers on perceptions of body shape and appearance. Empirical evidence further suggests that overweight populations generally exhibit higher SPA than their normal-weight counterparts [11,12].

2.1. Social physique anxiety and physical activities

According to a systematic review by Sabiston et al. [13], individuals who engage in regular physical exercise tend to experience lower levels of anxiety about their body image in social situations. Participation in physical exercise has also been shown to positively impact social physique anxiety [14]. However, the relationship between social physique anxiety and participation in physical activities remains unclear. Some studies suggest that perceiving body shape as being evaluated, experiencing anxiety about body shape and feeling insecure during exercise may influence the intention to participate in physical activities. For individuals experiencing SPA, this may also lead to the avoidance of physical activities. [13,15,16] However, some studies suggest that SPA levels are unrelated to physical activity behaviour [15] while others report a positive correlation [14].

Individuals with high SPA levels are thought to exercise in order to achieve a specific goal or to avoid feelings of guilt and shame [17].

2.2. Social physique anxiety and social self-efficacy

According to Rothberger et al. [11], social physique anxiety (SPA) shows a significant inverse relationship with self-efficacy. Those experiencing greater SPA are more likely to report lower self-efficacy, which is thought to stem from SPA's detrimental influence on personal confidence. This effect becomes especially evident in contexts where body image is exposed, leading to intensified uncertainty and feelings of unease among high-SPA individuals [18]. For example, when exercising in front of a mirror, individuals' anxiety levels increase, while their self-efficacy decreases [19,20].

There is a paucity of research on the impact of social self-efficacy on social physique anxiety. However, as demonstrated in previous studies, when individuals perceive that their body shape is being evaluated, their social physique anxiety level tends to increase, resulting in reduced confidence and a sense of uncomfortable. This may also lead to avoidance of situations where their body image is a centre of attention [11,18-20]. Higher levels of social physique anxiety are reported in social environments involving peers than in family environments [21]. Therefore, this study suggest that social physique anxiety may lead to feelings of uncertainty in social situations, resulting in a decrease in perceived social self-efficacy.

Although considerable research has focused on the correlation between SSE, SPA and PA, there is still no definitive answer as to whether these factors influence each other and, more importantly, how they influence each other. In particular, cross-cultural studies on social self-efficacy and social physique anxiety remain scarce. Therefore, exploring the relationship between social self-efficacy, social physique anxiety and physical activity among university students is important in addressing this academic gap.

3. Research hypotheses

- 1) SSE positively influences physical activity frequency (PAF);
- 2) SSE negatively influences SPA;
- 3) SPA negatively influences PAF;
- 4) SPA serves as a mediating factor in the influence of SSE on PAF.

4. Methods

4.1. Participants

This study collected data via an online questionnaire. All participants were recruited from Chinese university students using a snowball sampling method. Participants who completed the questionnaire were asked to share it with other potential participants among their contacts. All participants received a reward of 2 CNY for completing this questionnaire.

A total of 490 Chinese university students completed the questionnaire after the data from incomplete questionnaires was excluded, including 145 males and 345 females. Table 1 shows the distribution of the frequency and percentage by age range status of the 490 respondents participated in this study. According to the result, 302 reported an age range of 18–20, 127 an age range of 21–23, 46 between age of 24–26, and 15 were over 26.

Table 1. The distribution of paiticipations' age range status

Age range(n=490)	Frequency	Percentage (%)
18-20	302	61.6
21-23	127	25.9
24-26	46	9.4
Over 26	15	3.1

4.2. Measures

To measure social self-efficacy, the study used The Scale of Perceived Social Self-Efficacy [22]. The scale contains 25 items that gauge individuals' confidence in performing social behaviors, scored on a five-point Likert scale ranging from minimal to complete confidence. Evidence from Smith and Betz [22] indicates that the instrument demonstrates strong internal consistency and test-retest reliability among university students.

The study employed a culturally adapted, 7-item form of the Social Physique Anxiety Scale (SPAS) [23] to evaluate participants' SPA. Responses were recorded on a five-point Likert-type scale, from 1 (not at all) to 5 (very much). Prior research has confirmed the suitability and psychometric validity of this shortened version for Chinese university-aged populations.

The study collected demographic information (age, gender) from participants through additional questions. Students' gender was included as a control variable during the analysis process because social physique anxiety has been found to be associated with gender, and it is typically used as a control variable in previous studies [12,24]. Participants were also asked questions to collect information on the types of sports activities they took part in, i.e. individual or group activities, and how long they spent on physical activities per week. They were also asked about their preferred sports activity environment.

5. Analysis

All statistical analyses were performed using SPSS in combination with Hayes' PROCESS macro [25]. The initial step involved generating descriptive statistics, mean differences, and bivariate correlations. Subsequently, mediation analysis was carried out with PROCESS (Model 4) to examine whether social physique anxiety served as a mediator within the hypothesized framework.

6. Results

Linear regression analysis revealed that social self-efficacy (SSE) was significantly and positively correlated with both social physique anxiety (SPA; $F(1, 488) = 25.697$, $\beta = 0.224$, $t = 5.069$, $p < 0.001$) and physical activity frequency (PAF; $F(1, 488) = 44.492$, $\beta = 0.289$, $t = 6.670$, $p < 0.001$). There was no significant correlation between SPA and PAF ($F(1, 488) = 0.437$, $\beta = 0.030$, $t = 0.661$, $p = 0.509 > 0.05$).

This study used the PROCESS model 4 [25] to test the mediating effect of SPA on the effect of SSE on PAF. In the mediation analysis model (controlling for SPA, Figure 1), the direct effect of SSE on PAF is ($\beta = 0.0078$, $se = 0.0017$, $p < 0.05$). The indirect effect ($\beta = -0.0002$, $95\%CI = [-0.0013, 0.0006]$) indicated that the interaction term was not significant, suggesting that SPA does not play a moderating role in this hypothetical model.

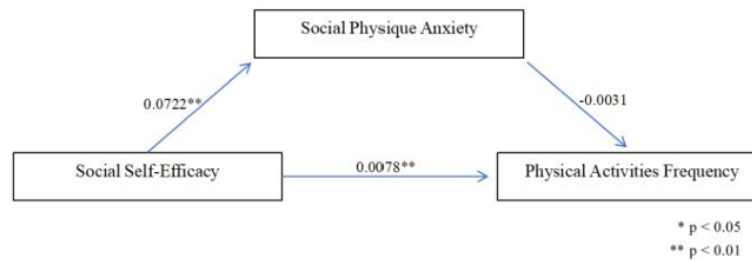


Figure 1. The effect size in the hypothetical meditation model

Table 2 presents the PROCESS analysis results of the hypothetical model in this study. The analysis results showed that the effect of SSE on both SPA ($F(5, 483) = 5.4794$, $R^2 = 0.0537$, $p = 0.0001$) and PAF are very significant ($F(6, 482) = 23.0309$, $R^2 = 0.2228$, $p < 0.001$). The relationship between SSE and PAF is not significant ($\beta = 0.00031$, $p = 0.5738$).

Table 2. The analysis results of hypothetical model

Dependent Variable	Predictor Variable	R2	F	β	SE	t	p
SPA	SSE	0.0537	5.4794	0.0722	0.0139	5.173	0
PAF	SSE	0.2228	23.0309	0.0078	0.0017	4.5148	0
PAF	SPA			-0.0031	0.0055	-0.5628	0.5738

7. Discussion

This study explores the relationship between social physique anxiety, social self-efficacy and physical activity. As there are gaps in the existing literature on these three factors, this study is important for subsequent related research. At the same time, as it targets Chinese university students, the research data complements previous studies and can provide a reference for subsequent cross-cultural research. Through the collection and analysis of data on social physique anxiety, social self-efficacy, and physical activity frequency among Chinese university students, it was found that SSE has a significant positive effect on both SPA and PAF. SPA in this study was found to have no significant correlation with PAF. Furthermore, this study also found that social physique anxiety does not play a mediating role in the effect of SSE on PAF.

These findings support the first hypothesis of this study, that SSE positively impacts PAF. This indicates that higher social self-efficacy is associated with increased participation in physical activities among Chinese university students, which is consistent with previous research findings [8]. It also suggests that a stable correlation exists between social self-efficacy and participation in physical activities in cross-cultural studies.

Contrary to Hypothesis 2, which predicted a negative influence of SSE on SPA, the present study found a positive correlation between the two variables. According to previous studies, a negative correlation between self-efficacy and social physique anxiety have been reported [11]. It also found that individuals may experience higher social physique anxiety and exhibit decreased self-confidence in social situations, especially those where physical appearance may be evaluated [11,18-21]. Based on these research, it seems that individuals who experience high social physique anxiety may appear to exhibit less social confidence than those with low social physique anxiety. Therefore, this study hypothesised that SSE might be negatively correlated with SPA. However, the results of the data analysis rejected this hypothesis. SSE was found to be significantly correlated with higher

SPA in this study. This positive correlation may be explained by that people with higher social self-efficacy are more active in social settings, making them feel that their physique is subject to more potential evaluation and resulting in them experiencing more social physique anxiety than people with low SSE. Another possible explanation is that this positive correlation may be due to cultural background or social environment. Further research is needed to determine the cross-cultural validity of the relationship between social self-efficacy and social physique anxiety.

This study found no correlation between SPA and PAF. SPA was also reported not to mediate the influence of SSE on PAF. Therefore, hypotheses 3 and 4 were not supported by the study's findings. The conclusion that social physique anxiety is not related to physical activity is therefore supported [15]. However, some studies also suggest that social physique anxiety may affect physical activity participation by influencing psychological needs and motivation [15,26]. Additional investigation might be required to ascertain if social physique anxiety encourages the desire to engage in physical exercise.

The findings from this sample of Chinese university students indicated that social self-efficacy exerted a positive effect on both social physique anxiety and physical activity frequency. However, social physique anxiety did not significantly predict the frequency of physical activity, and the PROCESS analysis results also suggest that social physique anxiety did not serve as an intermediary between social self-efficacy and physical activity participation. However, this study may still have the following limitations: 1) This study is a cross-sectional study and further research may be needed into the effects of social self-efficacy, social physique anxiety and physical activity among people of different ages; 2) This study only involved Chinese university students and lacks cross-national and cross-cultural data, which may lead to some limitations; 3) Participants in this study were recruited through snowball sampling rather than random selection, which may introduce some bias; 4) All the data were collected via self-report questionnaires, which may introduce subjective bias; 5) The sample size of the study was relatively small, which may lead to some errors. Furthermore, while some studies have reported that gender may impact the level of social physique anxiety [12,24], this was not observed in the present study. Therefore, when exploring how physical activity affects an individual's social self-efficacy, it may be beneficial to consider its potential mechanisms.

To conclude, physical activity represents a fundamental avenue for promoting community health, it means developing effective interventions to foster active lifestyle is important in today's context. This research contributes by clarifying how social self-efficacy and social physique anxiety relate to physical activity among Chinese university students, thereby extending prior research and suggests the areas requiring further investigation.

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