

Physical self-concept between PE major and non-PE major students in Hong Kong

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Abstract

The study was designed to examine differences of physical self-concept between PE major and Non-PE major university students in Hong Kong. A Physical Self-Description Questionnaire (PSDQ) (Marsh et al. 1994) was administered to 184 university students (92 PE majors and 92 Non-PE majors, with equal numbers of males & females in each major) studied in a university in Hong Kong. The PSDQ consists of 11 scales: Health; Coordination; Physical Activity; Body Fat; Sports Competence; Global Physical; Appearance; Strength; Flexibility; Endurance; and Esteem. A 2x2 MANOVA was used to determine differences between gender and major. In main effect, it was found that the mean vector scores of males in the following scales: body fat, coordination, activity, sports competence, health, endurance, strength, and global physical were significantly ($p < .05$) higher than that of females. In comparison of major, it was revealed that the mean vector scores of PE major in the following scales: Coordination, endurance, flexibility, activity, sports competence, strength, and global physical were significantly ($p < .05$) higher than that of Non-PE major students. However, the interaction of gender and major was not significantly ($p > .05$) different in this study. The results may reflect that males and PE major students, who usually spend more time on physical activity and sports training tend to have better fitness and skill oriented self-concept than their counterparts.

Keywords: Gender, Self-esteem, University students, Vocation

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Introduction

Many researchers use the terms self-concept and self-esteem interchangeably. According to Stanwyck (1983), self-concept is the conscious perceptions one has of one's self, the cognitive component of the self-system, while self-esteem is the evaluation of one's perceptions of self-concept. Fleming and Courtney (1984) stated that "self-concept includes pure self-descriptions, which are distinguishable from self-esteem, because such descriptions do not necessarily imply judgements" (p.406). Stanwyck (1983) simplified the difference, with self-concept as "how I see myself", and self-esteem as "how I feel about how I see myself". Shavelson et al. (1976) however, commented that there is little or no empirical support for the distinction between self-esteem and self-concept. They defined self-concept as an individual's perception of self formed through experience with environment, interactions with significant others, and attributions of his/her own behavior. It is both evaluative and descriptive and is multidimensional and hierarchically organized, with perceptions moving from inferences about self in sub-areas (e.g., academic reading and mathematics) to broader areas (academic and nonacademic) and finally to general self-concept.

Based upon Shavelson's model of self-concept, Marsh et al. (1994) developed the multidimensional Physical Self-concept Scales such as the Physical Self Description Questionnaire (PSDQ) in which nine specific components of physical self-concept (strength, body fat, activity, endurance, sports competence, coordination, health, appearance, and flexibility) and two general components (global physical self-concept, and global esteem) are measured. The PSDQ is a comprehensive, valid (Marsh et al. 1994), stable and consistent (Marsh 1996) instrument designed to measure the physical self-concept.

Even in the early day, researchers had reported a positive influence of physical activity on improving body-image and self-esteem (Van Aniel & Austin 1984; Tucker 1983; Snyder and Kivlin 1975; Darden 1972). Zion (1965) indicated that alterations on the body as a result of physical training could logically be expected to change one's body-image, which is highly

correlated with and might be expected to extend to self-concept. Following such assumption, it could be hypothesized that physically well-trained persons would have higher level of physical self-concept than those with less training. As to the researcher's knowledge, there is limited research conducted in this area. The present study examines the differences of physical self-concept between PE major and Non-PE major university students in Hong Kong. The gender differences on physical self-concept were also investigated.

Method

Subjects

Subjects in this study were 184 students (92 PE major and 92 Non-PE major, with equal Ns on both sexes) from Hong Kong Baptist University. The average age for men and women were 21.59 and 21.01 respectively.

Measuring instrument

The Physical Self-Description Questionnaire (PSDQ) (Marsh et al. 1994) was used to measure subjects' physical self-concept. The PSDQ consists of 70 items which under 11 scales: Appearance; strength; endurance; flexibility; health; coordination; activity; body fat; sports competence; global physical self-concept; and global esteem. Confirmatory factor analysis of multitrait-multimethod supported the convergent and discriminant validity of the PSDQ (Marsh et al. 1994). The PSDQ was administered to high school students on 4 occasions over a 14-month period. Across the 11 scales, the internal consistency at each occasion was good (median alpha = .92) and the stability over time varied from median $r = .83$ for a 3-month period to median $r = .69$ for the 14-month

period (Marsh 1996). A 6-point Likert scale, from false (1) to true (6) was used with the PSDQ in this study. The scoring for the negatively worded items (1, 4, 12, 15, 22, 23, 26, 31, 33, 37, 40, 41, 44, 45, 48, 56, 59, 62, 67, 68, 70) was reversed. Total score of the PSDQ is ranged from 70 to 420.

Procedure

Upon receiving permission from the participants and their respective tutors, the researcher conducted the pencil-paper measurements during the physical education classes. Informed consent was obtained from students prior to the test. Confidentiality of subjects' information and data was addressed. Subjects were instructed to complete the PSDQ sincerely and no discussion was allowed throughout the test.

Data analysis

Descriptive statistics was used to compute the means and standard deviations of the total mean PSDQ scores and the 11 scales scores for the subjects. The 2 x 2 independent group MANOVA was conducted to compare the mean vector scores between gender and major on each of the scales. The above statistical analyses were conducted by using the SPSS 9.0 for Window.

Results

Descriptive Statistics analyses of the mean vector scores of the 11 scales were presented in Table 1.

Basic assumptions for the use of MANOVA procedures in data analyses were tested through computation of the Bartlett-Box, Box M test, and Bartlett Test of Sphericity. The results are presented in Table 2.

Table 1 Description statistics for the PSDQ mean vector scores [mean (SD)] for both gender and major (N=184)

	Gender		Major	
	Male	Female	PE	Non-PE
Appearance	4.07 (0.91)	4.06 (0.69)	4.17 (0.87)	3.95 (0.73)
Activity	3.80 (1.17)	3.08 (1.12)	4.09 (1.02)	2.79 (0.99)
Body Fat	4.40 (1.09)	3.88 (1.30)	4.18 (1.18)	4.10 (1.28)
Coordination	3.94 (0.80)	3.63 (0.77)	4.08 (0.75)	3.48 (0.72)
Endurance	3.51 (1.11)	3.12 (1.13)	3.81 (1.12)	2.82 (0.92)
Flexibility	3.62 (0.97)	3.57 (1.10)	3.79 (1.07)	3.40 (0.97)
Health	4.29 (0.67)	4.06 (0.75)	4.28 (0.76)	4.08 (0.65)
Sports Competence	3.92 (0.91)	3.48 (0.98)	4.21 (0.77)	3.19 (0.88)
Strength	3.96 (0.82)	3.53 (0.80)	4.06 (0.76)	3.42 (0.78)
Global Physical Self-concept	3.85 (0.85)	3.58 (0.81)	4.02 (0.78)	3.42 (0.79)
Global Esteem	4.51 (0.76)	4.50 (0.68)	4.56 (0.75)	4.45 (0.69)

Table 2 Basic assumptions for 2x2, independent group MANOVA

	Bartlett-Box <i>F</i> -ratios	<i>P</i> values
Appearance	3.586	0.013*
Activity	1.312	0.269
Body Fat	1.368	0.250
Coordination	0.506	0.678
Endurance	1.841	0.138
Flexibility	0.760	0.516
Health	1.123	0.338
Sports Competence	0.254	0.858
Strength	0.164	0.921
Global Physical Self-concept	0.165	0.919
Global Esteem	0.581	0.627

Box *M* *F*-ratios = 1.369, *P* = .000

Bartlett Test of Sphericity = 1014.101, *df* = 65, *P* = .000

* *P* < 0.05

The Bartlett-Box *F* ratios for Body Fat, Coordination, Endurance, Global Esteem, Global Physical Self-Concept, Flexibility, Health, Activity, Sports competence and Strength were non-significant (*P* < 0.05); however, Appearance was significant (*P* < 0.05). The Box *M* *F*-ratio was significant (*P* < 0.05) indicating that there were significant differences in the variance, covariance matrices for the two independent groups. The Bartlett Test of Sphericity was significant (*P* < 0.05) indicating the correlation matrix for the 11 scales was different from an identity matrix. The basic assumptions for using MANOVA were violated except for the Bartlett Test of Sphericity.

According to Stevens (1992), violations of the assumptions in MANOVA are inevitable. When the Box *M* test is significant with equal numbers of subjects and large group sizes, the type II error rate will be only slightly affected, power will be attenuated to some extent. In this study, the analyses were conducted with equal sample sizes, and the basic assumptions for MANOVA, to certain extent, could be fulfilled.

The MANOVA program was utilized to compare the mean vectors of PSQD scale scores using gender and major as the independent variables. The results of the analysis were presented in Table 3. Significant (*p* < .05) mean vector differences were found in both

main effects: sex and major. The interaction however was not significant difference with respect to the 11 scales of the PSQD. The Univariate *F*-tests for each of the 11 dependent variables are presented in Tables 4 and 5. It was found that the male was significantly (*P* < 0.05) higher than the female on the mean vector scores of the following scales: physical activity, body fat, coordination, endurance, global physical, health, sports competence, and strength. In comparison of major, it was revealed that PE major was significantly (*P* < 0.05) higher than Non-PE major on the mean vector scores of the following scales: activity, coordination, endurance, flexibility, global physical, sports competence, and strength.

Discussion

The main purpose of the present study was to investigate whether interaction exists between gender and PE- and Non-PE major university students in physical self-concept as measured on the Physical Self-Descriptive Questionnaire (PSDQ) in Hong Kong. The result showed that there were no significant interactions, however, differences were found in both gender and major. The males and PE major students had higher scores in most of the scales of PSDQ than their counterparts.

Table 3 2x2 MANOVA comparing physical self-concept scales for PE and non-PE

Effect	Wilks' Lambda	<i>F</i>	Hypo <i>df</i>	Error <i>df</i>	<i>P</i>
Sex	0.76	4.86	11	170	0.00
Major	0.58	10.87	11	170	0.00
Sex x Major	0.97	0.37	11	170	0.96

Table 4 Univariate *F*-ratio comparing male and female students on physical self-concept scales

Variable		SS	df	ms	<i>F</i>	<i>P</i>
Appearance	Between	0.08	1	0.08	0.00	0.95
	Within	4260.73	180	23.67		
Activity	Between	847.96	1	847.96	26.24	0.00*
	Within	5815.67	180	32.30		
Body Fat	Between	447.65	1	447.65	8.49	0.00*
	Within	9482.23	180	52.67		
Coordination	Between	164.54	1	164.54	8.56	0.00*
	Within	3457.78	180	19.20		
Endurance	Between	253.56	1	253.56	6.84	0.01*
	Within	6665.86	180	37.03		
Flexibility	Between	3.39	1	3.39	0.08	0.76
	Within	6887.41	180	38.26		
Health	Between	160.78	1	160.78	5.00	0.02*
	Within	5776.78	180	32.09		
Sports Competence	Between	313.04	1	313.04	13.44	0.00*
	Within	4189.56	180	23.27		
Strength	Between	307.84	1	307.84	15.21	0.00*
	Within	3641.08	180	20.22		
Global physical Self-concept	Between	117.44	1	117.44	5.37	0.02*
	Within	3935.28	180	21.86		
Global Esteem	Between	0.44	1	0.44	0.01	0.90
	Within	6114.19	180	33.96		

Table $F(.05) (1, 180) = 3.90$ * $P < 0.05$ **Table 5** Univariate *F*-ratio comparing PE Major and Non-PE Major Students on physical self-concept scales

Variable		SS	df	ms	<i>F</i>	<i>P</i>
Appearance	Between	80.89	1	80.89	3.41	0.06
	Within	4260.73	180	23.67		
Activity	Between	2809.57	1	2809.57	86.95	0.00*
	Within	5815.67	180	32.30		
Body Fat	Between	9.13	1	9.13	0.17	0.67
	Within	9482.23	180	52.67		
Coordination	Between	599.04	1	599.04	31.18	0.00*
	Within	3457.78	180	19.20		
Endurance	Between	1620.19	1	1620.19	43.75	0.00*
	Within	6665.86	180	37.03		
Flexibility	Between	251.22	1	251.22	6.56	0.01*
	Within	6887.41	180	38.26		
Health	Between	119.04	1	119.04	3.70	0.05
	Within	5776.78	180	32.09		
Sports Competence	Between	1704.34	1	1704.34	73.22	0.00*
	Within	4189.56	180	23.27		
Strength	Between	673.39	1	673.39	33.28	0.00*
	Within	3641.08	180	20.22		
Global physical Self-concept	Between	602.65	1	602.65	27.56	0.00*
	Within	3935.28	180	21.86		
Global Esteem	Between	33.91	1	33.91	.99	0.31
	Within	6114.19	180	33.96		

Table $F(.05) (1, 180) = 3.90$ * $P < 0.05$

The findings on gender partly support Wylie's (1979) research finding in which, who concluded that there was no evidence for sex differences in overall self-concept at any age level, however, sex differences would exist in specific components of self-concept. Marsh (1989) also found that males had higher self-concept in physical ability and appearance whereas, Lintunen (1987) indicated that males scored higher on perceived physical performance capacity than females. Crocker and Ellsworth (1990) also obtained similar findings - males scored higher than females on perceived athletic competence and perceived physical appearance. Hallinan et al. (1991) revealed that females, regardless of having or not having participated in athletics, tend to view themselves as overweight and tend to be dissatisfied with their perceived physical appearance. The higher self-concept for males on physical appearance found by the previous researchers was not supported by this study.

Several researchers have documented that athletes have higher self-esteem as compared to nonathletes (Mahoney 1989; Higin 1980; Trujillo 1983). Other researchers have also articulated a link between the athletes' greater physical endurance, coordination, and reflexes, and a more positive body image for the athletes which could, in turn, generalize to the athletes' overall self-esteem (Bird & Cripe 1986; Davies 1989). Kamal et al. (1995) conducted a study to compare self-esteem between athletes and nonathletes and concluded that athletes had a higher positive attitude - being more optimistic, attractive, sociable, and successful than their counterparts. Researchers believed that athletes had invested heavily in their sports performance and frequently received positive informational feedback were essential for the development and maintenance of self-esteem. From the studies revealing that strong relationships between actual and perceived physical fitness (Chung 1996), physical activity and physical self-concept (Gary 1992; Fox and Corbin 1989; Marsh & Jackson 1986) as well as physical fitness and physical ability self-concept (Chung 1995; Marsh & Peart, 1988), it could be concluded that individual with more activity involvement tend to have better motor skills and physical fitness and higher physical ability self-concept.

The relationship between self-concept and behavior tendencies has been researched extensively over years. Roid and Fitts (1988) stated that the individual's self-concept has been demonstrated to be highly influential in much of his/her behavior and also to be directly related to general personality and mental health. It can be expected that individuals with positive physical self-concept may be more active and those who actively involved in physical activity may have higher physical self-concept.

In fact, the positive effects of physical training on self-concept and body-concept are well documented (Finkenber et al. 1994; Anshel et al. 1986; Brown and Harrison 1986; Hatfield et al. 1985; Tucker 1983; McGowan et al. 1974).

The cultural stereotypes of females suggest that they should be inactive, weak, and decent but do not limit them from participating in physical activity. In building up self-confidence for females in performing physical activity, educators may take Lenney's (1977) suggestions : (a) not to arrange male oriented activities for the female participants; (b) avoid competitive and comparative situations; and (c) provide clear feedback to the female participants.

The PSDQ is a reliable, valid, and comprehensive inventory for reflecting one's physical self-concept. However, it seems difficult for subjects to complete 70 items of statements consecutively with focused attention. It is desirable to simplify the questionnaire and to develop a Chinese version of the PSDQ for future studies.

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