

PHYSICAL SELF-PERCEPTION IN SPANISH ADOLESCENTS: GENDER AND INVOLVEMENT IN PHYSICAL ACTIVITY EFFECTS

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ABSTRACT

This work analyses the effects of gender and level of physical activity involvement on physical self-perceptions in Spanish adolescents. Participants were 2,372 Spanish students. Results showed an effect of interaction between gender (males vs. females) and physical activity practice (practice vs. non-practice), indicating that males that did sport had higher scores in Sport Competence, Attractive Body, Physical Condition and Physical Strength than females that did sport and females that did not. Females that did sport had higher scores in Sport Competence, Physical Condition and Physical Strength than females that did not do any sport. Results also showed differences between physical self-perceptions and the level of physical activity involvement. Those that participated in physical activity *once a week or less* had lower scores in Sport Competence, Physical Condition and Physical Strength than those that participated in physical activity *more than 3 times a week*. Those that participated in physical activity *more than 3 times a week* had higher scores in Sport Competence, Attractive Body, Physical Condition and Physical Strength than those that participated in physical activity *2 to 3 times a week*. The implications of these findings on the development of physical activity programmes are discussed in the document.

KEY-WORDS: Physical self-perceptions, gender, physical activity involvement, adolescence.

INTRODUCTION

Research has underlined that adolescence is a developmental stage characterised by a high number of psychological and physical changes (Brown, 1998; Harter, 1999; Mañano, Ninot and Bilard, 2004). Development of self-esteem has been a major concern among physical activity researchers, linking the development of self-esteem to different facets, such as physical self concept (Fox, 2000).

Marsh and Hattie (1996) described a variety of possible theoretical models of self-concept that over time have resulted from a clear analogy with intelligence models, sometimes considered as a factor of general ability (one-dimensional model) and other times understood from a multidimensional point of view, its components sometimes considered at a similar level and other times presenting a hierarchical structure, which incorporates both perspectives, the general and the multidimensional ones. For a few years these approaches have been increasing considerably in research on self-concept.

The one-dimensional model proposes that there is only one self-concept factor or that one general factor dominates the more specific factors. Some researchers, such as Coopersmith (1967), Marsh and Winnne (1978) and Rosenberg (1979), argued that multiple dimensions of self-concept were heavily dominated by a general factor in such a way that separately the factors could not be suitably differentiated. However, it was later shown that these conclusions reflect numerous problems in measurement and statistical analyses, rather than supporting one-dimensionality of self-concept, they advocate a multidimensional model (Boyd and Hrycaiko, 1997; Harter, 1985; Hattie, 1992; Marsh, Barnes, Cairns and Tidman, 1984; Marsh, Barnes and Hocevar, 1985; Marsh, Parker and Barnes, 1985; Marsh, 1990; Marsh and Hattie, 1996; Shavelson et al., 1976).

Successive research has established the multidimensionality of self-concept even more clearly and at the same time the previous support given to the one-dimensional

perspective has been abandoned (Byrne, 1984; Marsh and Shavelson, 1985), which has led people to conclude that self-concept cannot be interpreted appropriately if its multidimensionality is ignored. The multidimensional hierarchical factor model considers the existence of a global component at the top of a strong hierarchy. One of the components of the multifactor structure is the physical component, which from day to day is becoming more recognised in the study of physical activity sciences, of Physical Education and sport.

Therefore, changes in global self-esteem will be the result of prior changes that have occurred in the facets of self-concept, since these are at the bottom of the multidimensional hierarchical model, while global self-esteem is at the top of this model. As a result, when changes in the facets of self-concept are not significant, no changes will occur in global self-esteem (Boyd and Hrycaiko, 1997).

As indicated by Fox (1998) and Mañano et al. (2004), physical self occupies a unique position in the self-system because the body provides substantive interface between the individual and the world.

Measurement of physical self

In some reviews on the assessment of self-concept, such as those carried out by Wylie (1974, 1989) or Shavelson, Hubner and Stanton (1976), it was discovered that several instruments contained items related to physical skills and physical appearance. Nevertheless, these elements did not appear to be sufficiently structured so as to provide a clearly interpretable measurement of physical self-concept.

Wylie (1989) also reviewed several multidimensional self-concept instruments that contained a measurement of one or more physical self-concept components that were clearly differentiated from other specific domains of self-concept and general self-concept. However, the largest step taken recently in research on physical self-concept

has been supplied by the development of different multidimensional scales of physical self-concept. Of all these instruments, the most relevant are Physical Self-Perception Profile (PSPP) (Fox, 1990; Fox and Corbin, 1989), Physical Self-Concept Scale (PSC) (Richards, 1987), and Physical Self-Description Questionnaire (PSDQ) (Marsh, Richards, Johnson, Roche and Tremaine, 1994).

Of all the above, the PSPP (Physical Self-Perception Profile) is the most consistent instrument insofar as the multidimensional measurement of physical self-concept is concerned (Byrne, 1996). This instrument has its origins in the work by Fox (1990) and Fox and Corbin (1989), who provide theoretical and empirical research guaranteeing its production. The PSPP is mainly based on the work by Harter (1985, 1986) and Shavelson, Hubner and Stanton (1976). Coherent with the above-mentioned hierarchical model, Fox (1990) argued that self-perceptions can vary from one level to another, for example, from the superordinate (global self-esteem), domain (physical), subdomain (sport competence), facet (soccer ability), subfacet (shooting ability) and state (I can score this penalty).

Fox (1990) began by determining the most important components in physical self-concept by prior reviews and he collected replies from university students on the most important components of the physical self. This form of content validity is a strong feature of the PSPP. Based on these preliminary studies and on successive exploratory factor analyses, Fox initially proposed five scales: sport competence (athletic ability, ability to learn sports, sport confidence), perception of physical condition and fitness (physical condition, resistance, physical state, capacity to keep active, security in physical scenarios), perception of an attractive body (physical attraction, ability to maintain an attractive body, confidence in personal appearance), and perception of physical strength (perception of strength, muscular development, confidence in

situations that require strength), and a superior physical self-worth (general feeling of pride, satisfaction, happiness and confidence in the physical self). Within each scale, the items were explained in detail in order to reflect the product (good at sport), the process (learns sports skills slowly) and the perception of confidence (confidence in the sport), which implicitly represents a taxonomic multifaceted model.

Gender and physical involvement effects in the physical self.

A few number of investigations have analysed the differences in physical self-concept related to gender and the different levels of physical activity involvement. This investigations show that males have higher perceptions of physical self-worth (Gutierrez et al, 1999a; Maïano et al., 2004; Marsh, 1998; Marsh et al., 1994; Whitehead and Corbin, 1997), attractive body (Hagborg, 1994; Maïano et al., 2004), sport competence (Maïano et al., 2004; Marsh, 1998), physical condition and physical strength (Maïano et al., 2004) than females.

Research has demonstrated the link between physical activity and physical and psychological changes (Engelbrecht, Pienaar and Coetzee, 2002; Oweis and Spinks, 2001). Some studies state that those that do a sport regularly have a high interest in physical exercise and assess their physical shape better than those that are not regular sports people and, in turn, than those that do not do any sport at all (Raich et al., 1996).

In this respect Marsh (1986) states that self-esteem is affected by exercise and by increasing it, leading to both psychological and physical benefits (Alexander, Nickel, Boreskie and Searle, 2000; Jackson and Marsh, 1986; Weiss, McAuley, Ebbeck and Wiese, 1990; Boyd and Hrycaiko, 1997). Along these lines, we can also highlight the contribution made by Alfermann and Stoll (2000), where it can be seen that those who do sport show a significant improvement in physical self-concept and a decrease in psychosomatic conditions.

Furthermore, Trew et al. (1999) state that the adolescents most active in sports have more self-worth than those that are sedentary, distinguishing between both sexes on specifying that males spend more time on doing sport than females, leading to higher perceptions of athletic self-competence and global self-esteem.

There are some previous studies on samples of young people in Spain (Balaguer, 1998) that have discovered that boys who do sport two or more times a week had higher scores in Sport Competence, Physical Appearance and Social Acceptance than those that are sedentary. While girls who did sport as often only had higher scores in Sport Competence. Of all the self-concept domains, Sport Competence was the most powerful predictor for both males and females.

The results of the research showed that pre-adolescent females with a low self-esteem and a low self-concept will benefit more from the intervention programme and will have a less conservative assessment of it than older girls, in spite of the fact that the latter felt the programme was relevant. Generally, the programme's assessment and score will drop as the age of the subjects rises (Boyd and Hrycaiko, 1997).

The objective of this investigation was to analyse the effects of gender and the levels of physical activity involvement on the physical self-perceptions of Spanish adolescents. Our hypothesis was that males would present higher levels of physical self-perception than females, and subjects not involved in physical activity would present lower scores in physical self-perception than subjects involved in physical activities.

METHOD

Participants and procedure

Our study sample consisted of 2,330 students (mean age =14.8, SD=0.91). There were 1,200 boys and 1,130 girls, all members of physical education classes in schools in a large Spanish city. 1,689 of these participants were involved in physical activity outside

physical education classes, and 676 indicated that they were not involved in physical activity. All subjects volunteered to participate in the study.

Permission to conduct this investigation was received from headteachers. Students were told about the purpose of the research and their rights as study participants, and were asked to sign a consent form. The instruments for measuring the different variables were administered in a classroom to the chosen subjects when the teacher was not present. The measures were given to all students in the same order. Each participant took 15-20 minutes to complete the questionnaires and responses to the instrument were kept anonymous. Participants were told to ask for help if confused concerning either instructions or the clarity of particular items. No problems were encountered in completing the inventories or understanding the nature of the questions.

Measures

Physical Self-Perception Profile.

The Spanish adaptation (Gutiérrez, Moreno and Sicilia, 1999b) of the Physical Self-Perception Profile (Fox, 1990; Fox and Corbin, 1989) was employed. The original instrument consisted of 30 items and five factors: one competence domain -Physical Self-Worth-, and four subdomains -Physical Condition, Sport Competence, Physical Strength and Attractive Body. The adapted Spanish version (Gutierrez et al., 1999b) also showed five subscales, but with a different item-factor distribution: Sport Competence, Attractive Body, Physical Condition, Physical Strength, and Self-Confidence. The Spanish version was called Physical-Self Questionnaire (PSQ); the alphas of this work were between .89 and .69.

Responses to the questionnaire were scored on a Likert-type scale ranging from 0 to 100 (0 = strongly disagree and 100 = strongly agree).

Demographic variables

Data about gender and level of physical activity involvement were also collected. Participants were asked about their level of physical activity involvement outside physical education classes. The question was “please indicate if you are involved in some physical activity (sport, fitness, swimming, trekking, aerobics, jogging, basketball, tennis, etc.) outside physical education classes”. If the participant answered “yes” to the question, another item was employed to measure the level of physical activity involvement. Three possibilities were presented: 1) once a week or less; 2) 2 to 3 times a week; 3) more than 3 times a week.

RESULTS

Validity and reliability of the Physical Self Questionnaire

A Confirmatory Factor Analysis (Table 1) was employed to determine the factor validity of the PSQ. Two models were tested: the original four correlated factors model obtained from Fox and Corbin’s work (1989), and a five correlated factors model adaptation by Gutierrez, Moreno and Sicilia’s (1999b). Assessment of model fit was conducted using various types of overall fit indices for the hypothesized construct model and individual parameters fit. For the hypothesized construct models, multiple indices were employed (Hu and Bentler, 1999): the Chi-square test (no significant values indicate a good adjustment of model and data), the Comparative Fit Index (values greater than .90 indicate a good fit), the Tucker-Lewis Index (values of .90 or higher show a good adjustment of model) the Parsimony Normed Fit Index (values grater than .70 usually represent an acceptable parsimony model) and the Root Mean Square Error of Approximation (values less than .10 are interpreted as a reasonable fit, whereas values below .08 indicate a good fit of the data (Steiger, 1990). For each item, the *t*-value associated to each estimate was used to asses whether each item was measured adequately.

Table 1 shows that the five correlated factors model was more adjusted and parsimonious than the four correlated model. The RMSEA was below .08 in the five factors model, indicating a reasonable fit for this model. The estimate for the five factors model was higher than 2.00 for all items, indicating a good contribution for all items. In the four factors model, items 11, 6, 17 and 19 showed *t*-values below 1.96. This lack of support for the four factors model was unexpected, since this model was developed based on a factor distribution pattern from Fox and Corbin's (1989) investigation. Due to the findings obtained, the solution of five correlated factors was accepted.

Internal consistency was obtained via calculation of Cronbach's alpha coefficients. Table 2 shows the descriptive statistics and the alpha coefficients for all factors. Only the Physical Strength showed an alpha value below the recommended .70 (Nunnaly, 1978). Given the number of items in this subscale, however (i.e., number of items = 5) the observed internal reliability could be considered acceptable (Nunnaly and Bernstein, 1994; Hair, Anderson, Tatham and Black, 1998).

Principal and interaction effects of gender and level of physical activity involvement on physical self-perceptions.

To analyse the principal (gender and level of physical activity involvement), and interaction effects for each factor of PSQ, MANOVA and ANOVA were calculated.

In Table 3, the MANOVA executed for all PSQ scales showed a significant difference (Wilks' Lambda = .81, $F = 83.95$, $p = <.001$) for gender and the dependent variables. The univariate ANOVA showed a main effect of gender on Sport Competence, Attractive Body, Physical Condition and Physical Strength ($p <.001$). No significant differences were found in the Self-Confidence factor ($p >.05$). In all cases males presented higher scores for these scales than females.

To analyse the effect of different levels of physical activity involvement in physical self-perceptions, two MANOVA'S were calculated. First MANOVA executed simultaneously for all PSQ scales showed a significant difference (Wilks' Lambda =.83, $F= 72.17$, $p = <.001$) between physical activity practice (practice vs. non-practice) and physical self-perceptions. The a posteriori executed ANOVA showed that non-practitioners had lower scores in Sport Competence, Attractive Body, Physical Condition and Physical Strength than physical activity practitioners ($p<.001$). No significant differences were found in the Self-Confidence scale ($p>.05$).

Next, a MANOVA was executed between the subjects involved in physical activities and all the subscales of PSQ, with the three levels of physical activity involvement as independent variables. The MANOVA showed significant differences between the levels of physical activity involvement in practitioners (Wilks' Lambda =.90, $F= 14.37$, $p = <.001$). The univariate ANOVA showed differences in Sport Competence, Attractive Body, Physical Condition and Physical Strength ($p<.01$), but not in the Self-Confidence scale ($p>.05$). The a posteriori Tuckey' analysis showed that those who participated in physical activity *once a week or less* had lower scores in Sport Competence, Physical Condition and Physical Strength than those who participated in physical activity *more than 3 times a week*. Post-hoc analysis also showed that those who participated in physical activity *more than 3 times a week* had higher scores in Sport Competence, Attractive Body, Physical Condition and Physical Strength those who participated in physical activity *2 to 3 times a week*.

Finally, to analyse the interaction effect between gender and physical activity involvement (practice vs. non-practice) a 2x2 MANOVA was calculated. The MANOVA showed significant interaction differences (Wilks' Lambda = .99, $F= 2.33$, $p= .04$). The univariate ANOVA showed differences in Sport Competence, Attractive Body, Physical

Condition and Physical Strength ($p < .01$). No significant difference was found in the Self-Confidence subscale ($p > .05$). The Tuckey post-hoc comparison test showed that males that did sport had lower scores in Sport Competence, Attractive Body, Physical Condition and Physical Strength than males that did not do sport and lower scores in Sport Competence, Physical Condition and Physical Strength than females that did not do sport. Males that did sport also showed lower scores in Physical Condition than females that did sport. Post hoc analysis also showed that males that did sport had higher scores in Sport Competence, Attractive Body, Physical Condition and Physical Strength than females that did sport and females that did not. Finally, females that did sport had higher scores in Sport Competence, Physical Condition and Physical Strength than females that did not do sport.

DISCUSSION

The first aim of this study was to examine the effects of gender and level of physical activity involvement on physical self-perceptions in Spanish adolescents. Results showed an effect of interaction between gender (males vs. females) and practice of physical activity (practice vs. non-practice), indicating a cumulative effect of these two variables. Students were influenced by these two factors, supporting the idea that self-perceptions function in a linear manner (Vallacher and Novak, 1997). The results showed that males that did sport showed better scores in physical self-perceptions than the other analysed groups (males and females that did not do sport, and females that did sport). Moreover, these results were not confirmed for the perception of self-confidence. Males that did not do sport showed better perception of self-confidence than other groups but this difference was not significant. Further investigation is needed in order to analyse if the absence of significant differences is a characteristic of our sample.

The results showed a simple effect of gender on Sport Competence, Attractive Body, Physical Condition and Physical Strength. Males presented significantly better scores than females on these variables. The differences obtained in the self-confidence factor were not significant but had the same directionality as the other physical self-perception factors. As indicated by Maïano et al. (2004), these results underline the influence of gender in adolescents' physical self-perceptions (Marsh, 1998). We agree with some researchers who consider that a possible explanation of these differences could be attributed to the type of physical activities/programmes and the internalisation of post industrial society's ideal of the body and the high value placed on it (Maïano et al., 2004; Marsh, 1999). Furthermore, Trew et al. (1999) state that the adolescents most active in sports have more self-worth than those that are sedentary, distinguishing between both genders on specifying that males spend more time on doing sport than females, leading to higher perceptions of athletic self-competence and global self-esteem.

After analysing the differences obtained for different levels of physical activity involvement, the results showed that those who participated in physical activity *more than 3 times a week* showed higher scores in Sport Competence, Physical Condition and Physical Strength than those who participated in physical activity *once a week or less*, and *2 to 3 times a week*. These results are on the same lines as those found by Raich et al. (1996), who discovered that subjects who do sport regularly have a high interest in physical exercise and assess their physical state better than subjects that do not do sport regularly and, in turn, than those that do not do any sport. Some investigations have demonstrated that physical involvement has a great impact on physical and psychological changes (Davis, 1997). These investigations showed that involvement in physical activity is positively related to well-being, mood, physical self-

perceptions and mental health (McDonald and Hogdon, 1991; Oweis and Spinks, 2001). For physical self-perceptions, research has demonstrated that those involved in physical activity experience an increase in self-esteem and physical self-confidence (Alexander et al., 2000; Barrett, Smoll and Smith, 1992; Jackson and Marsh, 1986; Weiss, McAuley, Ebbeck and Wiese, 1990; Leith and Taylor, 1991; Boyd and Hrycaiko, 1997; Weinberg and Gould, 1996). Along these lines, we can also highlight the contribution made by Alfermann and Stoll (2000), where it can be seen that those who do sport show a significant improvement in physical self-concept.

Within this trend, Li (1996) identifies four variables as significant predictors of self-esteem: *attractive body*, *sport competence*, *appearance preferences* and *health assessment* stating, in contrast to the data from our research, that the self-esteem of non-exercisers reaches higher values than the self-esteem of physically active students. Indeed, in the work by Alexandris et al. (1997) it was stated that non-participants were significantly more limited in the intrapersonal dimension than participants.

The study carried out by Balaguer (1998) showed that males who did sport two or more times a week had higher scores in Sport Competence, Physical Appearance and Social Acceptance than those that are sedentary. While the females who did sport as often only had higher scores in Sport Competence. Of all the domains of self-concept, Sport Competence was the most powerful predictor for both the males and the females. This conclusion coincides with the results of Allison et al. (1999), for whom self-efficacy in physical activities, in spite of external barriers, is the main predictor of participation in these activities.

Coinciding with our data, but within the university population, Gutiérrez et al. (1999a) prove that students who do some physical activity have a significantly more positive perception of each and every one of the variables that form the physical self-

concept, highlighting that the more sport done by the students, the better the perception of the physical self-concept.

Our results have shown the great relevance that doing physical activity has on the development of the physical self-concept. These results mark the need for appropriate management of physical activity programmes offered both in and out of school. The evaluation the subjects make of these sports programmes or of doing another kind of physical activity will have an influence on the decision to do a sport or not. These reflections would be highlighting the need to carry out physical activity programmes which, from a motivational perspective, have an impact on how many people do physical activity (Downs and Singer, 2003). In this respect, the results obtained in the research done by Boyd and Hrycaiko (1997) indicated that the strongest effects obtained after applying the physical activity programme were on the self-concept of physical ability of both pre-adolescent and adolescent females. On the other hand, the weakest effects were found on the self-concept of physical appearance. This coincided with prior research in which no relationships were found at all between physical exploits and physical attraction (Marsh, 1986; Marsh and Peart, 1988). The results of the research showed that pre-adolescent females with low self-esteem and a low self-concept will benefit more from the intervention programme and will have a less conservative assessment of it than older girls, in spite of the fact that the latter felt the programme was relevant. Generally, the programme's assessment and score will drop as the age of the subjects rises (Boyd and Hrycaiko, 1997).

Therefore, training those responsible both in and out of school in physical activity programmes is necessary, as some researchers have already highlighted (Ames, 1992; Duda, 2001; Roberts, 2001). This training will enable programmes to be perceived as more attractive, allowing for a greater level of involvement by adolescents. Similarly, and

in the educational field, emphasis must be placed on the need to carry out actions allowing there to be more equality between the sexes in the way they are treated by physical education teachers. There are studies that have proved that when the teacher designs more co-operative physical education classes based on personal effort rather than on comparative performance, the students' perception of being treated equally increases (Cervelló, Jiménez, del Villar, Ramos and Santos-Rosa, 2004). Carrying out activities that are not discriminatory or considered as characteristic of boys would help girls to be involved more directly in doing physical activities (Whitehead and Corbin, 1997).

To conclude, we would like to comment on some future perspectives that are derived from the results obtained.

Firstly, and in regard to the measurement instrument used in this research, results have shown differences in the structure of the measurement model of physical self-concept. The accepted measurement model for this research has shown a distribution of the items different to the original instrument designed by Fox and Corbin (1990) and supports the factor distribution found by Gutiérrez et al. (1999b). However, we consider that more studies are needed to show whether the differences obtained in the structure of the instrument are because the instrument was adapted or due to that fact that, as Harter (1999) actually states, cultural aspects can establish differences in the global structure of physical self-concept. More research is needed to clarify this point.

Lastly, we believe that more research is required to analyse from a motivational and experimental point of view how modifying motivational climates (Ames, 1992; Nicholls, 1989) can affect physical self-perceptions during adolescence. This research should analyse how the influence of motivational variables determines the acquisition of extracurricular sports habits, and the type of physical activities that the subjects choose

voluntarily outside school hours, since it has been proved from a correlational perspective that subjects that perceive task-involving motivational climates tend to do more extracurricular physical activity than those subjects that perceive ego-involving motivational climates (Jiménez, 2004).

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Table 1. Fit indices of two measurement models

Model	χ^2	g.l.	CFI	TLI	PNFI	RMSEA
1*	4645.47	246	.95	.94	.77	.087
2**	5464.62	395	.95	.94	.81	.073

*Fox and Corbin's (1989) four correlated model

** Gutierrez, Moreno and Sicilia's (1999) five correlated model

Table 2. Descriptive statistics and alpha coefficients of PSQ scales for all subjects

	MEAN	S.D.	ALPHA
PSQ			
Sport competence	50,34	21,82	.80
Attractive body	55,11	20,02	.76
Physical condition	56,08	20,13	.75
Physical strength	53,17	19,25	.60
Self-confidence	51,26	23,81	.73

Table 3. Univariate and multivariate analysis of variance of PSQ scales

	Principal	Effects	Levels of Physical Activity involvement	Interaction Effects
	Gender	Physical Activity Practice		Gender x Physical Activity Practice
	F	F	F	F
PSQ				
Sport competence	57.27**	22.70**	53.18**	210.75**
Attractive body	444.59**	315.29**	7.26*	24.44**
Physical condition	308.28**	367.07**	52.43**	186.16**
Physical strength	120.02**	103.71**	12.70**	58.77**
Self-confidence	2.30	1.54	.475	1.01
Multivariate analysis				
Wilks' Lambda	.81	.83	.90	.99
Multivariate F	83.95**	72.17**	14.37**	2.33*

* p<.01; **p<.001