

Physical Self-Concept of Spanish Schoolchildren: Differences by Gender, Sport Practice and Levels of Sport Involvement

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Abstract

This study examined the psychometric properties of the Spanish version of the C-PSQ, as well as the effect of gender, the practice of physical activity and sport and the extent of physical activity and sport practice outside of school hours in relation to the physical self-concept of older primary schoolchildren in Physical Education classes. The sample was comprised of 1086 participants, 570 boys and 516 girls ranging in age from 10 to 11 years. Each student completed Fox and Corbin's (1989) Physical Self-Perception Profile (PSPP) as it had been modified for the Spanish context by Moreno and Cervelló (2005). The Spanish language version of the PSPP constituted a valid measure of the physical self-concept of these youth and was comprised of four factors. The construct validity of the measure was supported by findings that revealed that individuals who engaged in sport practice outside of school hours, and who engaged in a greater frequency of sport practice outside of school hours, had more favourable self-perceptions of competence and confidence in physical activities than did those engaged in less physical activity outside of school. Results in relation to gender indicated that boys had higher levels of perceived competence and greater self-confidence than did the girls in relation to sport activities, whereas the girls had a more favourable perception of their physical appearance and physical strength than did boys. These differences may reflect underlying growth and developmental influences for boys and girls in this age range.

Keywords: Physical self-perceptions, gender, physical activity involvement.

Introduction

Theorizing about the self-concept has taken place in the phenomenological environment that Wylie (1974) defined as the study of critical awareness. Personal conduct is influenced by those personal meanings that each individual ascribes to their perceptions of their experiences. The concept of how a person views himself or herself is part of a whole where one's self-esteem is a fundamental contributor to well-being and mental health (Fox, 2000). In this way, the feelings that one has toward oneself are at the core of one's thoughts and determine the development of self-concept.

In this sense, Rosenberg (1979) commented that human motivation can reflect a universal tendency to maintain, protect, and to actualize one's self-concept and Whitehead (1993) indicated that motivation will depend upon one's personal cognitive evaluation, which is itself dependent upon the perception of competence that the individual has about themselves. In this regard, Bandura (1986) and Deci and Ryan (1985) affirmed that self-esteem and motivation have much in common. Motivation is an outcome that helps us to understand the different individual perceptions that take place in students. In the physical education context, Li, Lee, and Solmon (2005) found that those students who are more motivated, perceived themselves to be more competent than their peers and this is a logical extension of the knowledge that we have about the relationship between self-perceptions and motivation.

Measurement of Physical Self-Concept

The examination and understanding of self-concept requires appropriate methods of measurement of this construct. Originally, the examination of self-concept was oriented toward a

unidimensional perspective that reflected a global view of the self (Coopersmith, 1967; Marsh and Winnie, 1978). This approach to measurement was imprecise because it assessed a general sense of self-worth without considering the role of other contributors to self-concept (Fox, 1990). The works of Marsh (1990) and Shavelson, Hubner, and Stanton (1976) provided a new viewpoint on the manner of understanding the self-concept, a contribution that was directed toward a multidimensional perspective introducing the physical dimension as a fundamentally important component of general self-concept.

The adoption of a multidimensional perspective on the physical self-concept contributed to the development of measures that could more effectively measure physical self-concept. The work of Epstein (1973) and Shavelson et al. (1976) was important because it highlighted physical competence and appearance as principal dimensions of self-concept. Fox and Corbin (1989) proposed four specific physical dimensions that consisted of competence, appearance, physical condition and strength, as well as a general physical self-worth dimension that permitted the comparison among different domains to increase our understanding and create a domain of general self-perception (Fox, 1990). In their instrument, individual differences did not affect the structure of the subscales. With reference to the relations established between each one of the dimensions proposed in the Physical self Perception Profile (PSPP), authors such as Van de Vliet, Onghena, Fox, Van Coppenolle, David, Pieters, and Peusken (2002), Asçi, Asçi, and Zorba (1999) and Atienza, Balaguer, Moreno, and Fox (2004) raise the possibility of an excessive overlapping between the dimensions of competence in sport and physical condition, making it difficult to differentiate between them.

From Fox's (1997) perspective, the dimensions that best define the physical self-concept are those that best differentiate among people. This differentiation depends partly of developmental status because the dimensions that best characterize the self-concept vary as a consequence of age, and are also influenced by social context and cultural influences. The findings obtained in the development of an instrument for the measurement of physical self-concept by Fox and Corbin (1989) were supported in subsequent modifications of this instrument (Asçi et al., 1999; Biddle, Page, Ashford, Jennings, Brooke, and Fox, 1993; Gutiérrez, Moreno, and Sicilia, 1999b; Moreno and Cervelló, 2005; Page, Ashford, Fox, and Biddle, 1993; Sonstroem, Speliotis, and Fava, 1992). There have also been an increasing number of investigations into the measurement of physical self-concept (Asçi, 2005; Boyd and Hrycaiko, 1997; Maïano, Ninot, and Bilard, 2004; Marsh and Peart, 1988; Miller, 1989; Petrakis and Bahls, 1991; Riley, 1983; Schemp, Cheffers, and Zaichkowsky, 1983; Sonstroem, Harlow, and Josephs, 1994).

Physical self-concept and physical activity

The importance of physical self-concept rests in the relationship between the individual's personal set of beliefs and their subsequent behaviour. The measurement of physical self-efficacy has been utilized to establish relationships among one's overall self-perceptions and their subsequent participation in physical activities. To increase overall self-worth through a positive change in physical self-concept does not automatically result from participation in physical activity programs but such programs can be utilized to incrementally improve the physical self-concept perceptions of the individual (Fox, 2000). In this sense, investigations conducted by Sonstroem et al. (1992), Page et al. (1993), and Asçi (2005) have found that more favourable perceptions of one's physical capacity contribute to an increase in levels of participation in physical activity.

Physical self-concept and gender

In reference to gender, research indicates that boys and girls usually differ in both global and specific self-concept dimensions (Eklund, Whitehead, and Welk, 1997). In general, investigators have noted less favourable physical self-perceptions for females in comparison to males (Boyd and Hrycaiko, 1997; Goñi and Zulaika, 2000; Hagger, Biddle, and Wang, 2005; Harter, 1978; Hattie, 1992; Jackson and Marsh, 1986; Marsh, 1998; Weiss and Bredemeier, 1983). These less favourable self-perceptions for girls have been found with regard to specific physical self-concept dimensions, including perceived sport competence, physical condition and strength (Asçi et al., 2005; Maïano et al., 2004; Marsh, 1998; Welk and Eklund, 2005), physical attractiveness (Hagborg, 1994; Maïano et al.,

2004; Marsh, 1998), and overall physical self-appraisals (Asçi et al., 2005; Gutiérrez, Moreno, and Sicilia, 1999a; Maïano et al., 2004; Marsh, 1998; Whitehead and Corbin, 1997).

It is important to remember that the social cultural context exerts a clear effect on physical self-concept characteristics. Roberts (1995) and Ruiz (1995) have noted that motor competence diminishes with age in girls which can have correspondent effects on perceived competence. A lack of perceived competence can affect level of involvement in physical activity. Gender stereotypes about various physical activities in sport can also influence the sport and physical activity of girls. The study by Solmon, Lee, Belcher, Harrison, and Wells (2003) indicated that when girls perceived an activity to be more appropriate for males than for females, they typically demonstrate lower perceived competence in that activity. In this same way, Ruiz, Graupera, Rico, and Mata (2004) speak of clashing self-concepts. Boys may be more motivated to participate in competitive activities and girls in cooperative activities as a consequence of differences in preferred styles of social interaction. The study by Asçi et al. (2005) indicated that Turkish girls score lower on self-ratings of physical attractiveness than do Turkish boys and the same patterns hold for American girls (Whitehead, 1995), whereas Estonian girls score more highly than their Turkish and American counterparts (Raudsepp, Kais, and Hannus, 2004).

Education provides an important socialization experience for youngsters. Physical Education contributes to the development of the physical self-concept of youngsters and to attitudes toward the practice of physical activity that can extend through the lifetime. This physical activity involvement allows for the participation of the individual in a social environment without renouncing their unique personal identity that uniquely identifies the individual as a member of society.

Children between the ages of 10 and 11 years undergo physical changes that affect the physical development of both males and females as well as the process of personal and social identity construction. As Lirgg (1993) mentioned, the inclusion of males and females of this age in coeducational physical education classes serves to make physical development salient to individuals and can contribute to an uncomfortable situation for many students at this phase of adolescence. In this regard, the process of physical self-concept formation can certainly be influenced by physical growth and development during adolescence. Nonetheless, as Fox (1988) has noted, it is difficult to directly understand how self-esteem is affected by the child's developmental status. Certain studies with pre-adolescent youth attribute the lack of strong correlations between the different domains of physical self-concept during adolescence to the fact that the components of physical self-concept are still becoming differentiated throughout the adolescence phase (Alsaker and Olweus, 1993; Harter, 1999; Marsh and O'Neill, 1984).

With this consideration in mind, and taking into account that the Children and Youth Physical Self-Perception Profile (CY-PSPP) validated by Welk and Eklund (2005) and Whitehead (1995) is an appropriate tool for the adolescent population aged 12 and above and that it is difficult for younger schoolchildren to understand, given that the way the items are written presents the quality of a person in two opposing messages, affirmative and negative, an aspect that tries to prevent people from responding to the questionnaire with social desirability criteria, but which makes it difficult for 10 and 11 year old pupils to understand. Our point of view was to reject the use of an instrument as popular as the CY-PSPP for younger schoolchildren and we analysed the use of the Spanish version of the PSPP, known as the Physical Self Questionnaire (PSQ), adapting it for children older than primary school age. This approach is also supported in the work of Marsh, Asçi and Tomás (2002) where he states that as the items are difficult to understand, they do not achieve what they set out to do, eliminating the socially desirable answers. Therefore, the goal of this investigation was to identify the structure of the physical self-concept of schoolchildren and to examine the effect of gender, sport practice and level of sport practice on this self-appraisal. In order to meet these objectives, we hypothesised that the factor structure of the PSQ, consisting of five factors, sport competence, attractive body, physical strength and self-confidence, could be modified when applied to schoolchildren older than primary school age. We also established the hypothesis that the boys would obtain higher scores than the girls in all the physical self-concept dimensions, and that doing physical activity outside school hours would improve physical self-perceptions.

Method

Participants and procedure

The sample for our study was comprised of 1086 students ($M = 10.3$ yrs., $SD = 0.51$ years) and included 570 boys and 516 girls. All participants were volunteers who had been recruited from physical education classes from schools in a large city in Spain. Descriptive self-report data indicated that 998 of these participants reported doing physical activity outside of physical education classes and 88 indicated that they did not practice additional physical activity. With regard to their level of involvement, 155 individuals reported engaging in physical activity “sometimes”, 394 reported doing physical activity “two or three times per week”, and 448 reported doing physical activity more than three times per week. The participating students come from state schools in a large city. The process for them to be assigned to the study was semi-probabilistic sampling. The status of the sample was divided into middle, lower-middle and lower class. The vast majority of them are Spanish, although there are also some immigrants, mainly from countries in Eastern Europe, South America and the Maghreb. The students have three hours of Physical Education per week.

In accordance with normal data collection procedures in Spain, permission to conduct this investigation had been previously obtained from the parents of the participants as well as from their primary teachers. The pupils were informed of the general purpose of the study and of their rights of study participants and were asked to sign a consent form. We ask for the students to complete the questionnaire. We had previously asked the students' primary teachers to inform us about those students whose level of reading comprehension was not sufficient for the completion of the questionnaire and did not include their questionnaire data in the final data analysis. The questionnaire was administered in a regular school classroom without the presence of a teacher. The measures were given to each student in the same order. Each participant took 15 to 20 minutes to complete the questionnaires and responses to the instrument remained anonymous.

Pilot Study. In order to check the validity of content, we subjected the set to a qualitative assessment of the items by three selected judges, who are experts in the subject, and 20 students who had similar characteristics to the population being studied. The items forming the questionnaire were read, according to the procedure explained above. Then we talked about the meaning of the phrases. We asked them to make any questions they had known to us, which we noted down for later review and we asked them to circle the items that they would not know how to answer using the scale presented. The students' opinions showed confusion in the items #6 “I believe that I am not among the most capable in terms of sport ability and doing physical exercise” and #27 “Compared to others, I don't believe that my level of fitness is so high”, mainly due to the fact that the message of these phrases formulated in negative caused confusion when having to give their opinion using the scale presented. This aspect did not occur with the rest of the phrases where the adverb “no” appeared. In addition, the judges agreed that the difficulty in understanding these items lay in the lack of meaning of the words “capacity” and “physical condition”, which, within the context of the phrase, refers to the general meaning of the word, without allowing the student the possibility to establish its semantics from the similarity with other synonymous words in the phrase, an aspect that did occur in items where physical shape was referred to. In addition we replaced some words, such as “condition”, “attractive”, “I” and “facet” for synonyms such as “shape”, “nice” and “own”, which showed more understanding and did not change the message of the phrase. As a result, after this study, we decided to eliminate these items from the original instrument and the questionnaire was formed as it appears in (Appendix 2).

Appendix 2. C-PSQ scale in Spanish.

Cuando realizo actividad física...

1. Soy muy bueno/a en casi todos los deportes
 2. Siempre mantengo una excelente forma física
 3. Comparado con la mayoría, mi cuerpo no es tan bonito
 4. Comparado con la mayoría de la gente de mi mismo sexo, creo que me falta fuerza física
 5. Me siento muy orgulloso/a de lo que soy y de lo que puedo hacer físicamente
 6. Siempre me organizo para poder hacer ejercicio físico intenso de forma regular y continuada
 7. Tengo dificultad para mantener un cuerpo bonito
 8. Mis músculos son tan fuertes como los de la mayoría de las personas de mi mismo sexo
 9. Siempre estoy satisfecho/a de cómo soy físicamente
 10. No me siento seguro/a cuando se trata de participar en actividades deportivas
 11. Siempre mantengo un alto nivel de resistencia y forma física
 12. Me siento avergonzado/a de mi cuerpo cuando se trata de llevar poca ropa
 13. Cuando se trata de situaciones que requieren fuerza, soy el primero/a en ofrecerme
 14. Cuando se trata del aspecto físico, no siento mucha confianza en mi mismo
 15. Considero que siempre soy de los/as mejores cuando se trata de participar en actividades deportivas
 16. Suelo encontrarme un poco incómodo/a en lugares donde se practica ejercicio físico y deporte
 17. Pienso que a menudo se me admira porque mi físico o mi tipo de figura se considera bonita
 18. Tengo poca confianza cuando se trata de mi fuerza física
 19. Siempre tengo un sentimiento verdaderamente positivo de mi aspecto físico
 20. Suelo estar entre los/as más rápidos/as cuando se trata de aprender nuevas habilidades deportivas
 21. Me siento muy confiado/a para practicar de forma continuada y para mantener mi forma física
 22. Creo que, comparado/a con la mayoría, mi cuerpo no parece estar en la mejor forma
 23. Creo que comparado con la mayoría, soy muy fuerte y tengo músculos bien desarrollados
 24. Desearía tener más respeto hacia mi propio físico.
 25. Cuando surge la oportunidad, siempre soy de los/as primeros/as para participar en deportes.
 26. No me siento seguro/a sobre el aspecto de mi cuerpo
 27. Creo que no soy tan bueno/a como la mayoría cuando se trata de situaciones que requieren fuerza
 28. Me siento muy satisfecho/a tal y como soy físicamente
-

Measures

Physical Self-Perception Profile (PSPP). The Spanish language adaptation (Gutiérrez et al., 1999b; Moreno and Cervelló, 2005) of the Physical Self-Perception Profile (Fox, 1990; Fox and Corbin, 1989) was employed. The original instrument is comprised of 30 items that load onto five factors. The adapted Spanish version also had five subscales but had a different factor structure. The Spanish language version was labelled the Physical Self-Questionnaire (PSQ) and had Cronbach alpha levels of between .62 and .85 for the five subscales (Appendix 1). The structure of the response format to the questionnaire was designed to be consistent with the Spanish academic context in which evaluations of pupils' performance are structured along a scale of "0" to "10". Thus, responses to the questionnaire items were indicated on an 11-point Likert scale anchored by "strongly disagree" (0) and "strongly agree" (10).

Appendix 1. PSQ scale in Spanish (Moreno and Cervelló, 2005).

Cuando realizo actividad física...

1. Soy muy bueno/a en casi todos los deportes
 2. Siempre mantengo una excelente condición y forma física
 3. Comparado con la mayoría, mi cuerpo no es tan atractivo
 4. Comparado con la mayoría de la gente de mi mismo sexo, creo que me falta fuerza física
 5. Me siento muy orgulloso/a de lo que soy y de lo que puedo hacer físicamente
 6. Creo que no estoy entre los/as más capaces cuando se trata de habilidad deportiva
 7. Siempre me organizo para poder hacer ejercicio físico intenso de forma regular y continuada
 8. Tengo dificultad para mantener un cuerpo atractivo
 9. Mis músculos son tan fuertes como los de la mayoría de las personas de mi mismo sexo
 10. Siempre estoy satisfecho/a de cómo soy físicamente
 11. No me siento seguro/a cuando se trata de participar en actividades deportivas
 12. Siempre mantengo un alto nivel de resistencia y forma física
 13. Me siento avergonzado/a de mi cuerpo cuando se trata de llevar poca ropa
 14. Cuando se trata de situaciones que requieren fuerza, soy el primero/a en ofrecerme
 15. Cuando se trata del aspecto físico, no siento mucha confianza en mi mismo
 16. Considero que siempre soy de los/as mejores cuando se trata de participar en actividades deportivas
 17. Suelo encontrarme un poco incómodo/a en lugares donde se practica ejercicio físico y deporte
 18. Pienso que a menudo se me admira porque mi físico o mi tipo de figura se considera atractiva
 19. Tengo poca confianza cuando se trata de mi fuerza física
 20. Siempre tengo un sentimiento verdaderamente positivo de mi aspecto físico
 21. Suelo estar entre los/as más rápidos/as cuando se trata de aprender nuevas habilidades deportivas
 22. Me siento muy confiado/a para practicar de forma continuada y para mantener mi condición física
 23. Creo que, comparado/a con la mayoría, mi cuerpo no parece estar en la mejor forma
 24. Creo que comparado con la mayoría, soy muy fuerte y tengo músculos bien desarrollados
 25. Desearía tener más respeto hacia mi propio físico.
 26. Cuando surge la oportunidad, siempre soy de los/as primeros/as para participar en deportes.
 27. Creo que, comparado con la mayoría, mi nivel de condición física no es tan alto
 28. No me siento seguro/a sobre la apariencia de mi cuerpo
 29. Creo que no soy tan bueno/a como la mayoría cuando se trata de situaciones que requieren fuerza
 30. Me siento muy satisfecho/a tal y como soy físicamente
-

Demographic variables. Data relating to gender and level of physical activity involvement were also collected. Participants were questioned about their level of physical activity involvement outside of their regular physical education classes. The question asked was, "Please indicate if you practice some physical activity or do some club sport (sport, fitness, swimming, hiking, aerobics, running, basketball, tennis, etc.) outside of physical education classes. If the participant responded "yes", another question was included to assess their level of physical activity involvement. Three possibilities were presented: 1) one day per week; 2) two to three days per week; or 3) more than three days per week.

Results

The overall sample was divided into two groups. One part of the overall sample that included 544 participants was utilized for an exploratory factor analysis. The second part of the sample, which included 543 participants, was utilized in a confirmatory factor analysis. The purpose of using these two samples was for the results of the confirmatory analysis to check those obtained in the exploratory analysis.

Study 1. Validity and Reliability of the Children Physical Self Questionnaire

A principal component analysis using varimax rotation was conducted for the purpose of examining the factor structure of the measure in the assessment of physical self-concept among 10 and 11 year old students. The principal component analysis resulted in the elimination of two items from the scale and the elimination of these items improved the internal validity of the measure. These

items were item #7 "I am always prepared to do physical exercise on a regular and continuous basis"; which did not show values above .40 in the rotation and item #4 "Compared to others of my age and sex, I feel that I lack physical strength", whose correlation had a difference of three points compared with the rest of the items forming the factor, a circumstance that decreased the percentage of variance and made it advisable to eliminate them to increase the factor reliability. We conducted a new exploratory analysis without these items and twenty six items remained in the analysis grouped into four factors (Table 1) that consisted of competence, physical appearance, strength, and self-confidence with eigenvalues greater than 1.00 (7.46, 3.04, 1.17, and 1.38, respectively). These factors combined to explain 48.40% of the variance. In the analysis, we observed that the majority of the items related to sport competence and physical condition are grouped within the same factor, showing the highest correlations between both dimensions. In addition, the factor we called "self-confidence" was formed by items in the original questionnaire from the factors attractive body, sport competence and physical condition, referring to the feeling of assurance and confidence the student has in his physical facet.

An analysis was conducted of the internal consistency of the measure and of each of the four factors that emerged from the exploratory factor analysis. The first factor, identified as sport physical competence makes references to the perception that the individual has the ability to successfully engage in sport and to overcome challenges related to their participation in sport practice, such as his or her desire to participate in these activities (e.g., I am good in almost all sports as well as in physical exercise"). The Cronbach internal consistency coefficient for this subscale was .87. The second factor makes references to the perceived favourability or unfavourability of the individual's body image (e.g., "Compared to others, my body is not so good looking"). The alpha Cronbach level for this subscale was .76. The third factor involved peer comparison on perceived physical strength (e.g., "Compared to the majority of people of the same age and gender I believe that I lack physical strength"). A Cronbach alpha coefficient of .67 was obtained for this subscale. The fourth factor makes reference to a general feeling of confidence with respect to the pride that the person has regarding their physique and of the self-assurance they have when they do physical activity/sport, (e.g., "I feel proud of who I am and what I can do physically") and produced a Cronbach alpha level of .77.

Table 1. Psychometric properties of the C-PSQ scale (Exploratory Factor Analysis).

Items	F1	F2	F3	F4	
1. I am very good at almost all sports	.68				
2. I always stay in good physical shape.	.60				
11. I don't feel confident when I have to take part in sport activities.	.67				
12. I always stay at a high level of fitness and physical shape.	.60				
15. As far as physical appearance is concerned, I don't feel very self-confident.	.62				
16. I think that I am one of the best when it comes to sporting activities.	.71				
17. I usually feel a little uncomfortable in places where people are doing physical exercise and sport.	.71				
21. I am usually one of the fastest in the class to learn new physical skills.	.68				
22. I feel very confident about my ability to maintain regular exercise and physical shape.	.57				
26. When the opportunity arises, I am always one of the first to participate in sport activities.	.55				
3. Compared with others, my body is not so good-looking		.68			
8. I have difficulty in maintaining a good-looking body.		.61			
13. I feel embarrassed about my body when it comes to wearing few clothes.		.48			
18. I often think that others admire me because my physical appearance or my figure type is considered attractive.		.45			
23. I feel that compared to the majority of people my body does not seem to be in the best shape		.64			
25. I would like to feel better about my physical own		.54			
28. I feel insecure about my body		.61			
4. Compared to others of my age and sex, I feel that I lack physical strength			.53		
9. My muscles are as strong as the majority of people of my sex.			.51		
14. In situations where strength is needed, I am always the first to volunteer.			.45		
19. I lack confidence when it comes to physical strength			.58		
24. In comparison to the majority of others, I am very strong and have well-developed muscles.			.60		
29. I don't believe that I am as good as others when it comes to situations requiring physical strength			.42		
5. I am very proud of what I can do physically				.65	
10. I am always satisfied with my physical shape.				.59	
20. I always have good feeling about my physical shape.				.51	
30. I feel very satisfied with how I am physically				.69	
	Reliability	.87	.76	.67	.77
	Variance explained for each of the factors	18.4%	10.1%	10.0%	9.7%
	Total variance explained	48.40%			

Study 2. Confirmatory Factor Analysis

A confirmatory factor analysis was conducted to determine the factor structure of the Children Physical Self Questionnaire (C-PSQ). Assessment of model fit was conducted using various fit indices to examine the fit of the overall model, as well as the fit of the individual parameters. For the hypothesized construct model, multiple indices were employed as recommended (Hu and Bentler, 1999). These indices included the Chi-square test (a non-significant value indicates a good level of model adjustment), the Comparative Fit Index or CFI (values exceeding .90 indicate a good fit), the Tucker-Lewis Index (values exceeding .90 usually represent a parsimonious model) and the Root Mean Square Error of Approximation, or RMSEA, where values below .08 usually indicate a good fit (Steiger, 1990). A t-value was also obtained that reflected item fit.

A maximum likelihood extraction method was conducted and the data were normally distributed as reflected by the Mardia coefficient. Given that the data did not show multivariate normality (Mardia = 47.67), the bootstrapping (Byrne, 2001) technique to improve non-normality of data was employed. This approach calculates the parameter estimates from an empirical sampling distribution, rather than the theoretical distribution of statistical tests as do chi-square and normality tests (Mooney and Duval, 1993). A bootstrapping method was used to correct any abnormal data. With respect to the χ^2 statistic, a significant value was not found given that the obtained value of χ^2 /g.l. of 3.60, was within an acceptable range for the model. With regard to the incremental and comparative fit indices, (CFI = .98 and TLI = .97), the factorial model explained well the covariance matrix given that associated values exceeded .90. The RMSEA (.04) and SRMR (.04) each indicated good levels of model fit.

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

A multivariate analysis of variance (MANOVA) was conducted on the total sample for the purpose of comparing differences according to gender, sport practice and level of sport practice outside of school hours as well as across the four factors (Tables 2 and 3). With regard to gender, significant differences were found on each one of the four factors: competence ($F = 114.27, p < .001$), physical appearance ($F = 5.03, p < .05$), strength ($F = 9.17, p < .05$) and self-confidence ($F = 63.06, p < .001$). In this regard, the boys perceived themselves to be more competent and had higher physical self-confidence levels than did the girls. To the contrary, the girls had a more favourable perception of their physical appearance and strength than did the boys.

In the examination of the variable extracurricular sport practice we found significant differences on this variable. In this regard, those individuals who were engaged in sport outside of school demonstrated higher levels of perceived competence ($F = 48.72, p < .05$), physical appearance ($F = 4.87, p < .05$), strength ($F = 7.83, p < .05$) and self-confidence ($F = 36.74, p < .05$). As expected, those individuals who engaged in sport had more favourable perceptions of their competence ($M = 5.67$) than those who did not engage in sport ($M = 3.92$) and had higher levels of self-confidence ($M = 7.06$) relative to those who did not practice sport ($M = 5.37$). However, the students who did not practice sport had a stronger belief that they had an attractive body ($M = 4.73$), in comparison to those who did engage in sport ($M = 4.16$), and physical strength was also more favourably perceived by those who did not practice sport ($M = 4.25$) than by those who practiced sport ($M = 3.54$).

In terms of level of sport practice, we observed significant differences on the dimensions of competence ($F = 16.04, p < .05$) and self-confidence ($F = 8.98, p < .05$), but did not find significant differences relative to appearance ($F = .80, p > .05$) or strength ($F = 2.04, p > .05$). In this regard, the greater amount of time dedicated to the practice of sport outside of school was associated with higher levels of perceived competence and self-confidence. The means for perceived competence across the three groups were $M = 5.16$ for the no sport practice group, $M = 5.38$ for the two or three times per week group, and $M = 6.10$ for the three times or more per week group. For self-confidence the means were 6.41 for the no-practice group, 6.98 for the two or three times per week group, and $M = 7.37$ for the three times or more per week group.

To assess the interaction between gender and practice of physical activity (practice vs. non-practice), a MANOVA was calculated. The MANOVA indicated that gender by practice interaction effects were not present across the four physical self-concept dimensions (Wilks' lambda = 6.14, $p > .05$).

Table 2. Descriptive statistics and Alpha coefficients of C-PSQ scale.

	MEAN	SD	ALPHA
Competence	5.55	2.24	.87
Attractive body	4.23	2.26	.76
Physical strength	3.63	2.26	.67
Self-confidence	6.94	2.48	.77

Table 3. Analysis of variance of C-PSQ scale by gender, physical activity practice and levels of physical activity involvement.

Gender	F	SD	Boys	Girls	
Competence	114.27**	2.24	6.20	4.78	
Attractive body	5.03*	2.26	4.05	4.37	
Physical strength	9.17*	2.21	3.40	3.82	
Self-confidence	63.06**	2.49	7.50	6.30	
Physical activity practice	F	SD	No practice	Practice	
Competence	48.72**	2.24	3.92	5.67	
Attractive body	4.87*	2.26	4.73	4.16	
Physical strength	7.83*	2.21	4.25	3.54	
Self-confidence	36.74**	2.49	5.37	7.06	
Levels of Physical Activity involvement	F	SD	Rarely	2-3 days a week	+3 days a week
Competence	16.04**	2.17	5.16	5.38	6.10
Attractive body	.80	2.26	4.36	4.16	4.09
Physical strength	2.04	2.20	3.64	3.68	3.38
Self-confidence	8.98**	2.43	6.41	6.98	7.37

* $p < .05$; ** $p < .001$

Discussion

The primary purpose of this investigation was to identify the nature of physical self-concept in school-aged children between 10 and 11 years of age. In addition, we were interested in adapting the instrument and examining the psychometric properties the PSQ had for children older than primary school age, the role that gender, sport practice, and level of sport practice had in the nature of physical self-perception characteristics of this sample.

The results indicated differences in the structure of the model for the measurement of physical self-concept in comparison to previous studies. The model obtained in this sample differed from that present in the original model obtained by Fox and Corbin (1989) that was subsequently supported in a Spanish context in a sample of adolescent school children by Moreno and Cervelló (2005). The exploratory and confirmatory factor analyses employed in this study indicated the presence of four factors. In this respect, modifying the factor structure of the PSQ makes the first hypothesis formulated true. This leads us to pointing out the overlapping that occurs between the items sport competence and physical condition in the age of the sample studied. These results have been obtained with samples of different cultures and ages (Asçi et al., 1999; Atienza et al., 2004; Marsh et al., 2002; and Van de Vliet et al. 2002), indicating an excessive correlation between the items of both dimensions, which would indicate a lack of discriminating variance grouped within the same factor.

The first factor was labelled "Physical and sport competence" and refers to individuals' perceptions of their competence to participate in sport practice. The second factor "Physical Appearance" refers to the

individual's comfort with their body image and sense of physical attractiveness. The third factor was labelled "Strength" and refers to how the individuals perceived their physical strength in relation to other students of their same age and gender, as well as how physical activity affected their feelings of strength. The fourth factor, "Self-confidence" is a reflection of the student's perceptions about their capacity to successfully meet challenges in physical activity and sport. This factor is comprised of items related to the sense of self-worth and pride that one has in one's physical capacity, and their feelings of personal satisfaction, confidence in their personal capacities and self-assurance when doing physical activity/sport. Distinguishing between the perception of competence one has (factor 1), the perception of attractive body and the confidence these perceptions give the student.

As Fox (1997) indicated, the domains that comprise the physical self-concept vary as a function of the age of the individual and their social and cultural context. In this way, the age and/or developmental status of adolescents can affect their perceptions of the self. Harter (1999) noted that as youngsters begin to differentiate different self-dimensions that this outcome is accompanied by a decline in their overall sense of self-esteem or self-worth.

These results indicated that a four factor model of physical self-concept holds for Spanish schoolchildren ages 10-11 years of age and that this model is well supported by the data. In the factor analysis we can observe the lack of grouping of items that allow us to refer to a specific perception of physical condition. They are grouped within the physical/sport competence factor. It is probably the lack of specific contents within primary education, where physical condition is worked as a block, which make it difficult to have a perception of it. The bias of physical education in Schools in Spain after the creation of the new national (Base Curricular Decrees) and regional curricula highlights the teaching of contents, such as knowledge, image, body expression, abilities and skills and health through playing, leaving the knowledge of the factors that affect physical condition for Secondary Education. With regard to relationships present among the variable of gender and each of the demographic factors, these obtained results show that the boys demonstrated more favourable self-perceptions of sport confidence and self-confidence in the sport domain, whereas the girls have more favourable self-perceptions of physical appearance and strength. This does not confirm the second hypothesis, as the boys do not obtain higher scores in all the physical self-concept domains.

The studies conducted by Eklund et al. (1997) highlighted the tendency for boys and girls to differ in their specific and global self-perceptions. These findings are consistent with the investigations conducted by Aşçi et al. (2005), Boyd and Hrycaiko (1997), Hagger et al. (2005), Harter (1978), Jackson and Marsh (1986), Mañano et al. (2004), Moreno and Cervelló (2005), and Weiss and Bredemeier (1983) who have found that boys demonstrate more favourable perceptions of physical competence than do girls.

Lirgg (1993) has proposed that boys and girls have different definitions of success in sport and physical activity in that boys may be more oriented toward the demonstration of sport competence in a social comparison manner whereas girls may not use these same processes of social comparison in the formation of self-confidence in the physical domain.

Martens (1996) noted that feelings of competence are essential for individuals to experience overall self-worth. In the investigation carried out by Ruiz et al. (2004), these researchers found that although boys felt more competent in the physical domain than did the girls, that the girls were not as concerned about having competence in this domain as they were with establishing appropriate affective and emotional ties with their peers in this domain of activity. Jackson and Marsh (1986) proposed that females are likely to demonstrate lower levels of perceived competence in those domains stereotypically associated with the masculine role. Thus, a variety of social and cultural influences may be present that are reflected in this pattern of gender differences.

As noted in the studies by Solmon et al. (2003), a lack of confidence in those activities perceived as gender-role stereotyped is completely logical within the concept of self-efficacy. If, as indicated by Sonstroem et al. (1994), increasing self-efficacy in the resolution of challenges also increases one's general self-esteem, we ought to reflect about the types of physical activities included in our studies and the manner in which we structure them so that gender stereotypes do not become mediating influences

shaping our conclusions (Li et al., 2005). As such, the subjective perceptions of the value that different physical activities have in physical education classes may vary according to the gender role stereotypes that exist relative to that activity. Such stereotypes may differentially affect the perceived competence and motivation of boys and girls with regard to their willingness to engage in these activities.

Whitehead (1993) affirmed that an individual's self-perceptions while engaged in sport and physical activity vary considerably according to the perceptions of control that the individual has within this social context. It is logical that girls' self-concept perceptions change depending upon the social and cultural context which is their frame of reference. Our investigation revealed significant differences on the dimension of physical appearance in favour of the girls, who also perceive this dimension to be more important than do the boys. These findings are consistent with those obtained by Asçi et al. (2005) and Raudsepp et al. (2004), although they are not consistent with investigations carried out by Hagbord (1994), Hagger et al. (2005), Maïano et al. (2004), Marsh (1989), Trent, Rusell, and Gooney (1994) and Whitehead (1995). Meanwhile, Welk, and Eklund (2005) did not find any significant gender differences in their study.

Marsh (1987) noted that the importance of physical attractiveness rests in how it affects social relationships. In this regard, the importance that each culture places on ideal physical appearance affects the perceptions of students. It appears that the perceptions of female Spanish, Turkish, and Estonian girls may differ from those of French, British and American girls. The extent to which ideal body image is fostered within a given culture, contributes to the extent of concern that individuals have about their own appearance as a consequence of this social pressure. This perception would increase to the extent that youngsters have a differentiated sense of self (Marsh and O'Neill, 1984). It also has to be remembered that the age of the female participants in this study can be related to the social pressure they experience relative to ideal appearance.

An interesting finding in this study was that the females had more favourable perceptions of their strength than did the boys. These findings are contrary to those encountered by other researchers, including Hagger et al. (2005), Maïano et al. (2004), Marsh (1998), and Welk and Eklund (2005) although each of these studies were conducted with individuals who were older than 12 years of age. It should be mentioned that the frame of reference for the children was to compare themselves to others of the same age and gender, thus girls and boys did not directly compare to members of the other sex. The age range of our sample could be the determining influence in this finding in that the physical maturation of the girls is considerably more advanced than the boys and, thus, girls have had relatively greater recent strength gains than have their male counterparts. As mentioned by Faigenbaum and Zaichowsky (1997), youngsters increase strength during this age range as a consequence of physical growth even if they haven't done any specific training.

Findings pertaining to the relationship between amount of sport practice and the four physical self-concept dimensions were consistent with our expectations. Those students who engaged in extracurricular physical activity demonstrated higher levels of perceived sport competence and self-confidence than did those who did not practice to the same extent. Allison et al. (1999) found that the perceived physical competence dimension was the component that yielded the greatest effects from a program of physical activity for school children. These results are also consistent with other investigators such as Asçi et al. (2005), Boyd and Hrycaiko (1997), Hagger et al. (2005), Jackson and Marsh (1986) and Weiss, Mcauley, Ebbeck, and Wiese (1990).

In the same manner, perceptions of physical competence appear to increase with level of practice of physical activity. Previous research related to physical self-perceptions show that the practice of physical activity increases self-esteem and self-confidence (Alexander, Nickel, Boreskie, and Searle, 2000; Boyd and Hrycaiko, 1997; Jackson and Marsh, 1986; Weiss et al., 1990). On the other hand, this study indicated that those students who did not engage in sport practice had higher scores in the domains of strength and physical appearance and it was particularly surprising that the regular practice of physical activity did not emerge as a predictor of satisfaction with physical appearance. In their study, Boyd and Hrycaiko (1997) found that the weakest effect on the dimensions of self-concept following the initiation of physical activity for pre-adolescent and adolescent girls pertained to changes in the perception of physical

appearance. These results coincide with those of Marsh (1986) and Marsh and Peart (1988) who also did not find an influence for sport practice on perceptions of physical attractiveness. Fox and Corbin (1989) noted that body attractiveness is a component that is more difficult to predict in relation to the influence of physical activity on students. It is also possible that favourable body images for school aged youth also do not correspond with the likely types of physical changes that accompany physical activity.

The practice of physical activity also does not appear to affect the perceptions of strength held by youngsters. The results of a study by Zaichowsky, Zaichowsky, and Martinek, (1975) indicated that training two times per week did not produce significant effects in shaping the perceptions that youngsters have about themselves or about their performance in activities that require strength. Despite the increase that would likely accompany participation in a physical activity program, the training did not have a significant effect on the other psychological indicators in this study.

With reference to the relationships between the frequency of sport and physical activity practice and the variables that were the object of this study we found that to the extent that sport practice increased that there was also an increase in youngsters' perceptions regarding their competence and self-confidence. The students who practiced more than three times per week were found to be higher in perceived competence and self-confidence than those who engaged in physical activity outside of school on fewer occasions. These results are consistent with the line of research encountered by Balaguer (1998) and Raich, Torras, and Figueras (1996), who found that boys who participated in sport programs more than two times per week showed higher levels of perceived sport competence. Therefore, in connection with the third hypothesis, doing physical activity outside school hours only seems to increase self-perceptions in sports competence and self-confidence.

Finally, these results suggest that differences in physical activity self-perceptions in relation to gender and level of sport practice are likely to contribute to subsequent differences in the motivational profiles of these individuals. In accordance with Li et al. (2005), we believe that students who perceive themselves to be more competent in an activity tend to be more motivated in that activity. As such, future investigations should assess how physical self-perception variables affect students in Physical Education classes and establish learning climates where the social and motivational dimensions are constant for the two sexes. In this sense, it would be appropriate to conduct qualitative studies that set out to establish well-balanced climates for students of both sexes. Furthermore, it would be appropriate to assess how the physical activity practice outside of the school setting can provide a benefit to the physical self-perceptions of students, as well as to examine the influence parents and teachers have with regards to acquiring the different perceptions found in each one of the dimensions of physical self-concept, adapting them to the context of the sample analysed.

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