MALAYSIAN JOURNAL OF

Sport Science and Recreation

CONTENTS

UNIVERSITI TEKNOLOGI MARA

Faculty of Sports Science & Recreation

Volume 1 No. 1

Malaysian Journal of Sport Science and Recreation

Malaysian Journal of Sport Science and Recreation

Volume 1 • No.1 / 2005

FACULTY OF SPORTS SCIENCE AND RECREATION
Universiti Teknologi MARA

Contents

Measuring Perceived Competence and Global Self-Worth in Children: Implications for Australian Boys and Girls in the Physical Domain

Elizabeth Rose
Edith Cowan University
Dawne Larkin
University of Western Australia

Abstract

In this study we examined the validity of the Self-Perception Profile Children (SPPC; Harter, 1985) with 8 to 11 year old Australian girls ($n = 200$) and boys ($n = 180$). We also looked at the relationship between perceived athletic competence and actual movement competence as measured by the MAND (McCarron, 1982). Although some correlations between athletic self-perceptions and actual motor competence were significant, they were low and varied by age and gender. ANOVAs revealed differences across gender and grade. Interactions for physical appearance and global self-worth showed girls' self-perceptions lowered from grade 4 to 6. First and second-order factor analyses for the total sample and the girls subsample supported Harter's model, but the factor pattern for boys differed. The differences found between girls and boys demonstrate the importance of examining their developmental responses separately.

There is growing concern that levels of physical activity in Australian children are declining. As the primary school curriculum becomes increasingly crowded, and exposure to computerized entertainment competes with children's willingness to engage in games and sport, educators and health professionals are now even more aware of the physical and psycho-social implications of sedentary lifestyles in childhood. Understanding and enhancing children's self- perceptions especially in the athletic domain, are likely to be crucial to their motivation and enjoyment in physical activity.

Harter's (1978) Competence Motivation Theory predicts that individuals perceiving high competence in the athletic domain will be more likely than others to participate in physical activity and sport. Harter also predicts that support from significant others as well as actual motor competence will lead to higher self-perceptions that in turn enhance intrinsic motivation to engage in physical activity. Other theorists (Deci & Ryan,1985; Fox, 1997; Griffin & Keogh, 1982; Sonstroem, 1997) provide similar rationales with implications for promoting and encouraging physically active lifestyles in children and youth. While there is considerable support for the relationships among domain specific self-perceptions, the role of significant others, and behaviour (Weiss, Ebbeck, & Horn, 1997; Weiss & Ferrer-Caja, 2002; Weiss & Williams, 2004), support for direct links between actual motor competencies and domain specific self-perceptions are weak to moderate (Fox, 1997). In the interests of furthering understanding of self-perceptions and promoting children's engagement in physical activity, it is important to examine the cross cultural validity of Harter's (1985) Self-perception Profile for Children (SPPC) in the Australian context. While there has been extensive validation of scales designed for Australian children (Marsh & Redmayne, 1994; Marsh & Shalveson, 1985) increasingly researchers are employing scales originally designed for use in the North American context. Harter (1999) emphasizes the importance of considering cultural differences in how children see themselves emerge even among Western industrialized nations. It is also important to validate self-perceptions at the domain specific level and understand the relationships between perceptions of athletic competence and actual movement competence.

Harter's original developmental and measurement framework comprises of multidimensional self-evaluation in the physical, social, and scholastic domains as well as the individual's overall value placed on him/herself. This multidimensional view is strongly supported (Fox & Corbin, 1989; Marsh & Shavelson, 1985) in preference to the earlier unitary trait approaches to self-esteem (Coopersmith, 1967; Piers, 1969). For middle childhood Harter identified five subdomains (athletic competence, physical appearance, social acceptance,

scholastic competence and behavioral conduct). Global self-worth was viewed as separate but affected by domain specific self-perceptions. According to Harter (1988) it is necessary to separate an individual's domain specific perception of their competence from their overall perception of self-worth in order to determine the relationship between competence and global self-worth. Within her model, Harter also considers developmental changes in self-perceptions, distinguishing an increasing number of subdomains from early childhood to adulthood, reporting changes in level of perceived competence for girls and boys across the developmental stages.

More recently Harter (1999) discussed an extension to her model describing two clusters of domain specific competencies that bear a direct relationship to sources of social support. Firstly, there is a cluster comprising physical appearance, athletic competence, and social acceptance influenced by peer feedback. The second cluster, comprising scholastic competence and behavioral conduct, is identified as reliant on adult feedback. Thus the better looking, more likeable and athletically competent one feels, the more support one perceives from peers. The scholastic/ behavioral cluster bears a stronger relationship to parental and teacher support. The more well behaved, the better the scholastic achievement, the more support a child will feel from teachers and parents. There are important implications from her model for encouraging children to remain physically active. If such clusters emerge in an Australian sample then physical educators and sports scientists have greater justification for targeting programs that might increase cooperative engagement in play, games, and sport. Physical competence, likeability by peers, and physical appearance are highly relevant in play games and sport. Crocker, Hoar, McDonough, Kowlowski, and Niefer (2004, p. 208) view Harter's new conceptualization as a call for "integration of sport competence and peer acceptance and friendship research suggesting that this will lead to a better understanding of emotion and motivation in youth sport". In order to promote children's engagement in active lifestyles in and out of school, there is a need for sport and physical education researchers to examine the potential validity of this new model.

Cross-cultural differences are an important consideration when using the SPPC outside the United States. Scales are often used in other countries without establishing local psychometric validity, despite the possibility of cultural differences in the construction of the self. In the Australian context, Trent, Russell, and Cooney (1994) found strong support for the validity of the Self-perception Profile for Adolescents (Harter, 1988). Although there is support for cross-cultural use of the SPPC from other countries (Granleese & Joseph 1993, 1994; Miller,

2000) there is surprisingly little reported on the use of the SPPC with Australian children. To date researchers have generally ignored factor equivalence between boys and girls. Considering different socialization experiences for girls and boys (Coakley, 2004) and consistent reports that girls have lower self- perceptions in the athletic and physical appearance domains (Harter, 1985; see Harter, 1999 for review), it is important that gender differences in factor patterns of domains are examined.

In this study, the major purpose was to examine the psychometric properties of the SPPC and its validity for use with a sample of Australian boys and girls. Within this context we explored Harter's extended model comprising of two clusters of self-perceptions: a) athletic competence, social acceptance and physical appearance, and b) scholastic competence, behavioral conduct, in the SPPC. We assessed criterion-related validity between actual motor competence and perceptions of athletic competence. Additionally we investigated grade and gender differences on domain specific self-perceptions and global self-worth to explore whether the results were similar to those reported by Harter (1985).

METHOD

Participants

The archival database used here was obtained from 380 children from Grades 4, 5 and 6 coeducational classes from three schools ($M = 10.1$ years of age, $SD = 0.94$). There were 180 males and 200 females from predominantly middle class families. More details of the sample are provided in Rose, Larkin, and Berger (1997).

Instrumentation

Scale content. The SPPC (Harter, 1985) was designed for Grades 3 to 6 to measure self-perceptions in five competency domains. The specific domains include athletic and scholastic competence, social acceptance, physical appearance, and behavioral conduct. The global self-worth subscale was designed to be independent of the specific domains. Internal consistency reliability for the total sample is reported elsewhere (Rose et al., 1997).

Question format. Each item consisted of two statements reflecting opposing views of oneself, for example "some children find it hard to make friends BUT for other children it is pretty easy". The child first decided which statement best described

him/herself and then indicated whether that statement was "really true for me" or "just sort of true for me". This option allowed the respondents to qualify their choice of statements. Items written within each domain were counterbalanced so that half of the items were worded with the positive statement on the left and half of the items were worded with the negative statements on the left.

Scoring. Responses were scored on a scale from 1 to 4 where 4 reflected the highest level of perceived competence (that is, the positively worded item is really true for me) and 1 indicated low perceived competence (that is, the negative worded item is relatively true for me).

Procedures

Class groups completed the SPPC in thirty-minute sessions during a regular scheduled class period. Standardized instructions were read aloud to the students to facilitate accurate understanding, careful consideration, and thinking, to alleviate rushing through the items.

Motor competence for each child was measured using the McCarron Assessment of Neuromotor Development (MAND; McCarron, 1982) a battery of 5 fine and 5 gross motor tasks which yields an overall standardised score of motor proficiency called the neurodevelopmental index (NDI). The NDI has a range from 40, the lowest score, to 155, with a mean score of 100 and a *SD* of 15.

Data Analysis

Descriptive statistics and two-way ANOVAs were used to identify Grade and Gender effects in the database. The data were explored to see if the psychometric properties of the SPPC were adequate for boys and girls as well as the total Australian sample. Initial analyses included: a) internal consistency reliabilities using Cronbach's Alpha; and b) Pearson correlations to investigate the relationship between global self-worth and domain specific perceptions. This procedure was also used to explore the criterion-related validity between perceptions of athletic competence and actual motor competence. First order principal component analysis with promax rotation was used to explore whether the original questions from the SPPC loaded on the five factors representing the five subscales identified by Harter (1985). Only criterion loadings of .4 or higher were used to interpret the factor structure. A second-order factor analysis with promax rotation was used to identify whether the variable clusters: a) athletic competence, physical appearance, and social acceptance and b) scholastic competence and behavioral conduct predicted by Harter and colleagues emerged.

RESULTS

Gender and Grade Differences

Means and standard deviations of self-perceptions for girls and boys across grades are presented in Table 1. Two-way Gender x Grade ANOVAs showed gender effects for athletic competence, F (1, 374) =21.88, p < .001 and grade effects with the grade 4 group reporting significantly higher (p < .05) perceptions of athletic competence than the grade 6 group. There was a main effect of gender for physical appearance, F (1, 374) = 20.41, p < .001 further explained by a Gender x Grade interaction, F (2, 374) = 5.36, p < .01 which showed that girls' perceptions decreased with age while boys tended to increase. There was a significant effect for gender for social acceptance, F (1,374)= 7.69, p <. 01, with boys reporting higher perceptions than girls. There were grade effects for scholastic competence, F (2, 374) = 4.30, p < .05. The grade 4 group reported significantly higher (p < .05) perceptions of scholastic competence than the grade 6 group. There was a significant main effect of gender for behavioral conduct, F (1, 374) =13.23, p < .001 and a significant main effect of grade, F (2, 374) = 3.26, p < .05. The girls had higher perceptions of their behavioral conduct than the boys. Again the grade 4 group reported significantly higher (p < .05) perceptions in this domain than the grade 6 group. The ANOVA with global self-worth showed a significant main effect of gender, F (1, 374) = 4.23, p < .05 which was further explained by the Gender x Grade interaction, F (2, 374) = 3.90, p < .05. This interaction showed a similar pattern to that found with physical appearance with the girls' perceptions of physical appearance reducing from grade 4 to grade 6 and the boys' perceptions tending to increase across these grades.

Internal Consistency Reliabilities

The internal consistency reliabilities for the girls and boys groups for the five subscales and global self-worth were generally acceptable. The girls ranged down from .86 for athletic competence, .85 for social acceptance, .83 for scholastic competence, .80 for physical appearance, and .79 for behavioral conduct and global self-worth. The boys ranged down .84 for scholastic competence, .82 for athletic competence, .77 for behavioral conduct, .76 for social acceptance, .72 for global self-worth and a less acceptable .68 for physical appearance. Our findings are generally consistent with the overall internal consistency reliabilities reported by Harter (1985), providing further support for the use of SPPC in an Australian sample.

Table 1

Self-Perception Means and Standard Deviations for Boys and Girls in Grades 4, 5, and 6.

Self-Percept	Grade 4		Grade 5		Grade 6		Overall	
Athletic	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Boys	3.28	(0.67)	3.20	(0.71)	3.15	(0.71)	3.20	(0.70)
Girls	3.01	(0.61)	2.86	(0.77)	2.64	(0.77)	2.86	(0.71)
Total	3.18	(0.64)	3.03	(0.76)	2.88	(0.78)	2.86	(0.74)
Physical Appearance								
Boys	3.02	(0.68)	3.08	(0.59)	3.11	(0.57)	3.07	(0.61)
Girls	3.00	(0.68)	2.75	(0.71)	2.54	(0.70)	2.76	(0.72)
Total	3.01	(0.68)	2.91	(0.67)	2.81	(0.70)	2.91	(0.69)
Social Acceptance								
Boys	2.95	(0.78)	3.20	(0.63)	3.12	(0.56)	3.10	(0.66)
Girls	2.93	(0.83)	2.96	(0.77)	2.76	(0.76)	2.88	(0.79)
Total	2.94	(0.80)	3.08	(0.71)	2.93	(0.69)	2.98	(0.73)
Scholastic								
Boys	2.94	(0.67)	2.80	(0.74)	2.84	(0.72)	2.85	(0.71)
Girls	3.14	(0.63)	2.92	(0.73)	2.72	(0.61)	2.92	(0.67)
Total	3.04	(0.65)	2.86	(0.74)	2.78	(0.66)	2.89	(0.70)
Behavioral Conduct								
Boys	3.06	(0.71)	2.87	(0.56)	2.95	(0.63)	2.95	(0.63)
Girls	3.33	(0.63)	3.20	(0.60)	3.06	(0.60)	3.19	(0.62)
Total	3.21	(0.67)	3.04	(0.60)	3.01	(0.61)	3.08	(0.63)
Global Self-Worth								
Boys	3.26	(0.60)	3.27	(0.60)	3.30	(0.59)	3.28	(0.60)
Girls	3.34	(0.59)	3.14	(0.61)	2.95	(0.67)	3.14	(0.64)
Total	3.30	(0.59)	3.20	(0.61)	3.12	(0.66)	3.20	(0.62)

Relationships Across and Within Domains

The correlation matrix for boys and girls for global self-worth and the specific domains of athletic and scholastic competence, social acceptance, physical appearance, and behavioral conduct is summarized in Table 2. Scores in each domain correlated significantly with global self-worth with physical appearance showing the strongest relationship for both boys and girls.

Table 2
Correlations Between Self-Perceptions for Girls (n = 200) and Boys (n = 180)

	Global		**Athletic**		**Social**		**Appearance**		**Scholastic**	
	boy	girl	boy	girl	boy	girl	boy	girl	boy	girl
Athletic	.46	.44								
Social	.39	.47	.43	.46						
Appear	.63	.70	.37	.45	.40	.40				
Scholastic	.47	.44	.40	.21	.30	.38	.31	.30		
Conduct	.41	.53	.20	.18	.17	.30	.27	.41	.60	.44

The correlation between the motor competence score and perceptions of athletic competence for the total sample was $r = .24$ but there were variations in the relationships across age and gender as shown in Table 3. Although some of the r-values were significantly different from 0 ($p < .01$), they did not show a strong link between perceived and actual competence.

Table 3
Correlations between Perceptions of Athletic Competence and Movement Competence

	Grade 4	**Grade 5**	**Grade 6**	**Total**
Girls	.22	.20	.37**	.28**
Boys	.38**	.16	.15	.20**

**$p < .01$

Factor Analyses

Children's responses to the SPPC were factor analyzed using promax rotations to determine whether a) the resulting subscales were consistent with Harter's (1985) conceptualization; and b) the factor loadings for our Australian sample were similar to that found for the American samples reported by Harter. It was hypothesized that there would be five factors that comprised the scales: athletic competence, scholastic competence, social acceptance, physical appearance, and behavioral conduct. The items pertaining to global self-worth were omitted from the factor analysis because the self-worth judgment is determined in part by the perceived level of competence attained in domains considered important to the individual (Harter, 1985).

The hypothesized factor structure was realized for the total sample revealing five subdomains as found by Harter (1985). These results mirror those of the factor analysis of the girls' data presented in Table 4. The factor analysis of the girls' data was also very stable with just two low cross loadings. The boys' data showed some variation from Harter's original 5-factor solution (see Table 4). The athletic, social acceptance, and physical appearance factors were quite stable although the latter factors included only 5 of the 6 questions considered to measure those domains and there were some cross loadings. The scholastic and behavioral conduct questions loaded on the same factor. The 4th factor loaded across 3 domains, physical appearance, social acceptance, and athletic competence.

Domain Clusters

The second-order factor analysis of the Australian sample supported the variable groupings reported by Harter and colleagues. The athletic, social acceptance and physical appearance factors, with loadings of .87, .76, and .69, respectively, forming the first second-order component and the scholastic and behavioral conduct factors with loadings of .93 and .77 forming the other second-order component. The results from the girls' sample mirrored that of the total sample. However the boys' second-order factor analysis resulted in two quite different second-order components which were a reflection of the differences in the first-order factors. For the boys, the initial second-order component comprised the athletic competence factor, the social/physical factor, and the scholastic/ behavioral conduct factor (.73, .77, and .50 respectively). The other second-order component included physical appearance (.87), social acceptance (.52) and a lower cross loading (.41) on the scholastic/behavioral conduct factor from the initial promax rotation.

Table 4
A Five-Factor Solution for Girls (n = 200) and Boys (n = 180) in Grades 4, 5, and 6.

	Girls					Boys				
	F1	F2	F3	F4	F5	F1	F2	F3	F4	F5
ac9	.834						.640			
ac3	.812						.770			
ac21	.759						.749			
ac15	.724						.685			
ac33	.685						.692			
ac27	.479						.516		.429	
sa8		.823						.765		
sa14		.727							.607	
sa32		.714						.762		
sa26		.674						.566	.523	
sa20		.654						.444		
sa2		.638						.634		
sc25			.774			.733				
sc31			.733			.690				
sc13			.731			.619				
sc1			.704			.698				
sc7			.631			.504				
sc19			.612			.548				
pa22				.741					.513	.473
pa28				.724					.458	.543
pa34				.707				.486		.598
pa4				.676						.618
pa16				.603					.607	
pa10				.425						.570
bc17					.761	.679				
bc11					.719	.608				
bc29					.652	.614				
bc35					.651	.717				
bc23					.651	.584				
bc5					.550	.466				
Eigenvalue	7.9	3.4	2.3	1.7	1.4	7.1	3.2	2.1	1.8	1.4
%variance	26.3	11.2	7.7	5.6	4.8	23.5	10.7	7.0	5.9	4.8

DISCUSSION

Overall the psychometric properties found for Harter's (1985) SPPC with the Australian children were acceptable. While the results reported from analysis of the girl's' data provide further support for the use of the instrument with this group, there were some concerns that emerged with the analysis of the boys' data

The moderate relationships found between global self-worth and all the domain-specific perceptions of competence are consistent with Harter's model. Perceptions of physical appearance had the highest association with global self-worth for both boys and girls and the values were similar to those reported by Harter (.62 to .73; 1985). This relationship is consistent with the view that physical appearance is inextricably related to an individual's self-worth across the lifespan (Fox, 1997; Harter, 1999). Harter terms physical appearance as the "portable self"; and perceptions of attractiveness are "an omnipresent feature of the self" (1999, p. 160). They are the most difficult of all self-perceptions to discount in any attempt to protect one's overall self-worth. The relationship between global self-worth and athletic competence was within the range reported by Harter in 1985 (.30 to .52) but higher than the correlations from the study of older children reported by Granleese and Joseph (1993; 1994). The relationships between global self-worth and social acceptance, behavioral conduct, and scholastic competence were also similar to those reported by Harter (1985). For boys, the lowest relationship was between global self-worth and behavioral conduct whereas for girls it was with both athletic and scholastic competence. Our results with global self-worth are similar to those summarised by Harter (1999) for physical appearance but the boys in our sample relate athletic competence and global self-worth higher than global self-worth and the domains of behavioral conduct and social acceptance. Given cultural differences this is probably not surprising.

The issue of criterion-related validity between perceived physical competence and actual motor competence is somewhat confusing, as folklore has implicitly considered that the two are strongly linked. In contrast to this belief, research with children has shown a low relationship (Boucher, Doescher, & Sugawara, 1993; Goodway & Rudisill, 1997). The low but significant relationship between athletic self-perceptions and actual motor competence found in this study support this earlier research indicating that children's perceptions and actual competence are not well matched. What is interesting in these results is that the changes differ for girls and boys. For the girls, the relationship increases across grades

and although still low it is significant at grade 6 (.37). By contrast, the boys show a decrease in the relationship across grades. Whereas the relationship between actual and perceived motor competence is significant in grade 4 (.38), by grade 6 the relationship is exceptionally low (.15). It appears that the girls' perceptions of competence are becoming more realistic which is consistent with Harter's predictions across grades. In contrast the boys' perceptions become less related to reality. Perhaps these patterns reflect gender stereotypes whereby girls feel more comfortable admitting low motor ability and, by contrast, boys do not. There is a range of findings in relation to perceived and actual motor competence. The studies that have found higher correlations have involved physical perceptions and physical activity that are closely linked (Biddle et al., 1993: Marsh & Redmayne, 1994). For example, Biddle et al. (1993) showed a strong relationship (.75) between the 20m shuttle run and perceptions of physical condition but not perceived strength, while Marsh and Redmayne (1994) reported a correlation of .643 between endurance on the 12 minute run test and endurance self-concept. Perhaps the concepts and measures used to establish criterion-related validity between perceived and actual motor competence were too general in this study.

Consistent with previous research (Harter, 1985; Hergovich, Sirsch, & Felinger, 2004), the results from the present study showed that girls had lower perceptions of their athletic competence and higher perceptions of behavioral conduct than did the boys. Girls also had lower perceptions of their social acceptance. Grade 6 children perceived lower perceptions in the athletic, scholastic, and behavioral domains, supporting other research showing a reduction in self-perceptions with age (Harter, 1985). The interactions indicated boys' perceptions of physical appearance and global self-worth tended to increase from grades 4 to 6 whereas girls' perceptions decreased from grades 4 to 6. Harter (1999) and Fox (1997) have discussed a number of factors that might influence the decrease in girls' perceptions of physical appearance as they approach puberty. The similar pattern found with the decrease in global self-worth for girls may be a reflection of the tight relationship between perceptions of physical appearance and global self-worth. Regardless of efforts to change education policy and practice to promote self-perceptions for all, it appears that socialization practices associated with gender role stereotyping in the larger society remain powerful.

While this study was limited by use of only exploratory factor analysis, the results provided support for the SPPC a priori dimensions with this Australian sample, revealing five subscales: athletic competence, physical appearance, scholastic competence, behavioral conduct, and social acceptance. The SPPC

performed well with data from the girls. However the results from the boys' data differed somewhat from Harter's domains. Although separate athletic competence, physical appearance, and social acceptance factors were apparent in our study, a combined factor emerged that loaded strongly on 2 of the physical appearance questions and 2 of the social acceptance questions as well as having lower cross loadings with questions from other domains. There was no distinction between scholastic competence and behavioral conduct, which formed a single factor. Our unpublished research indicates that when separate factor analyses on the SPPC were carried out with a group of girls and boys who are athletically gifted, this combined behavioral/scholastic factor was also apparent. Harter (1985) has also reported that her Sample D produced this combined factor. Although Harter (1985) provides a developmental explanation, it is possible that contextual factors also contribute to this outcome. For the total sample and the girls' subsample, the clear differentiation between the subscales, indicated by high factor loadings and low non-significant cross loadings support the multidimensional concept of self reported by Harter (1985). While the overall factor analysis points to the applicability of the Harter's (1985) factor structure with our Australian sample it appears to be more appropriate for our girls than for our boys. Factor analyses are rarely reported separately for gender but it appears from our findings that this may be necessary if researchers wish to use the SPPC accurately and appropriately in cultures outside the United States. Harter (1999) recommends that researchers in self-perceptions explore subgroups and profiles of individuals whose scores represent different combinations.

The importance of understanding more about children's self perceptions in terms of relevance to either peers or adults was based on Harter and colleagues (Harter, Marold, & Whitesell, 1992) refinement of her original model. Our findings of 2 variable clusters for the total sample are consistent with those reported by Harter and her colleagues for their combined sample. The separate analyses according to gender showed that the girls mirrored the 2 variable clusters found with the total sample. The second-order factor analysis for the boys was different, reflecting the differences in the initial factor structure. It is important to understand more about these differences between boys and girls and how they influence physical education contexts in order to design interventions and sports settings that enhance peer relations particularly in those with low self-perceptions in the physical domain.

Our overall findings provide strong support for the use of the SPPC with girls in middle primary school. For the boys the athletic competence, social acceptance, and physical appearance factors were quite stable but there was a lack of equivalence

in the factor pattern for behavioral conduct and scholastic competence. Harter's model provides a valuable means from within which children's self-perceptions can be examined. However caution is needed when generalizing validity from combined samples of boys and girls, not only with the SPPC but also with other self-perceptions measures employed in research across the lifespan.

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