Parental Support of Physical Activity Positively Predicts Physical Self-Concept in Young Adolescents

Abstract

Previous research that has examined the association between parental physical activity behavior and physical self-concept in children and adolescents has found inconsistent relationships. This study examined whether perceived parental physical activity practices contributed to the explanation of self-concept and physical self-esteem in adolescents after controlling for the personal characteristics and physical fitness status of the adolescent participants. 1036 secondary education students participated in the study (M = 14.14 yrs., SD = 1.26 yrs.). Beyond the influence of gender, age, body mass index and physical fitness status, previous parental physical activity levels and general support for physical activity involvement explained physical activity self-concept, perceived sport competence and physical self-esteem. Parental physical activity socialization practices were related to physical activity self-concept in a Spanish young adolescent sample. It is concluded that educational and health institutions should provide support for physical activity, particularly in families with limited resources.

Keywords: parental physical activity, physical self-concept, adolescent, fitness

Introduction

Adolescence is a transitional stage in which important physical, cognitive, social and emotional changes take place (Arain *et al.,* 2013; Haugen, Ommundsen, & Seiler, 2013). In order to adapt to such changes, adolescents interact with socialization agents (parents, teachers and peers) to develop greater knowledge about themselves and the world that surrounds them (Bornstein, Jager, & Steinberg, 2013; Lu, Hsu, Wang, Lin, Chou, & Yeh, 2014). The image that individuals construct about themselves is known as the self-concept. Shavelson, Hubner and Stanton (1976) defined the self-concept as the perception that the person possesses about themselves as it is grounded in the interactions and experiences that have been shared with significant others and in relation to the individual's own self-appraisals.

The self-concept is a generic term that is inclusive of various dimensions including emotional, social, academic, physical and familial dimensions (Barnett, Lubans, Salmon, Timperio, & Ridgers, 2017; Borrego-Balsalobre, López-Sánchez, & Pérez-Suárez, 2014; Harter, 1999). Among these dimensions, the physical dimension (appearance, strength and sporting ability among others) have been positively linked to the physical self-concept and to motor coordination (Rodríguez-Fernández, González-Fernández, & Goñi-Grandmontagne, 2013; Vedul-Kjelsås, Sigmundsson, Stensdotter, & Haga, 2012), participation in sport and physical activities (Cooke, Trebaczyk, Harris, & Wright, 2014; Goltz & Brown, 2014) and health-related physical status (Babic, Morgan, Plotnikoff, Lonsdale, White, & Lubans, 2014; Brewer & Olson, 2015; Carraro, Scarpa, & Ventura, 2010).

Recent studies have examined the relationship between physical fitness status and physical self-concept in the adolescent population. For example, Borrego-Balsalobre et al., (2014), found that endurance, strength and flexibility were positively associated with physical appearance, competence and perceived physical capacity in a sample of male and female adolescents aged 14 and 15 years. In a sample of Italian adolescents ages 12 to 15 years, Carraro et al., (2010) found that physical fitness characteristics including strength and cardiovascular endurance were positively and significantly related to sport competence, flexibility, endurance and global physical self-concept. Similar results were obtained by Vedul-Kjelsas et al., (2012). In their study they found that physical fitness status, as measured through long and high jumps, throwing ability, speed and endurance were positively associated with perceived athletic competence and perceived physical appearance in their sample of preadolescent Norwegians.

Researchers have also explored various patterns of family influence and it is relationship to physical self-concept in adolescents (De la Torre-Cruz, Ruiz-Ariza, López-García and Martínez-López, 2015), but the findings from this research have not been entirely consistent. Bois, Sarrazin, Brustad, Trouilloud and Cury (2005) concluded mothers´ perception of their child´s physical competence was related to children´s perceived competence, and subsequent time spend in physical activity. In the same vein, Garcia and Gracia (2006) and De la Torre-Cruz et al., (2015) found that physical self-concept appraisals were more favorable in boys than for girls and attributed this finding to parental socialization practices that were more democratic and permissive. Nonetheless, the studies by Donaldson and Ronan (2006) and Martínez and García (2007) did not reflect these differences in parental socialization style.

Some more consistent findings have emerged from that reveal differences in physical self-concept in relation to personal characteristics. Males generally have been found to hold more favorable assessments across the distinct dimensions of physical self-concept than do females (Çaglar, 2009; Gentile, Grabe, Dolan-Pascoe, Twenge, Wells, & Maitino, 2009; Klomsten, Skaalvik, & Espnes, 2004; Liu & Gill, 2011). However, as children age, particularly during the transition phase between primary and secondary school, their physical self-perception tends to become less favorable, particularly in relation to sport competence, coordination, flexibility and general self-concept (Babic et al., 2014; Hamari, Heinonen, & Aromaa, 2017; Labbrozzi, Robazza, Bertollo, Bucci, & Bortoli, 2013). Similarly, higher indices of body mass (BMI) are negatively related to physical self-concept and its components (O´Dea, 2006; Suchert, Hanewinkel, & Isensee, 2016; Voelker, Reel, & Greenleaf, 2015).

Despite the current knowledge in this area of study, researchers have not yet conducted investigations relative to the influence of parents' physical activity practices as they relate to their child's physical self-concept during adolescence. As such, this study intended to examine the how well the physical activity behaviors and practices of parents predicted self-concept and physical self-esteem in adolescents while controlling for relevant personal characteristics (gender, age and BMI) and physical fitness status (speed, strength and aerobic capacity).

Method

Participants

A total of 1036 secondary education students between the ages of 12 and 16 years (M = 14.14 yrs., SD = 1.26 yrs.), who attended one of 12 educational centers took part in

this study. 17 of these individuals had extreme or outlying scores on one or more of the variables and their data was not included in further analyses. Consequently, the sample consisted of 1019 participants (538 females, 52.8%). The mean weight of the sample was 58.39 kilograms (*SD* = 13.39) and the mean height was 1.63 meters *(SD* = .86). Individual height and weight values were used to calculate body mass index in relation to the formula devised by Quetelet [BMI = weight (kg) /height (m^2)]. The mean BMI value obtained for the sample was 21.86 (*SD* = 4.09). Significant gender differences favoring males were found in body weight [*M* = 61.75 vs. 55.35; *t*(1018) = 7.98, *p* < .001] and height [*M* = 1.67 vs. 1.59; *t*(1018) = 15.11, *p* < .001], but not in BMI [*M* = 22.06 vs. 21.69; *t*(1018) = 1.48, *p* > .05].

Procedure

Data were collected in the spring of 2014. The purpose of the study was discussed with the administrators in the school districts involved and approval of the project was requested. Mothers, fathers and legal guardians all were required to sign a consent form authorizing the participation of their child in the study. The study was approved by the Bioethics Committee at the author's university (university name blinded). Anthropometric measures, physical fitness assessments and the completion of the questionnaires were conducted during physical education classes and under the supervision of one of the researchers. The procedures were adjusted to conform to the legal requirements of clinical investigations with human participants (*Royal Decree 223/2004* regarding clinical trials), legislation pertaining to the protection of data (*Organic Law 15/1999*) and the directives of the Declaration of Brazil (2013).

Instruments

Anthropometric and physical fitness assessments. Weight and height were measured through the ASIMED® Elegant Type B – Class III model scale and the SECA® 214 instrument for portable telemetry. During assessment of height and weight, students were shoeless and dressed in lightweight clothing. Body mass index was computed through the equation proposed by Quetelet: BMI = weight (kg) /height (m^2). The ALPHA fitness protocol was used to assess the physical fitness status of the participants. The procedure itself and its reliability had been described by Ortega, Ruiz, Castillo, & Sjöströsm (2008) and Ruiz et al., (2009). The specific tests conducted included: *long jump* to assess explosive strength in the lower extremities and the jump was assessed using a stationary or static starting position. The distance was computed in centimetres from the heel at landing closest to the takeoff line. The better of two jumps was retained. *Aerobic capacity* was assessed through the 20 metre down-and-back running test (Leger, Mercier, Gadour, & Lambert, 1988). The test consists of covering a specific distance between two lines separated by 20 metres on a timed signal. The mark registered (stretches) was the performance prior to the attempts that could not be completed. *Running speed*: A 4 x 10 metre speed test was used in which the participant must cover a distance of 10 meters between two lines on four consecutive occasions. The velocity is calculated in terms of metres/second.

Measures of parental physical activity involvement: Children's perceptions of parental influence in physical activity were assessed through the *Parental Influence on Physical Activity Scale–Child Version* (Jago, Fox, Page, Brockman, & Thompson, 2009). The scale consists of 14 items that represent four factors or subscales: *general parent support* (e.g., "the adults that I live with on a weekend day drive me to sport clubs");

current parental physical activity ("the adults that I live with on a weekday take part in lots of physical activity"); *past parental physical activity* ("the adults that I live with on a weekday used to take part in lots of physical activity but they don't anymore"); and *guiding support* ("the adults that I live with on a weekday encourage, or tell me, to be physically active"). The participants evaluated their mother's and father's behavioral practices separately and responded along a four-point Likert scale format anchored by "1" ("completely disagree") to "4" ("completely agree"). Since differences typically did not exist in the rating of mothers' and fathers' support across the sample, a mean value for the two parents was calculated for each dimension. The internal consistency of the measure for each of the subscales ranged from α = .84, (*current parental physical activity*) and .88 (*general parental support*).

Physical Self-Perception: For the assessment of physical self-concept the Physical Self-Description Questionnaire–Short Form (*PSDQ-S*; Marsh, Martin, & Jackson, 2010) was used. This scale is comprised of 40 items that assess nine specific components of the self-concept (*Physical Activity, Appearance, Body Fat, Coordination, Endurance, Flexibility, Health, Sport, Strength, and two general scales: Global Physical Self-Concept and Global Self-Esteem*). Participants respond to a 6 point Likert-type format with response categories that range from "1" ("totally false") to "6" ("totally true") in relation to their self-assessment. A higher value corresponds with a more favorable self-perception. For the purposes of this study, the two dimensions that are most strongly related to physical activity practice and physical self-concept were utilized. The Physical Activity dimension (four items, α = .89) is defined as the individual's perception that they have of themselves as a physically active person (e.g., "I often do exercise or activities that make me breathe

hard"). The sporting competence dimension (four ítems, α = .86) refers to the individual's physical condition and ability in the practice of physical activity and sport (e.g., "I am good at most sports"). Finally, physical self-esteem dimension (four items, α = .79) includes global self-perception assessments (e.g., "I feel good about who I am and what I can do physically").

Data Analysis

Descriptive statistics are provided in the form of means and standard deviations as well as Pearson correlation coefficients for the personal variables (other than gender), physical fitness scores, parental influence dimensions, and physical self-concept dimensions. A multiple hierarchical regression analysis was conducted to determine the amount of variance that could be explained in physical self-concept and physical self-esteem through the entry of four separate blocks of variables into the analysis in the following order: a) personal characteristics that included gender, age, and BMI relative to age and gender; physical fitness variables, that included running speed, long jump distance and aerobic capacity; c) current and previous parental physical activity practices; d) and global and guiding support provided by the parents for physical activity. Significance levels were set at $p < .05$ for each analysis. The analyses were conducted using IBM SPSS (20.0) for Windows.

Results

Descriptive statistics: Means and standard deviations for all of the variables are presented in Table 1. Correlational analyses revealed that participants' age was significantly and positively related to each physical fitness characteristic other than BMI, in which case the relationship was negative. Physical fitness status was significantly and

positively related to physical self-concept. Each of the physical fitness indices was positively related to perceived parental support for the practice of physical activity. Finally, current parental physical activity and perceived general parental support was positively and significantly related to the various physical self-concept dimensions (r = .25, p < .01, r = .23, p < .01 y r = .17, p < .01 for current parental physical activity and (r = .48, p < .01, r = .41, p < .01 and r = .27, p < .01, for general support). As such, a higher level of parental support was associated with a greater level of health-related physical fitness including a more favorable physical self-image (see Table 1).

Insert table 1, aprox. here

Hierarchical multiple regression analysis: To examine the predictive capacity of the sets of personal characteristics, physical fitness variables and parental influence variables of the physical self-concept of the adolescents, three separate hierarchical multiple regression analyses were conducted. The variables were introduced into this analysis in four blocks: personal characteristics (gender, age and BMI); physical fitness characteristics (speed, explosive force, and aerobic capacity); parental modeling behavior (current and previous parental physical activity behavior); and parental support (global and guiding support) for the practice of physical activity. The assessment of the unique contribution of each of the predictors relative to physical self-concept was calculated through standardized regression coefficients. The results revealed that participants' age and gender, explosive force (long jump distance), current and previous parental physical activity behavior and global support significantly explained physical activity self-concept,

perceived sporting competence and physical self-esteem in the adolescents. In addition, aerobic capacity contributed to the prediction of the first two dimensions (physical activity self-concept and sporting self-concept) whereas BMI contributed to the explanation of global physical activity self-concept. The final models that included the four sets of variables explained 30.7% of the variance in the values of physical self-concept for the practice of physical activity [R = .55, R^2 = .31; $F(10, 1008) = 44.71$, $p < .001$]; 31.2% of the variance in perceived sporting competence [R = .56, R^2 = .31; F(10, 1008) = 45.78, p < .001]; and 17.1% of the variance in physical self-esteem [R = .41, R^2= .17; F(10, 1008) = 20.79, p < .001]. The inclusion of each block of variables significantly improved the predictive explanation of the various self-concept components. The variables of age and previous parental physical activity (as well as BMI on general physical self-concept) were negative predictors whereas gender (males), explosive force and global perceived parental support contributed positively to the explanation of various characteristics of self-concept. Table 2 provides a detailed summary of these results.

Insert table 2, aprox. here

Discussion

This study examined the extent to which various family physical activity practices were related to the explanation of diverse self-concept and physical self-esteem outcomes in secondary education students while accounting for personal characteristics (gender, age and BMI) and physical fitness status. The results indicate that the perceptions that younger adolescents have of the previous physical activity practices of their parents along with the

general parental support provided (payment of fees, transportation to sites and encouragement provided) contributed to explaining the adolescents' own self-image as physically active and competent in the practice of physical activity when personal characteristics and physical fitness status had been previously controlled.

Specifically, females and older adolescents had less favorable perceptions of their physical activity and sport competence. These results coincide with previous investigations that have found that physical self-concept and their associated dimensions tend to be lower in females than in males (Çaglar, 2009; Gentile et al., 2009; Inchley, Kirby, & Currie, 2011). In addition, higher levels of BMI were also associated with poorer physical self-appraisals. In accordance with other researchers, these findings indicate that issues arise when there is greater discrepancy between one's own body image and the socially idealized body image (Babic et al., 2014). On the other hand, greater physical capacity, in terms of force and aerobic capacity, predicted a more positive physical self-image and a more favorable perception of sport competence. These findings are consistent with previous studies (Borrego-Balsalobre et al., 2014; Gestsdottir, Savansdottir, & Ommundsen, 2016; Vedul-Kjelsås et al., 2012) in that long jump distance and cardiovascular endurance were positively associated with perceptions of sport competence, physical appearance, flexibility, general physical self-concept and body image.

Parental physical activity influence predicted physical self-concept and physical self-esteem after controlling for the personal characteristics and physical fitness levels of these adolescents. Specifically, the extent to which the young people perceived that their parents had been physically active in the past, as well as the extent of parental support for their children's physical activity involvement, explained roughly 10% of the variance in

physical activity self-concept and perceived sport competence. It seems somewhat surprising that previous physical activity levels of the parents were associated with lower levels of physical self-perceptions in youth. One possible explanation for this result can be found in the arguments provided by Heitzler, Martins, Duke and Huhman (2006). These authors have suggested that physically active parents can dissuade their children from physical activity as opposed to stimulating their physical activity interest and involvement because parents can cause anxiety and even thoughts of dropout, due to the high parental standard. Along this same line, Davison and Deane (2010) concluded that adolescent females whose parents insist on physical activity involvement to reduce body weight experience lesser enjoyment and greater concern as a consequence of this focus. To the contrary, global support provided by parents contributes in a favorable way to self-concept and physical self-esteem. Similarly, perceived instrumental support was associated with higher levels on the self-concept dimensions.

These findings are consistent with those previously obtained by other researchers (Cheng , Mendonça, & de Farias-Júnior, 2014; Schoeppe, Liersch, Röbl , Krauth, & Walter, 2016; Silva, Lott, Mota, & Welk, 2014; Yao & Rhodes, 2015). These studies found that various forms of parental support, including praising participation, paying sport fees and providing transportation were associated positively with perceived self-efficacy, motivation and frequency of sport and physical activity engagement.

The results of this study have important educational and health implications for youth given the role of a favorable physical self-concept in contributing to physical activity involvement (Babic et al., 2014). Nonetheless, it is not certain whether physical activity involvement shapes self-concept or vice versa. In either case, the findings from this study

have suggested that favorable forms of parental influence contribute to the enhancement of various physical self-concept dimensions and physical self-esteem and increase the probability of participation in sport and physical activity practices. The directional nature of these relationships still need to be identified. Meanwhile educational and health institutions ought to encourage parental support toward physical activity practice in the family and provide the resources necessary to remove time and economic barriers to physical activity (Stearns, Rhodes, Ball, et al., 2016; Verloigne, Veitch, Carver et al., 2014).

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Table 1.

Average values, standard deviation and correlations between the different quantitative variables within this study.

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
Age (years)	14.14	1.26											
BMI (kg/m^2)	21.83	4.02	.09**										
Speed (metres/second)	3.28	.33	-.20**	.18**									
Long jump (cm)	149.29	30.19	.27**	-.21**	-.74**								
Aerobic capacity (stretches)	5.00	2.35	.14**	-.29**	-.57**	.64**							
Current parental physical activity practice (1 - 4)	1.96	.76	-.13**	-.03	-.05	.02	.05						
Past parental physical activity practice (1 - 4)	1.92	.90	-.06	.01	-.06*	.05	.05	.15**					
General parental support (1 - 4)	2.54	.77	-.10**	-.02	-.23**	.19**	.26**	.52**	.23**				
Guiding parental support (1 - 4)	2.16	.98	-.08*	.03	-.02	-.01	.04	.33**	.27**	.29**			
Physical activity factor (1 - 6)	3.76	1.52	-.05	-.03	-.28**	.31**	.33**	.25**	.05	.48**	.16**		
Sporting competence factor (1 - 6)	3.97	1.30	-.09**	-.11**	-.35**	.39**	.36**	.23**	.04	.41**	.13**	.74**	
Physical self-esteem factor (1 - 6)	4.51	1.20	-.06*	-.20**	-.22**	.27**	.21**	.17**	-.02	.28**	.05	.50**	.66**

*N = 1019. * p < .05. ** p < .01.*

Table 2.

Multiple hierarchical regression analysis for physical self-concept, sporting competence and self-esteem measures.

	ß	SEß	*p*	ß	SEß	*p*	ß	SEß	*p*	ß	SEß	*p*
Physical activity practice												
Step 1: Personal variables												
Sex	.368	.279	.001	.071	.454	.058	.080	.443	.028	.069	.414	.044
Age	-.067	.146	.027	-.140	.147	.001	-.107	.145	.001	-.077	.136	.006
BMI	-.034	.184	.255	.081	.192	.010	.076	.187	.013	.045	.175	.120
Step 2: Physical fitness												
Speed				.044	.854	.337	.036	.832	.419	-.012	.779	.781
Long jump				.170	.010	.001	.166	.010	.001	.172	.009	.001
Aerobic capacity				.203	.103	.001	.188	.100	.001	.113	.095	.002
Step 3: Parental modeling												
Current physical activity							.219	.058	.001	.011	.064	.721
Past physical activity							-.012	.097	.664	-.078	.094	.005
Step 4: Parental support												
General support										.387	.044	.001
Guiding support										.056	.090	.054
	R^2 = .081			R^2 = .156	ΔR^2 = .074 p < .001		R^2 = .202	ΔR^2 = .046 p < .001		R^2 = .307	ΔR^2 = .105 p < .001	
Sporting competence												
Step 1: Personal variables												
Sex	.319	.307	.001	.067	.371	.062	.077	.364	.029	.069	.352	.043
Age	-.110	.121	.001	-.206	.120	.001	-.178	.119	.001	-.157	.115	.001
BMI	-.104	.154	.001	.028	.157	.350	.024	.153	.407	.002	.149	.942
Step 2: Physical fitness												
Speed				.059	.698	.180	.053	.683	.220	.019	.662	.646
Long jump				.275	.008	.001	.270	.008	.001	.274	.008	.001
Aerobic capacity				.159	.084	.001	.146	.082	.001	.093	.080	.011
Step 3: Parental modeling												
Current physical activity							.196	.047	.001	.050	.054	.118
Past physical activity							-.030	.080	.276	-.076	.080	.006
Step 4: Parental support												
General support										.281	.037	.001
Guiding support										.038	.076	.185
	R^2 = .121			R^2 = .223	ΔR^2 = .102 p < .001		R^2 = .260	ΔR^2 = .037 p < .001		R^2 = .312	ΔR^2 = .053 p < .001	
Physical self-esteem												
Step 1: Personal variables												
Sex	.216	.289	.001	.104	.366	.006	.117	.362	.002	.109	.358	.004
Age	-.075	.114	.013	-.126	.119	.001	-.106	.118	.001	-.091	.117	.003
BMI	-.199	.145	.001	-.145	.155	.001	-.148	.153	.001	-.163	.151	.001
Step 2: Physical fitness												
Speed				-.005	.689	.920	-.007	.680	.877	-.032	.672	.481
Long jump				.211	.008	.001	.207	.008	.001	.209	.008	.001
Aerobic capacity				.001	.083	.978	-.010	.082	.806	-.048	.082	.227
Step 3: Parental modeling												
Current physical activity							.159	.047	.001	.056	.055	.109
Past physical activity							-.074	.079	.013	-.103	.081	.001
Step 4: Parental support												
General support										.215	.038	.001
Guiding support										.001	.077	.986
	R^2 = .090			R^2 = .115	ΔR^2 = .025 p < .001		R^2 = .142	ΔR^2 = .027 p < .001		R^2 = .171	ΔR^2 = .029 p < .001	