



Adolescent athletes' physical self-concept mediates the relationship between parental expectations and athletes' sports achievement

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We examined the relationships between parental expectations and the physical self-concept and sports achievement of their adolescent children, and investigated the mediating role of the adolescent athletes' physical self-concept in the relationship between parental expectations and adolescents' sports achievement. A survey was conducted with 385 junior high school students taking physical education classes in Taiwan. The results show that parental expectations had a positive effect on adolescents' physical self-concept, and that adolescents' physical self-concept had a positive effect on their sports achievement. In addition, the results revealed a full mediating effect, indicating that higher expectations by parents that their children would get high scores and perform better improved adolescents' physical self-concept, which, in turn, positively influenced their sports achievement. Our findings confirm the importance of parental expectations for the sports achievement of adolescents, and highlight the importance of individual physical self-concept for the achievement of adolescent athletes.

Keywords

competence beliefs;
parental expectation;
physical self-concept;
sports achievement;
physical education;
adolescent athlete

Family and school constitute important developmental contexts for children's psychological and intellectual capital (Bronfenbrenner & Morris, 2006; Hill & Taylor, 2004; Schneider & Coleman, 1993). The environment provided by and expectations of families are well-recognized as essential factors in the development of children's central values, personality traits, self-concept, and behaviors. In particular, parents' expectations are a crucial factor that can affect children's self-concept, academic achievement, and future development (Froiland & Davison, 2014; Hughes et al., 2013; Lazarides et al., 2016; Marsh et al., 2005; Neuenschwander et al., 2007; Yamamoto & Holloway, 2010).

A growing body of literature indicates that parental expectations and involvement promote children's academic success and positive behavior (Froiland & Davison, 2014; Neuenschwander et al., 2007; Rubie-Davies et al., 2010; Yamamoto & Holloway, 2010). Most studies have suggested that parental expectations are crucial to the development of children's psychological and intellectual capital, and to their learning outcomes (Bronfenbrenner & Morris, 2006; Fredricks & Eccles, 2005; Froiland & Davison, 2014; Jowett & Cramer, 2010; Neuenschwander et al., 2007; Yamamoto & Holloway, 2010). However, most previous researchers investigated the influence of parental expectations on the performance of academic-oriented students (cognitive learning; e.g., mathematics, languages) rather than investigating the outcome for those with other learning goals, such as sporting achievement (motor-skill learning). Little attention has been paid to how parental expectations impact children's sports achievement. Therefore, in this study we addressed these issues by focusing on the role of adolescent athletes' physical self-concept as a mediator of the

relationship between parental expectations and adolescents' sports achievement.

The expectancy–value model of achievement was proposed by Eccles and Wigfield (2002) to predict performance based on expectancies and ability self-concept. Because there is a scarcity of studies on the relationships between parental expectations, adolescent athletes' physical self-concept, and sports achievement, we adopted the expectancy–value model of achievement (Eccles & Wigfield, 2002). This study's contributions are threefold. First, we examined the relationship between parental expectations and adolescents' physical self-concept. Second, we examined the relationship between adolescents' physical self-concept and their sports achievement. Third, we investigated the mediating role of adolescent athletes' physical self-concept in the relationship between parental expectations and adolescent athletes' sports achievement. Above all, we expect our paper to serve as a potentially valuable reference for the future study and practice of sport education.

Literature Review and Hypotheses

Sports Academies in Taiwan

High school sports academies are institutions with special programs in Taiwan's education system. In a sports academy, also known as a physical education class (PEC), adolescent student athletes study together in the same class. PEC students learn academic subjects, such as mathematics, languages, and science, and also receive training in sports, such as basketball, baseball, and tennis. In other words, they have the dual role of students and athletes (Stambulova & Wylleman, 2015). Students in a PEC generally have between 10 and 15 hours per week of sports classes for learning and training. The number of hours increases during the summer and winter breaks. Talented student athletes are recruited into the PEC program and are trained for the Olympic and Asian Games. According to sports administration statistics collected by Taiwan's Ministry of Education (2017), the number of adolescent student athletes in PECs continues to increase, and 39.39% of junior high schools in this country offer PEC programs.

The sports achievement of students in PEC programs, aside from affecting their prizes, subsidies, and qualifications to become a player in a national team, also significantly impacts on their pursuit of further study at high school or university, and their future career development. Indeed, those with outstanding sports achievement can be admitted into university without passing an entrance examination, or can acquire qualifications for a job or become a coach after retirement as a player/athlete. As a result, sports achievements are considered a focal factor for pursuing further study and for the career development of students in PEC programs. Therefore, the issue of how to improve achievement is important in the sports field. Until now, relevant scholarly work has been focused primarily on sports training, coach leadership, and sports psychological skills (Kao & Tsai, 2016; Marsh & Perry, 2005; Verner-Filion et al., 2017). To the best of our knowledge, no research has been conducted in which the perspective of family influence has been examined. To fill this gap in the literature, we focused on parental influence on adolescents' sports achievement.

Parental Expectations and Adolescent Athletes' Physical Self-Concept

Parental expectations are defined as parents' evaluation and expectations of their children's behaviors, performance, and future achievements (Coleman, 1988; Neuenschwander et al., 2007). This term also refers to parents' anticipation of their children's academic success or progress (Yamamoto & Holloway, 2010). Higher parental expectations are defined in this study as parents holding stronger expectations that their children will gain high scores, and showing a higher degree of willingness to ask their children to obtain a better performance (Long & Pang, 2016). According to the expectancy–value model of achievement (Eccles & Wigfield, 2002), people's behavior and values are strongly influenced by others' expectations; in particular, expectations from significant others are a primary reference source of individuals' behavior. Parents are often among children's closest loved ones and role models. Through daily interaction with their

children, parents gradually instill their expectations, attitudes, beliefs, values, and concepts into them. Parents' beliefs about and attitudes toward their children are crucial for constructing children's self-perceptions, perceived competence, and behaviors (Collins & Barber, 2005; Eccles, 1983).

In the context of education, parental expectations influence students' competency beliefs (e.g., self-concept, self-efficacy), performance, and achievement (Ma et al., 2018; Senler & Sungur, 2009). Most prior research has demonstrated that parental expectations play a critical role in children's physical self-perception. For example, Jowett and Cramer (2010) pointed out that young athletes' physical self-descriptions (skill development, body shape, physiological competence, mental competence) were positively correlated with the quality of their relationships with their coaches and parents. Furthermore, Fredricks and Eccles (2005) found that parental expectations were a determinant of children's self-evaluation of their athletic ability: When parents had higher expectations of their children, children were more easily encouraged to have a positive physical self-concept. Consistent with the findings of previous studies (Collins & Barber, 2005; Fredricks & Eccles, 2005; Jowett & Cramer, 2010), we proposed that higher parental expectations would have a positive influence on adolescent athletes' physical self-concept.

Physical Self-Concept and Sports Achievement

Self-concept is defined as a mental representation of how individuals value themselves, including self-perceptions of competency and self-worth, which can influence their achievement behavior and task choices (Marsh, 1990). Rather than genetic or innate ability, individuals' self-evaluation is based on their experiences, attitudes, and the expectations of their significant others (e.g., parents or teachers), and is gradually developed through self-observation, social comparison, and cognitive experience (Fox, 2002; Marsh, 1990; Marsh & Shavelson, 1985; Shavelson et al., 1976). One aspect of self-concept particularly related to sports participation and performance is *physical self-concept*, defined as individuals' perception of themselves in terms of body strength, attractiveness, and other aspects in the physical domain (Fox, 2002; Fox & Corbin, 1989; Marsh & Redmayne, 1994). Adolescents are in a stage of physiological and psychological development when they start to recognize who they are, work out what they can do, and form expectations of the societal roles that they might play in the future. Adolescence is, therefore, a significant phase in regard to the development of positive self-concept (Erikson, 1963; Wuerth et al., 2004).

Self-concept plays an important role in learning achievement (Pajares & Schunk, 2001); specifically, children's ability to perceive themselves enables them to deal more effectively and more positively with difficult or challenging tasks (Eccles, 1983). Additionally, it has been shown that self-concept positively predicts academic achievement (Hascoët et al., 2020; Neuenschwander et al., 2007). Moreover, in a systematic review and meta-analysis the results revealed a significant association between children's and adolescents' physical self-perception and physical activity (Babic et al., 2014). Some studies have shown that physical self-concept is positively related to sports performance (Marsh & Perry, 2005; Marsh & Redmayne, 1994; Shapiro & Martin, 2010; Wiesmann et al., 2008). For example, Marsh and Perry (2005) conducted research with elite swimming athletes, and found that athletes with a stronger self-concept tended to perform better than did those with weaker self-concept. On the basis of the above findings, we proposed that physical self-concept would have a positive influence on sports achievement.

Physical Self-Concept as a Mediating Variable

In the expectancy–value model of achievement, Eccles and Wigfield (2002) pointed out that parental expectations can enhance children's competence beliefs (self-concept), through children's interactions with their parents while the beliefs and norms that are essential to parents are conveyed to them. This, in turn, influences children's academic achievement. Some studies have also indicated that children internalize their parents' expectations and values. Long and Pang (2016) reported that parents' education and expectations predicted children's academic achievements, and Lazarides et al. (2016) indicated that parental expectations impact on adolescents' educational aspirations. Moreover, empirical research has demonstrated that

parental expectations are associated with children's perceptions of their academic skills and with their ability to learn new concepts, and that these self-perceptions are related to achievement on tests (Benner & Mistry, 2007). Similarly, Neuenschwander et al. (2007) used the expectancy–value model of achievement with U.S. and Swiss samples to examine the effect of parental expectations on students' self-concept and achievement. Their results revealed that adolescents' self-concept mediated the effect of parental expectation on academic outcomes in both of these Western countries. Therefore, self-concept can be considered a critical mediator of the relationship between parental expectations and adolescents' academic achievement.

Previous studies relevant to sport performance have shown that parental expectations positively affect physical self-concept (Fredricks & Eccles, 2005; Jowett & Cramer, 2010), and that individuals' physical self-concept is positively associated with their sport performance (Marsh & Perry, 2005; Marsh & Redmayne, 1994; Shapiro & Martin, 2010). Thus, parental expectations may enhance children's physical self-concept, which, in turn, could have positive effects on sport performance. On the basis of the expectancy–value mode of achievement (Eccles & Wigfield, 2002) and the findings of previous studies (Benner & Mistry, 2007; Fredricks & Eccles, 2005; Marsh & Perry, 2005), we proposed that parental expectations would be associated with adolescent athletes' sports achievement through the mediator of adolescents' physical self-concept.

The purpose of this study was to investigate the relationships between parental expectations, adolescents' physical self-concept, and sports achievement among adolescent athletes enrolled in PECs in Taiwan. We proposed the following hypotheses:

Hypothesis 1: Parental expectations will positively predict adolescent athletes' physical self-concept.

Hypothesis 2: Adolescent athletes' physical self-concept will positively predict their sports achievement.

Hypothesis 3: There will be an indirect effect of parental expectations on adolescent athletes' sports achievements through the mediator of adolescent athletes' physical self-concept.

Method

Participants and Procedure

All procedures performed in the study were in accordance with the ethical standards for research with human subjects. The participants were 385 adolescent student athletes (231 boys, 154 girls) in 15 PEC classes at eight different schools in Taiwan. The average age of the participants was 14.90 years ($SD = 0.81$, range = 12–16 years). There were 209 (54.3%) who specialized in a physical contact sport (e.g., basketball and handball), and 176 (45.7%) who played a noncontact physical sport (e.g., badminton, swimming) or were track and field athletes. Participants engaged in sport competition at various levels: 36.3% competed at the school level, 26.5% at the county level, 29.1% at the national level, and 8.1% internationally.

The cluster sampling technique was used with the classes as the main sampling unit. Informed consent was obtained from the parents or legal guardians of the students in the selected classrooms. Students were informed that their participation in this study was voluntary, and that their responses would be kept confidential. They were also informed of their right to refuse or stop participation at any time without repercussions. A paper-and-pencil survey was used to gather data on demographic characteristics, parental expectations, physical self-concept, and sports achievements. It took 15–20 minutes to complete the survey.

Measures

Parental Expectations

We used 14 items adapted from Neuenschwander et al. (2007) and translated into Chinese to measure athletes' perception of parental expectations. First, an associate professor with a major in English translated the measures into Chinese. Next, the authors modified the Chinese version and examined the clarity of

wording and meaning of all items. Finally, an expert panel was requested to assess these measures to ensure content validity. A sample item is “My parents care about my sporting performance.” Responses are made on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Confirmatory factor analysis results provided support for a one-factor structure, chi square (χ^2) = 202.44, degrees of freedom (df) = 73, χ^2/df = 2.77, comparative fit index (CFI) = .93, Tucker–Lewis index (TLI) = .92, standardized root mean square residual (SRMR) = .06, root mean square error of approximation (RMSEA) = .07; all the standardized factor loadings were greater than .57 ($p < .01$); and Cronbach’s alpha was .86.

Physical Self-Concept

The Physical Self-Description Questionnaire developed by Marsh et al. (2002) was used to assess student athletes’ overall physical self-concept. The Chinese version of the scale was translated by Wang and Cheng (2016) and consists of four items (e.g., “I outperform most of my friends with regard to sports performance”). Participants respond using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Confirmatory factor analysis results provide evidence for a one-factor structure, χ^2 = 9.93, df = 2, χ^2/df = 4.97, CFI = .98, TLI = .95, SRMR = .02, RMSEA = .08; all standardized factor loadings were greater than .50 ($p < .01$); and Cronbach’s alpha was .80.

Sports Achievement

We adapted the four-item Academic Achievement Questionnaire (Chen et al., 2015) to focus on student athletes’ sports achievement. Three sports education scholars and coaches reviewed the clarity of wording and semantic content of the items. A sample item is “I have good achievements in my representative sports”). Responses are made on 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Confirmatory factor analysis results provide evidence for a one-factor structure, χ^2 = 2.83, df = 2, χ^2/df = 1.42, CFI = 1.00, TLI = 1.00, SRMR = .01, RMSEA = .01; all standardized factor loadings were greater than .62 ($p < .01$); and Cronbach’s alpha was .81.

Data Analysis

Statistical calculations and data analysis were carried out using Mplus 7.0. We calculated descriptive statistics, verified the reliability and validity of the scales using confirmatory factor analysis, and confirmed the fit of the measurement model. The hypotheses were verified using structural equation modeling and the significance of both direct and indirect effects was tested by executing a bootstrapping analysis with 5,000 resamples to generate 95% bias-corrected confidence intervals (CIs; Shrout & Bolger, 2002). To control for potential confounding factors, in line with previous research (Akben-Selcuk, 2017; Fredricks & Eccles, 2005; Ma et al., 2018; Marsh & Perry, 2005) we treated participants’ age and gender as covariates.

Results

Descriptive Statistics and Correlation Analysis

Descriptive statistics and correlation coefficients are presented in Table 1, showing that the scores for the variables of parental expectations, physical self-concept, and sports achievement were greater than the average of 3.50. Regarding the correlation analysis, parental expectations were significantly and positively correlated with both physical self-concept and sports achievement. Physical self-concept also had a significant positive correlation with sports achievement. These results suggest that the study variables were mutually correlated, which is consistent with prior research findings and the hypotheses of this study.

Table 1. *Descriptive Statistics and Correlation Coefficients for Study Variables*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Parental expectations	3.95	0.48				
2. Physical self-concept	3.29	0.60	.40**			
3. Sports achievement	3.61	0.67	.18**	.51**		
4. Gender	1.40	0.49	-.15**	-.16**	.09	
5. Age	14.90	0.81	-.09	.11*	.22**	.07

Note. * $p < .05$. ** $p < .01$.

Testing the Structural Model and Hypotheses

The overall absolute skewness of the observed variables in this study ranged from .04 to .81 (ideal fit < 2.00), and their kurtosis ranged from 0.70 to 1.13 (ideal fit < 8.00); Kline, 2005); thus, the research data could be assessed by means of maximum likelihood estimation. According to the analysis results, the standardized coefficients of the 22 items ranged from .50 to .88 and standard errors ranged from .02 to .05, all of which reached significance. This suggests that the model had good convergent validity. We subsequently tested the model fit, $\chi^2 = 540.40$ ($p < .05$), $df = 220$, $\chi^2/df = 2.46$, RMSEA = .06, CFI = .91, TLI = .90, SRMR = .07; all results met the required standard, indicating a good overall fit of the research model. The overall R^2 of this model ranged from .25 to .77, exceeding the recommended level of .20 (Jöreskog & Sörbom, 1993). The average variance extracted ranged from .52 to .60 (ideal fit > .50) and the construct reliability ranged from .80 to .95 (ideal fit > .60), which justified the reliability and validity of the overall research model (Hair et al., 2006). The correlation coefficients of all variables in the overall research model ranged from .18 to .51 (see Table 2), which are below .85 or the square root of average variance extracted (Hair et al., 2006), indicating that the overall research model of this study had acceptable discriminant validity.

Table 2. *Factor Correlations and Scale Reliabilities*

Variable	1	2	3
1. Parental expectations	(.74)		
2. Physical self-concept	.40*	(.72)	
3. Sports achievements	.18*	.51*	(.77)
CR	.95	.80	.85
AVE	.55	.52	.60

Note. CR = construct reliability; AVE = average variance extracted. Square roots of AVE are shown in parentheses on the diagonal.

* $p < .05$.

The hypotheses of this study were tested by structural equation modeling, and we controlled for both gender and age in the proposed model. Furthermore, we used bootstrapping analysis to assess the indirect effects. If 0 is not included within the 95% CIs of the datasets, the indirect effects are considered significant (Shrout & Bolger, 2002). The analysis results (Figure 1 and Table 3) reveal that there were significant direct effects (standardized coefficients) of parental expectations on physical self-concept, $r = .43$, 95% CI [0.233, 0.546], $p < .05$, and of physical self-concept on sports achievement, $r = .58$, 95% CI [0.409, 0.684], $p < .05$; hence,

Hypotheses 1 and 2 were supported. In regard to the mediating effect, the indirect effect of parental expectations on sports achievement was also significant, $r = .25$, 95% CI [0.121, 0.361], $p < .05$, indicating a full positive mediating effect of parental expectations on sports achievement via physical self-concept. Thus, Hypothesis 3 was supported.

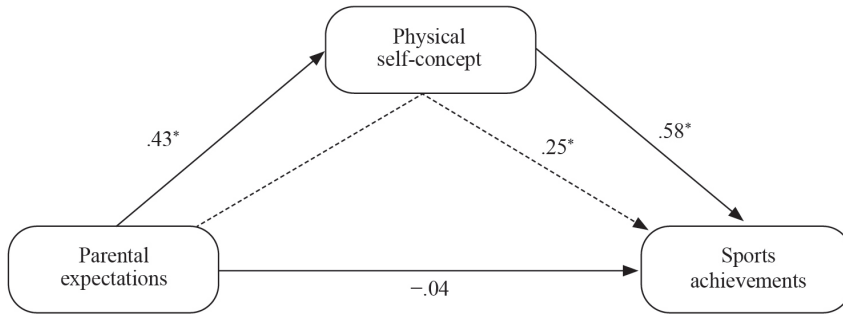


Figure 1. *Structural Model with Standardized Path Coefficients*

Note. Solid lines indicate direct effects and dotted lines indicate indirect effects.

* $p < .05$.

Table 3. *Direct, Indirect, and Total Effects of Parental Expectations and Physical Self-Concept on Sports Achievement*

Variable	Direct effect	Indirect effect	Total effect
PE → SA	-.04	—	
Mediating effect of PSC on PE and SA		.25*	.21*
PE → PSC	.43*	—	.43*
PSC → SA	.58*	—	.58*

Note. PE = parental expectations; PSC = physical self-concept; SA = sports achievement.

* $p < .05$.

Discussion

The primary goal of this study was to explore the relationships between parental expectations and adolescent athletes' physical self-concept and sports achievement in Taiwan, where the PEC system is popular. Using Eccles and Wigfield's (2002) expectancy–value model of achievement, we confirmed that adolescent athletes' physical self-concept mediated the relationship between parental expectations and adolescents' sports achievement. That is, parental expectations were positively related to adolescents' physical self-concept, and physical self-concept was positively related to adolescents' sports achievement. Furthermore, adolescent athletes' physical self-concept fully mediated the impact of parental expectations on athletes' sports achievement. This study extends the findings of previous studies and brings a deeper understanding of Eccles and Wigfield's expectancy–value model of achievement in the sports academy context.

Theoretical Implications

First, our results indicate that parental expectations were positively related to adolescents' physical self-concept, which is similar to the results of previous studies conducted in the academic context (Marsh et al., 2005; Mekonnen, 2014; Neuenschwander et al., 2007). We confirmed that parental expectations were crucial in the development of children's self-concept, regardless of whether the context was academic or sport performance. Consistent with the findings of Fredricks and Eccles (2005) and Marsh and Perry (2005), we also revealed that adolescent athletes' physical self-concept had a direct positive effect on their sports achievement. Athletes with a more positive physical self-concept generally cope better with training, setbacks, and challenges, and refuse to give up easily (Marsh et al., 2006). Therefore, such athletes have a better chance to achieve in their sports than do athletes with a less positive physical self-concept. Marsh and Perry (2005) reached the same conclusions with their sample of elite swimmers as we did with PEC students, demonstrating that the relationship between physical self-concept and sports achievement does not differ with respect to the level at which the athletes are competing.

Second, our study has implications regarding the mediation effect. We revealed that the direct influence of parental expectations on adolescent athletes' sports achievement was nonsignificant, and demonstrated that adolescent athletes' physical self-concept fully mediated the impact of parental expectations on athletes' sports achievement. This result provides a better understanding of adolescents' sports achievement in Taiwan, and contributes to the literature on how parental expectations influence the academic and sports achievement of their children in the sociocultural context (Yamamoto & Holloway, 2010).

In comparison to the full mediation effect we found in our study, Neuenschwander et al. (2007) observed that children's academic self-concept only partially mediated parental expectations on children's academic achievements. This difference might result from the fact that, because of the large time commitment athletes must dedicate to practice sessions, Taiwanese parents dedicate less time and fewer resources to PEC students than they would to their adolescent children who are focused on their academic studies. For instance, because of the nature of the Taiwanese educational system, students in PECs tend to live on campus in dormitories provided at the schools, to gain more time for practicing sports skills, and go home only on weekends. Therefore, parents of PEC students may spend less time with their children compared with parents of students who are not in PECs; thus, it is a typical situation that the main caregivers of these students are their coaches rather than their parents (Jowett & Cockerill, 2003).

In summary, our findings in this study and the conclusions of previous related reports confirm that children's physical self-concept plays a crucial role in the relationship between parental expectations and sports achievement. We have offered further evidence that for PEC students in Taiwan, parents' expectations are influential in the construction of their self-concept, and indirectly encourage their sports achievement.

Practical Implications

Our findings have several implications for educational practice. We revealed a positive effect of parental expectations that adolescents would obtain higher academic performance, test scores, grades, and competition rankings, and would achieve eligibility and opportunity to participate in overseas competition on adolescents' physical self-concept and sports achievement. Therefore, we encourage parents to develop positive interactions with their children in their daily life, to establish good parent-child relationships and consistent educational expectations, and, on this basis, to shape the children's positive physical self-concept, thereby enhancing their sports achievement. Parents are important educators who should pay attention to different learning areas (cognitive or motor-skill performance) to ensure that their children are given opportunities to succeed, and should create positive expectations when dealing with difficulties to foster their children's positive self-concept and self-identification. As significant others, it is likely that coaches as well as parents have close relationships with young athletes (Jowett & Cockerill, 2003). Coaches who hold a clear understanding of the dynamic process by which parental expectations are formed and interpreted by

children will be in a good position to assist their athletes in overcoming the effects of low parental expectations.

Overall, our study framework, which is based on the expectancy–value model (Eccles & Wigfield, 2002), can be used to explain athletes' sport achievement patterns. In particular, we have demonstrated the importance of parents' expectations regarding the development of young athletes' competency beliefs (self-concept, self-efficacy) and their achievement in sport performance: The more athletes perceive themselves as competent, the more likely it is that they can succeed.

Limitations and Directions for Future Research

This study has several limitations. First, use of a cross-sectional design limits verification of the causal relationships. Future studies could adopt a longitudinal design to investigate the causal effects of parental expectations on children's physical self-concept and sports achievement. Second, because all the data collected were self-reported by PEC students, the results might be affected by single-source bias (Podsakoff et al., 2003). We suggest that in future studies data be collected from different sources. For example, sports achievement could be assessed by coaches or peers, and a more standardized test could be used to measure sports achievement. Third, our participants were adolescent students at PECs in Taiwan. Thus, our results may not be generalizable to other cultural contexts. To increase the generalizability of our current model, future studies could explore whether similar relationships exist in other cultural contexts. Finally, we focused only on parental expectations, but the values and beliefs of parents and of significant others, like coaches and teachers, might also influence children's performance (Eccles, 1983; Jowett & Cramer, 2010; Mekonnen, 2014). Thus, to increase the theoretical integrity, future studies could examine the influence of parental values beliefs on children's sports achievement, and explore the influence of significant others (coaches, teachers) on students' sports achievement.

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