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Gomes, A.R., Gonçalves, M.A., Dias, O., & Morais, C. (2018). **Parental behavior, cognitive appraisal, and motivation in young athletes.** *Research Quarterly for Exercise and Sport*, 90(1), 80-94. (ISI Journal Citation Reports®, 2017 Impact Factor = 2.268). doi: 10.1080/02701367.2018.1563278.

Funding

Psychology Research Centre (UID/PSI/01662/2013), University of Minho
COMPETE2020. PT2020 Partnership Agreement (POCI-01-0145-FEDER-007653)
Project UID/MAT/00013/2013
Guimarães, European City of Sport 2013

Corresponding author

A. Rui Gomes
Universidade do Minho
Escola de Psicologia
Campus de Gualtar
4710-057 Braga
Portugal
Telf. +253.604.232
Fax: +253.604.221
rgomes@psi.uminho.pt

Purpose: This study tested two hypotheses relating young athletes' sports motivations to parental behaviors and cognitive appraisal: (1) young athletes' motivation in sports is related to their parents' behavior; and (2) this relationship is mediated by cognitive appraisal, even after controlling for competitive level and sports records.

Method: This cross-sectional study included 673 young athletes and it measured the athletes' perceptions of parental behaviors, cognitive appraisal, and sports motivation.

Results: Structural equation modeling confirmed Hypothesis 1 -- the mother's behaviors accounted for 15 to 16% of the variance in sports motivation, and the father's behaviors accounted for 12 to 21% of the variance. The correlation patterns differed according to whether the athletes were evaluating the mother's or father's behaviors.

Hypothesis 2 also was confirmed, for cognitive appraisal partially mediated the relationship between the perception of parental behaviors and sports motivation (34% of the variance was accounted for by the perception of the mother's behavior; 30% by the father's). The mediating model did not vary with competitive level or sports records.

Conclusion: Parental behaviors and cognitive appraisal need to be taken into account to understand young athletes' sports motivations.

Keywords: Youth sports; Parental pressure; Primary appraisal; Goal orientation.

Parental behavior, cognitive appraisal, and motivation in young athletes

Sports psychologists have tried to understand how sports can promote psychological growth and positive development in youth (Pierce, Gould, Cowburn, & Driska, 2016; Vealey & Chase, 2015). Extant data show that participation in youth sports represents an opportunity to learn social skills, values, attitudes, and motivational styles (Schwebel, Smith, & Smoll, 2016). However, to change opportunities into achievements, researchers need to understand the several factors that can turn these opportunities into positive or negative experiences, including how young athletes perceive their sports activities. Some factors are social; they include parental behaviors (Fredricks & Eccles, 2004), peer influences (Jõesaar, Hein, & Hagger, 2011), and coach-athlete relationships (Smith, Smoll, & Cumming, 2007; Stein, Bloom, & Sabiston, 2012). Other factors are psychological and they include motivation and goal orientation as stressed by Achievement Goal Theory (Ames, 1992; Nicholls, 1989) and Self-Determination Theory (Deci & Ryan, 2002).

These indications reinforces the idea that positive development of young athletes depends of multiple combination of psychosocial factors. As Magnusson and Stattin (2006) claimed, over-reliance on single dimensions or factors hinders our understanding of the psychological growth of young people. It follows that, to understand how psychological development may be promoted by sports, we need to consider multiple dimensions and coordinate multiple constructs (Bengoechea, Sabiston, & Wilson, 2015). This multi-dimensional approach is illustrated in current studies dealing with the impact of coaches, parents, and peers on young athletes' psychological wellbeing (Atkins, Johnson, Force, & Petrie, 2015; Jõesaar et al., 2011).

In this paper we focus on parents, a major influence in youth sports (Fredricks & Eccles, 2004). Parents represent the typical agent of the education and socialization of their children, with the capacity to influence their personal and social development (Knight, Dorsch, Osai, Haderlie, & Sellars, 2016; Pomerantz & Thompson, 2008). Previous research has shown that parents can have a positive impact when athletes perceive parental behaviors as encouragement, support, and praise; in contrast, parents can have a negative impact when their behaviors are perceived as unreasonably demanding, performance pressure, and criticism directed to sports failures (Knight, Boden, & Holt, 2010; Knight, Neely, & Holt, 2011).

Although the foregoing research findings are highly valuable, there is a scarcity of findings about how different parental behaviors interact to explain young athletes' personal experiences in sports. For example, Knight and Holt (2014) argued that limited attention has been given to the relationship between children's goals and their preferences for parental involvement. According to the contextual model of parenting style (Darling & Steinberg, 1993), we need to consider these relations because parenting style and parenting practices are underpinned by parents' goals and beliefs with regard to their child's socialization.

Therefore, in this study we analyze how the perception of parental behaviors relates to young athletes' sports motivation by testing the multiple relations between a variety of parental behaviors and the athletes' goal orientations. Parental behaviors are a set of specific actions assumed by parents and perceived by athletes to have the potential to influence their sports activity. Goal orientation, a construct derived from motivational theories, seems to be a critical factor to understand the sports activities of young athletes (Atkins et al., 2015; Kaye, Frith, & Vosloo, 2015; Vazou, Ntoumanis, & Duda, 2005). Achievement Goal Theory (AGT) states that individuals evaluate and respond to achievement activities (as in the case of sports) according to their standards of personal success and goal-directed actions (Nicholls, 1984; for AGT's relevance to sports, see Atkins et al., 2015; Kaye et al., 2015; McArdle & Duda, 2002; Schwebel et al., 2016). For AGT, success and competence can be established either through a mastery achievement goal orientation, or an ego achievement goal orientation. In the former case, the indicators of success are self-referenced and depend mainly on the accomplishment of personal goals, demonstrating task mastery, and exhibiting maximum effort and dedication. In the latter case, success depends on the comparison of personal performance with others, doing better than others, or performing similarly to others but with equivalent or less effort (Smith et al., 2007).

In this study, we use AGT as the theoretical framework to relate young athletes' perception of parents behaviors to their sports motivations. In fact, according to some studies (Fredricks & Eccles, 2004, 2005), how athletes perceive the behaviors of their mothers and fathers can modulate their efforts and behaviors when practicing sports.

Despite the unequivocal interest on understanding the differential relations between parental behaviors and athletes' goal orientation, it is possible that other factors influence the relationship between these two dimensions. One factor is cognitive appraisal, a key

construct involved in explaining human adaptation to stressful or demanding contexts (as can be the case of youth sports). In fact, based mostly on Lazarus (1999) cognitive-motivational-relational theory, several authors have attempted to explain athletes' adaptation to competition, providing useful indications about factors implicated in the evaluation and reactions to competition stressors, as is the case of cognitive appraisal and coping (for a review, see Blascovich & Mendes, 2000; Gomes, 2014; Jones, Meijen, McCarthy, & Sheffield, 2009).

We propose to analyze the relationship between the perception of athletes about parental behaviors in sports and the goal orientation they assume in sports, as well as to test if the way athletes perceive sports practice (i.e., cognitive appraisal) mediates the relationship between the aforementioned dimensions. From a theoretical point of view, cognitive appraisal is considered to mediate the demands emanating from a stressful event and the potential individual consequences resulting from that event (Lazarus, 1999; see also Gomes, 2014 and Turner & Jones, 2014). Admitted by several sport psychology researchers (e.g., Meijen, Jones, McCarthy, Sheffield, & Allen, 2013; Mellalieu, Hanton, & Fletcher, 2006), this mediational role attests to the relevance of cognitive appraisal to explain human adaptation to sports.

In the present study, cognitive appraisal is understood in terms of a transactional model of stress (Lazarus, 1999), which identifies how a certain stressful situation is evaluated and affects the individual's beliefs, values and/or goals (Arnold, 1960). By considering the processes of cognitive appraisal in human adaptation to stress, we can comprehend if the situation will have the potential to be a positive or negative opportunity for the wellbeing and personal growth of the individual. According to the interactive model of human adaptation to stress (Gomes, 2014), three main factors identify the processes of cognitive appraisal. First, the perception of importance indicates the personal relevance of the stressful situation to the individual, and it represents the "gateway" to understanding the individual's adaptation to stress. In fact, if the situation is not relevant to the person, it will be less likely that efforts of adaptation will be initiated. On the other hand, if the situation is relevant and perceived to be difficult to attain, individuals who perceive On the other hand, if the situation is relevant and perceived to be difficult to attain, individuals who perceive the situation to lead to anticipated gain will be in a position to consider the situation as positive (challenging), whilst those who anticipate harm or potential loss, will consider the situation as negative (threatening) (Lazarus,

1999). Thus, we conceive the practice of sports as having the potential to generate stress, as demonstrated by the literature (Nicholls, Perry, & Calmeiro, 2014), and we test if the tendency to perceive sports as more challenging or more threatening mediates the relationship between parents' behaviors and athletes' motivation.

Considering the need for further exploration of parental behaviors and goal orientation, the main purpose of this study is to analyze how parental behaviors (as an antecedent variable) relates to motivation in sports (as a consequent variable), and to determine whether cognitive appraisal mediates this relationship. We test the connections among these three variables from the athletes' perspectives and without taking parents' perspectives into account. Our choice is justified conceptually by considering that parents' beliefs and behaviors influence their children's beliefs, values, goals, and performance (Fredricks & Eccles, 2004). This influence can occur in a variety of ways, as for example, when parents act as sport role models (e.g., being a coach or participating in sports), when they give specific messages about the importance of sports, and when they provide emotional support and positive sport experiences that increases their children's involvement in sport (Fredricks & Eccles, 2005). If this influence between parents' behaviors and children's personal experience is expected to occur, then it makes sense to consider the perspectives of athletes on their parents' behaviors with regard to sports and then follow the possible relationships among the children's experiences as athletes, identified, in our case, by cognitive appraisal and motivation. The analysis of these relations is important because there are indications that parental behaviors indeed influence athletes' goal orientation (O'Rourke, Smith, Smoll, & Cumming, 2011) and can even overcome the influence of coaches (O'Rourke, Smith, Smoll, & Cumming, 2014; Schwebel et al., 2016). Thus, we analyzed the young athletes' perspectives of parental behaviors by differentiating the distinct influences of mothers and fathers.

To understand the specific relationship between parental behaviors, cognitive appraisal, and motivation, we formulated two hypotheses based on the concepts of direct and indirect effects models (Baron & Kenny, 1986).

Hypothesis 1 states that the perception of parental behaviors in sports is related to athletes' motivation (i.e., goal orientation). The nature of these relationships is expected to differ according to the four dimensions of parental behaviors evaluated in our study: (a) sports support: parents' satisfaction and support regarding their children's sports activities, (b) sports expectation: parents' expression of positive expectations about their

children's future success in sports, (c) performance pressure: parents' negative reactions regarding their children's poor sports performance, and (d) competition attendance: parents' presence in competitions to support their children's sports activity).

H1a. Sports support is positively related to both ego and mastery orientations.

H1b. Sports expectation is positively related to both ego and mastery orientations.

H1c: Performance pressure is positively related to ego orientation and negatively related to mastery orientation.

H1d. Competition attendance is positively related to both ego and mastery orientations.

Testing these relationships allows us to verify which model (direct or mediation, presented below as Hypothesis 2) best describes young athletes' goal orientation. Research has confirmed the propositions of the AGT model, which means that when parents (and coaches) promote a mastery achievement goal orientation, athletes' positive outcome consequences (i.e., lower anxiety, higher self-esteem, higher enjoyment, stronger mastery goal orientation, desire to stay involved in sports) are observed (Smith et al., 2007). In fact, athletes with a mastery orientation seem to believe that their efforts are the main causes of their success, rely mostly on problem-solving and adaptive learning strategies when facing stress events, and persevere in the face of adversity (Smith, Smoll, & Cumming, 2009). Conversely, when an ego achievement goal orientation is promoted, the outcome consequences are not as positive (higher anxiety and ego goal orientation scores, lower self-esteem, excessive expectations, negative performance evaluations, withdrawal from competition) (Knight et al., 2011; Sagar & Lavalley, 2010). Specifically, athletes with an ego orientation seem to be inconsistent in their efforts when performing difficult task, persevere less when facing adversity, and seem particularly willing to use deception and cheating to succeed in sports (Roberts, 2001).

Studying motivation as a consequent variable related to both parental behaviors and cognitive appraisal allows for a better understanding of how athletes' goal orientations relate to their perception of parental behaviors, especially given that we analyze parental behaviors from a multidimensional perspective (i.e., sports support, sports expectations, performance pressure, and competition attendance), testing differential path relationships between both parents (mothers and fathers). Research supports the role of parental behaviors and even cognitive appraisal as antecedent or predictor variables (O'Rourke et al., 2011), and motivation as a consequent variable (Harwood & Swain, 2002; O'Rourke, Smith, Smoll, & Cumming, 2013). To illustrate, Gershoren, Tenenbaum, Gershoren,

and Eklund (2011) designed an experimental study with young male soccer players to test the effects of task- and ego-oriented parental feedback on athletes' motivation, and concluded that ego involvement increased significantly among players receiving ego-oriented parental feedback, whereas players receiving task-oriented parental feedback became significantly more task-involved and less ego-involved. In our study, we aim to extend these findings by analyzing multiple relations between these variables, both as antecedent variables of motivation (in this hypothesis) and in a more complex model of cognitive appraisal mediating the relation between parental behaviors (antecedent) and motivation (consequent), as presented below.

Hypothesis 2 established that the processes of cognitive appraisal mediate the relationship between athletes' perceptions of parental behaviors in sports (as an antecedent variable) and athletes' motivation (i.e., goal orientation) (as a consequent variable). Specifically, we tested a partial mediation model which assumes a direct path from parental behaviors to cognitive appraisal, and a full mediation model which removes the direct path from parental behaviors to motivation). Thus, Hypothesis 2 addresses *if* and *to which extent* cognitive appraisal accounts for the relationship between the predictor variable (parental behaviors) and the criterion variable (motivation). If the mediation reduces the link between the independent (predictor) and dependent (criterion) variables, partial mediation is assumed. If the mediation eliminates the link between both variables, full mediation is assumed (Baron & Kenny, 1986). We believe this is the first time that the specific relationships among parental behaviors, cognitive appraisal, and motivation in sports are tested, particularly in young athletes, although there is some evidence for the potential of cognitive appraisal in explaining athletes' adaptation to sports (Bartholomew, Arnold, Hampson, Fletcher, 2017; Gomes et al., 2017; Nicholls et al., 2014). Specifically, Bartholomew et al.(2017) showed that, in high-level British athletes, cognitive stress appraisals mediate the relationship between organizational stressors and psychological need experiences. Gomes et al. (2017) confirmed the mediating function of cognitive appraisal, in this case between trait anxiety and burnout with young athletes. Finally, Nicholls et al. (2014) concluded that achievement goals were associated with appraisals, appraisals with emotions, and emotions with coping, and that both appraisals and emotions are important in shaping athletes' coping precompetitive strategies. Overall, these studies reinforce the value of cognitive appraisals as a key variable to explain very distinct experiences of athletes in their sports.

We aim to expand these findings by exploring whether cognitive appraisal mediates the relationship between parental behaviors and motivation according to the characteristics of sports and athletes (e.g., competitive levels and sports records). Although we tested the possibility of cognitive appraisal as a key variable in explaining young athletes' reactions to sports, it is also important to test in what conditions this mediation occurs. Thus, we tested the invariance of cognitive appraisal as a mediating variable between parental behaviors and motivation, considering the characteristics of sports contexts and the characteristics of the athletes of this study. Competitive levels and sports records are important variables in the explanation of young athletes' reactions to sports (Campo, Mellalieu, Ferrand, Martinent, & Rosnet, 2012) and, therefore, the influence of these variables was also considered in the mediation model.

In summary, this study examines the importance of cognitive appraisal on athletes' adaptation to sports considering the relationship between parental behaviors and motivation. To the best of our knowledge, it is the first study to test these specific mediating relationships.

Method

Participants

A total of 673 young athletes voluntarily participated in the study. The participants were 588 boys (87.4%) and 85 girls (12.6%), and their age ranged between 12 and 19 years old ($M = 14.78$ years; $SD = 1.86$ years), practicing the sports of soccer ($n = 323$, 48%), volleyball ($n = 86$, 12.8%), basketball ($n = 76$, 11.3%), soccer of teams with 7 players ($n = 45$, 6.7%), rugby ($n = 36$, 5.3%), futsal ($n = 33$, 4.9%), handball ($n = 33$, 4.9%), water polo ($n = 27$, 4%), and roller hockey ($n = 14$, 2.1%). The competitive levels of the athletes were second national division ($n = 436$, 64.8%) and first national division ($n = 229$, 34%); eight athletes did not specify their competitive level. The majority of the athletes ($n = 406$, 60.3%) had not attained a sports record in their careers, and 225 athletes (33.4%) had achieved the national title at the regional and/or national level.

Measures

Parental Behaviors in Sports Questionnaire (PBSQ; Gomes, 2010). This questionnaire was used to evaluate athletes' perceptions of the behaviors of their fathers and mothers regarding children's sports activities. The athletes that did not have a mother

or a father did not fill the corresponding part of the questionnaire, except when they identified a person with the same role and personal meaning as a parental figure. The PBSQ parental behaviors refer to specific actions assumed by parents when interacting with their children and that are perceived by young athletes to have the potential to influence the sports activity. The PBSQ includes four dimensions: (a) sports support: satisfaction and support given by parents regarding the sports activity of their children (four items for the father's version, $\alpha = .76$; four items for the mother's version, $\alpha = .83$); (b) sports expectations: expression of positive expectations about future success of athletes in their sports (three items for the mother's version, $\alpha = .77$; three items for the father's version, $\alpha = .67$); (c) performance pressure: negative reactions from parents regarding the poor sports performance of the athletes (four items for the mother's version, $\alpha = 0.92$; four items for the father's version, $\alpha = .89$); and (d) competition attendance: parental presence in competitions to support the athletes' sports activity (three items for the mother's version, $\alpha = .93$; three items for the father's version, $\alpha = .94$). Each item was measured on a five-point Likert scale (1 = *Never*; 5 = *Always*). The scores were obtained by calculating the mean value. Therefore, higher scores on each scale indicate higher perception by the athletes of the parental behaviors. Confirmatory factor analysis showed an acceptable fit for the four-factor model of parental behaviors of fathers ($\chi^2(71) = 257.77, p < 0.001$; RMSEA = 0.063, 90% C.I. [0.054; 0.071]; CFI = 0.97; NFI = 0.95; TLI = 0.96) and of mothers ($\chi^2(70 \text{ df}) = 276.29, p < 0.001$; RMSEA = 0.066, 90% C.I. [0.058; 0.074]; CFI = 0.97; NFI = 0.96; TLI = 0.96) (Bentler, 2007). However, due high modification indexes and low regression weights, five items were removed from the version for the father and three items from the version for the mother.

Primary and Secondary Cognitive Appraisal Scale (PSCAS; Gomes & Teixeira, 2016). Cognitive appraisal refers to how a person evaluates his/her transactions with the environment, revealing the personal meaning and significance attributed to a potentially stressful event (Lazarus, 1999). PSCAS evaluates primary and secondary cognitive appraisals regarding sports activity. The items were adapted for sports contexts by replacing the word "work" with "sport" in the instructions given to the athletes to complete the scale. For this study, primary cognitive appraisal was used to evaluate three dimensions: (a) sports importance: the extent to which athletes evaluate the sports activity as significant and important for their personal wellbeing (three items; $\alpha = .85$ for this study); (b) threat perception: the extent to which athletes evaluate the sports activity as

disturbing and negative for their personal wellbeing (three items; $\alpha = .76$ for this study); and (c) challenge perception: the extent to which athletes evaluate the sports activity as stimulating and exciting for their personal wellbeing (three items; $\alpha = 0.68$ for this study). Each item was measured on a seven-point Likert scale (e.g., 0 = *Means nothing to me*; 6 = *Means a lot to me*). The scores on the scales were obtained by calculating the mean value. Therefore, higher scores on each scale indicate higher importance, threat, and challenge perceptions. Confirmatory factor analysis showed acceptable fit for the three-factor model of primary cognitive appraisal ($\chi^2(24) = 39.28, p < 0.001$; RMSEA = 0.031, 90% C.I. [0.011; 0.048]; CFI = 0.99; NFI = 0.98; TLI = 0.99) (Bentler, 2007).

Achievement Goal Scale for Youth Sports (AGSYS; Cumming, Smith, Smoll, Standage, & Grossbard, 2008; Portuguese translation by Cruz, 2008). The instrument evaluates goal orientation as a dispositional tendency to be mastery or ego involved in achievement contexts (Nicholls, 1989). The instrument evaluates two dimensions: (a) ego orientation, that is, athletes' tendency to judge their ability as relative to what is demonstrated by others (e.g., "the most important thing is to be the best athlete"; six items, $\alpha = .93$ for this study); and (b) mastery orientation, the athletes' tendency to judge their ability as high or low with reference to their own past performance or knowledge (e.g., "my goal is to learn new skills and get as good as possible"; six items, $\alpha = .84$ for this study). The items were measured on a five-point Likert scale (1 = *Not at all true*; 5 = *Very true*). The scores were obtained by calculating the mean value. Therefore, higher scores on each scale indicated a higher orientation toward ego or mastery orientations. Confirmatory factor analysis showed acceptable fit for the two-factor model of burnout ($\chi^2(50) = 157.78, p < 0.001$; RMSEA = 0.057, 90% C.I. [0.047; 0.067]; CFI = 0.98; NFI = 0.97; TLI = 0.97) (Bentler, 2007).

Procedure

This study was approved by the Ethics Committee of the university with which the first author is associated (ref. CEUM 031/2014). After the approval of the Ethics Committee, the researchers contacted sports teams (team directors and coaches) to explain the goals of this study and the procedures of data collection. Those who agreed to be part of this study were contacted to start the data collection. Finally, the athletes and parents of minor age athletes were informed about the research project, and the parents

gave informed consent to allow their children to participate in this study. Athletes non-minors of age also gave consent to be included in the study.

Data Screening

The data was screened for univariate and multivariate outliers using the protocol described by Tabachnick and Fidell (2007). The standardized z-scores were inspected, and those larger than 3.29 ($p < .001$) were removed. Cases with a Mahalanobis distance greater than $\chi^2_{(10)}=29.59$ ($p < .001$) were also removed. After the data screening, a total of 657 ($n = 657$) young and team sports athletes were finally included in the analysis of the mother's behaviors in sports, and 656 ($n = 656$) were included in the analysis of the father's behaviors in sports.

Data Analysis

We conducted structural equation modeling (SEM) for the main analysis using a three-step model building approach applied for the mothers' and fathers' behaviors in sports. First, we examined the direct structural model between the parental behaviors in sports and motivation (i.e., goal orientation). Second, to determine the mediating role of threat perception and challenge perception, we composed a combined effects model to examine the direct and indirect effects of the parental behaviors of the fathers and mothers with regard to their children's sports' activity on motivation (ego and mastery orientations). Our aim was to test whether a mediation model fits the data better than a model with direct effects only, as well as whether full or partial mediation is a better fit to the data. Third, multigroup structural equation modeling was conducted to test the invariance of cognitive appraisal (threat and challenge perceptions) as a mediating variable between the athletes' perception of parental behaviors with regard to sports' activity and the athletes' motivation according to the competitive levels and sports records of the young athletes.

The structural models were tested in AMOS 24. To evaluate the goodness of fit of the models, we used Chi-square statistics and their associated probability levels, the root mean square error of approximation (RMSEA), the Tucker-Lewis index (TLI), and the comparative fit index (CFI). The bootstrap procedure of AMOS was used to obtain 95% confidence intervals around the parameter estimates in testing for the significance of the direct and indirect effects in the analyses. Bootstrapping is a powerful resampling method

to obtain parameter estimates and confidence intervals because no assumptions have to be made that the variables are normally distributed (MacKinnon, Fairchild, & Fritz, 2007). We used 2000 bootstrapped resamples to derive confidence intervals.

Finally, it should be noted that only the participants who attributed at least some importance to sports activity were selected to the analysis (this selection was based on the “sports importance” dimension from PSCAS). The relationships between parental behaviors, cognitive appraisal, and motivation are important to test whether athletes consider sports a significant activity in their lives and personal wellbeing; otherwise, if no importance is attributed to sports, then there is no sense to test sports as a context of human adaptation to parental expectations and as generating a distinct goal orientation. In this way, the typical cut-off of less or equal to two points on the Likert scale of the sports importance dimension was used to remove participants from the database (Gomes, 2014). Therefore, eight participants were removed from further analysis.

Results

Descriptive Results and Relationships between the Variables

Table 1 presents means, standard deviations, and Spearman rank correlations between the variables, differentiating the athletes’ perception of mothers and fathers’ behaviors. The correlations of mothers and fathers' behaviors followed a similar pattern. Dimensions of parental behaviors in sports (PBSQ) correlated positively with each other; they also correlated positively with goal orientations of AGSYS scale; the correlations with threat cognitive appraisal were positive (e.g., performance pressure) and negative (e.g., sports support) and with challenge perception they were both positive (although not all of them statistical significant). As expected, dimensions of cognitive appraisal correlated negatively, and dimensions of goal orientation correlated positively.

Table 1. Means, Standard Deviations, Alpha Values, and Correlations between Parental Behaviors (PBSQ), Cognitive Appraisal (PSCAS), and Goal Orientation (AGSYS) ($N = 673$)

Variables	<i>M (SD)</i> Father evaluation	<i>M (SD)</i> Mother evaluation	1	2	3	4	5	6	7	8
PBSQ										
1. Sports sup.	4.27 (.73)	4.08 (.91)	--	.48***	.19***	.59***	-.08*	.12**	.05	.23***
2. Sports exp.	2.92 (1.03)	2.74 (1.18)	.52***	--	.43***	.38***	.05	.13**	.34***	.21***
3. Perf. press.	2.63 (1.17)	2.21 (1.14)	.22***	.48***	--	.30***	.07	.11**	.29***	.03
4. Comp. att.	3.80 (1.14)	2.96 (1.29)	.55***	.51***	.39***	--	-.07	.09*	.11**	.15***
PSCAS										
5. Threat per-	0.73 (1.19)		-.08*	.07	.16***	.01	--	-.12**	.03	-.19***
6. Chall. per.	5.44 (.88)		.10**	.17***	.06	.10*	-.12**	--	.11**	.27***
AGSYS										
7. Ego orie	3.33 (1.16)		.02	.27***	.27***	.08*	.03	.11**	--	.22***
8. Mastery or.	4.51 (.56)		.27***	.22***	-.01	.10**	-.19***	.27***	.22***	--

* $p < .05$; ** $p < .01$; $p < .001$

Note: In the lower diagonal of the table are presented the values for the athletes' perception of mothers' behaviors. In the upper diagonal of the table are presented the values for the athletes' perception of fathers' behaviors.

Testing the Structural Equation Models

Two direct effect models were tested to analyze the contributions of the parental behaviors of mothers and fathers regarding the athletes' motivations. Direct paths were established between the four dimensions of the PBSQ instrument (sports support, sports expectations, performance pressure, and competition attendance) and the two dimensions of the AGSYS instrument (ego and mastery orientations). The model fit of the two models (mothers and fathers) was tested separately.

The model estimations of these two direct models revealed adequate fits for mothers, $\chi^2(282) = 697.504$ ($p < .001$), RMSEA = 0.047 ($p_{close} = .879$), CFI = .96, TLI = .96, and for fathers, $\chi^2(284) = 721.314$ ($p < .001$), RMSEA = 0.048 ($p_{close} = .782$), CFI = .96, TLI = .95. Figures 1 and 2 present the standardized path coefficients for direct structural model of mothers and fathers, respectively.

With regard to the mothers' model, ego orientation was explained by three parental behaviors related to sports support, sports expectations, and performance pressure

(competition attendance was not significant), and the model predicted 15% of this goal orientation variance, $R^2 = .151$, 95% C.I. [.082,.214], $p < .01$. Mastery orientation was explained by all parental behaviors, and the model predicted 16% of this goal orientation variance, $R^2 = .162$, 95% C.I. [.098,.218], $p < .01$.

With regard to the fathers' model, ego orientation was explained by three parental behaviors related to sports support, sports expectations, and performance pressure (competition attendance was not significant), and the model predicted 21% of this goal orientation variance, $R^2 = .212$, 95% C.I. [.130,.317], $p < .01$. Mastery orientation was explained by two parental behaviors related to sports expectations and performance pressure (sports support and competition attendance were not significant), and the model predicted 12% of this goal orientation variance, $R^2 = .118$, 95% C.I. [.056,.173], $p < .01$. For all the significant paths, the standardized coefficients presented the same signal (positive or negative) in the two models (mother and father). Ego orientation was explained by the athletes' perceptions of lower sports support given by parents, higher perception of sports expectations, and higher performance pressure assumed by their parents. Mastery orientation was explained by a higher perception of sports expectations of parents, lower performance pressure given by parents, and by less of a tendency toward the competition attendance of mothers.

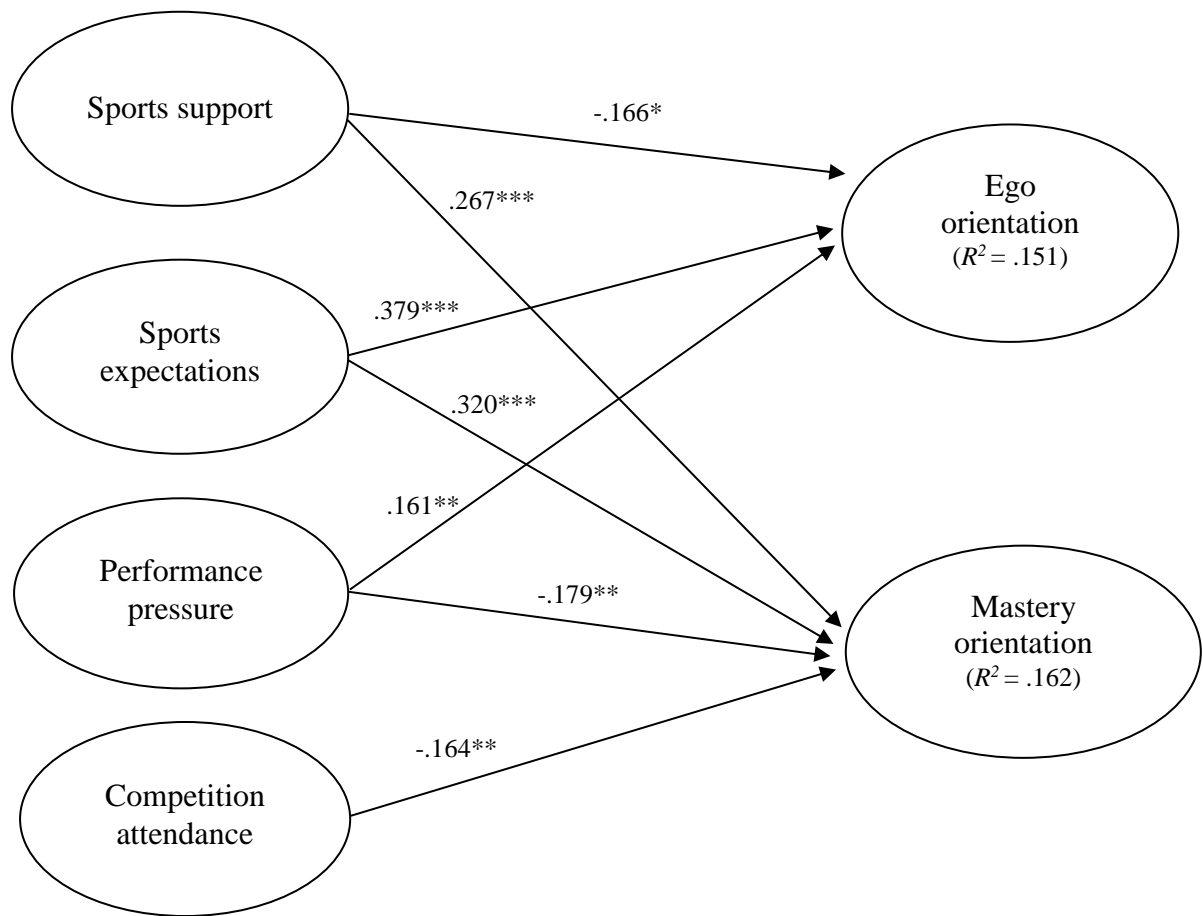


Figure 1. The direct effects models with standardized regression coefficients (mother values).

Note: When the path was not significant, the arrow was removed.

* $p < .05$, ** $p < .01$, *** $p < .001$

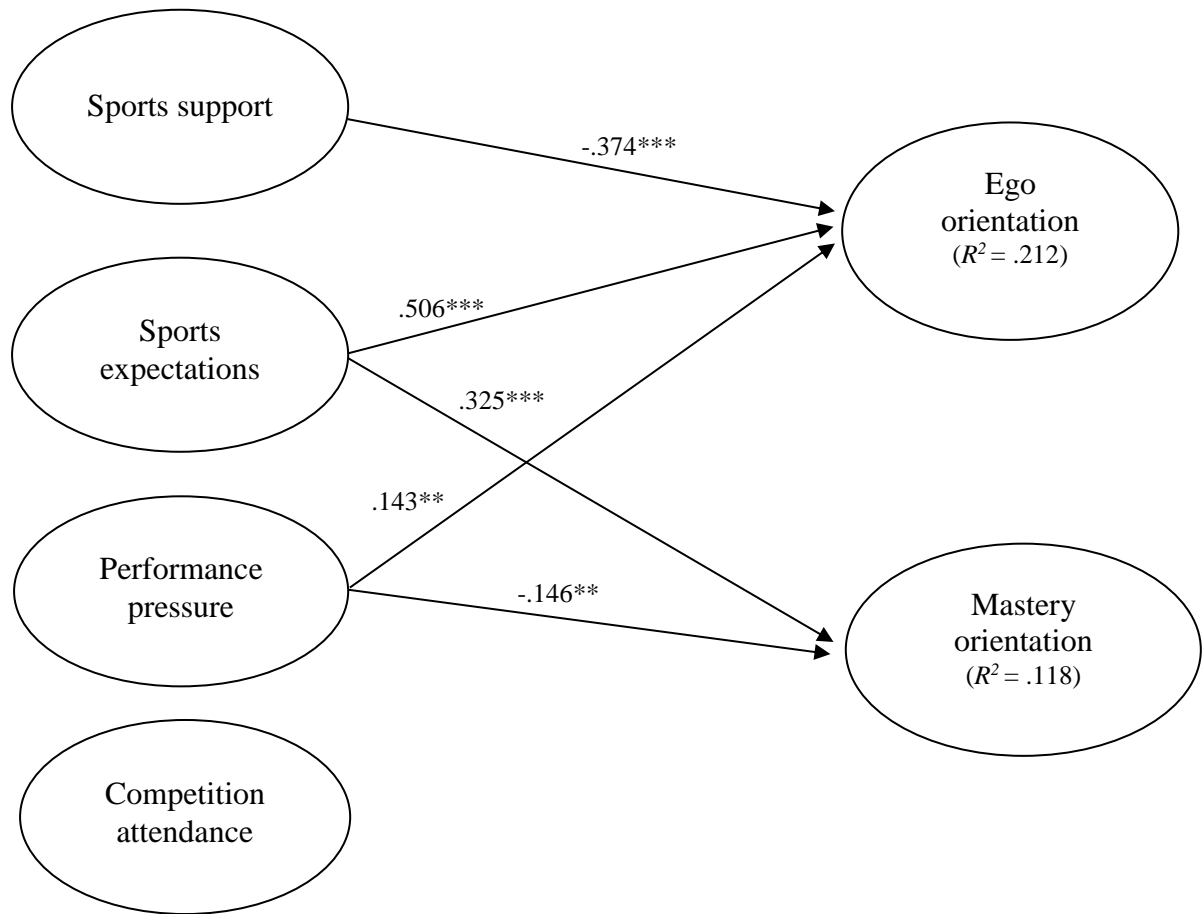


Figure 2. The direct effects models with standardized regression coefficients (father values).

Note: When the path was not significant, the arrow was removed.

* $p < .05$, ** $p < .01$, *** $p < .001$

Testing the Mediation Structural Models

In this step of the data analysis, we tested the mediation role of cognitive appraisal on the relationship established between parental behaviors in sports and the athletes' motivation (i.e., goal orientation). The model was tested separately for the athletes' perception of mothers and fathers' behaviors.

The fit indexes for the mothers' model showed good adjustment to the data, $\chi^2(438) = 1007.900$ ($p < .001$), RMSEA = 0.045 (90% C.I. [.041; .048], $p_{close} = .994$), CFI = .95, and TLI = .95. The fathers' model also presented a good fit, even though only the paths from cognitive appraisal to goal orientation remained significant: $\chi^2(438) = 1056.180$ ($p < .001$), RMSEA = 0.046 (90% C.I. [.043;.050], $p_{close} = .950$), CFI = .94, and TLI = .94.

The parameter estimates of the structural paths' standardized coefficients, the squared multiple correlation coefficients, and the corresponding 95% confidence intervals of the bootstrap estimates (the estimates were based on 2000 bootstrap samples) in the partial mediation models are presented in Table 2.

For the mothers' model, it can be observed that the partial mediation model explained 6% of the variance associated with threat perception (vs. 4% for the fathers' model) and 7% of the variance associated with challenge perception (vs. 6% for the fathers' model). Additionally, the combined effects of this model accounted for 17% of the variance for ego orientation (vs. 22% for the fathers' model) and 34% of the variance for mastery orientation (vs. 30% for the fathers' model).

With regard to both models, the results from the multiple mediation models that tested whether primary cognitive appraisal (threat perception and challenge perception) mediated the relationship among the four dimensions of parental behaviors in sports and motivation (ego and mastery goal orientations) are summarized on Table 2. The results showed that the direct effects from parental behavior in sports on goal orientation were for significant in almost all cases. Exceptions of non-significant paths were found between sports support and mastery orientation (for the fathers' model), and between competition attendance and mastery orientation (for the fathers' model). Most importantly, relationships of mediation occurred for almost all the dimensions of parental behaviors in sports (the only exception was the dimension of competition attendance). Specifically, threat perception partially mediated the relationship between sports support and mastery orientation (for the mothers' model); challenge perception partially mediated the relationship between sports expectations and both ego and mastery orientation (for the mothers' model); and threat perception partially mediated the relationship between sports performance and mastery orientation (for the mothers' model). All the standardized regression coefficients between variables are presented on Figure 3 (mother values) and Figure 4 (father values).

Table 2. Standardized Effects (95% confidence intervals) in Partial Mediation Effects

Models						
Model (Mother) - Dependent variables						
	Cognitive appraisal		Goal orientation			
	Threat perception (TP)	Challenge perception (CP)	Ego orientation		Mastery orientation	
			Indirect effect	Direct effect	Indirect effect	Direct effect
SS	-.190*	.098 n.s.	.012 n.s.	-.190**	.070 n.s.	.225**
	[-.351;-.025]	[-.074;.262]	[-.011;.052]	[-.342;-.034]	[-.017;.166]	[.089;.373]
FE	.078 n.s.	.213*	.027*	.349***	.077+	.201**
	[-.112;.265]	[.061;.382]	[.001;.074]	[.177;.527]	[-.003;.175]	[.044;.353]
SP	.188**	-.065 n.s.	-.008 n.s.	.176**	-.056*	-.109*
	[.053;.312]	[-.172;.046]	[-.032;.011]	[.062;.298]	[-.118;.000]	[-.223;-.003]
CA	-.004 n.s.	.004 n.s.	.001 n.s.	-.094+	.002 n.s.	-.172**
	[-.115;.101]	[-.128;.156]	[-.018;.021]	[-.222;.020]	[-.061;.073]	[-.279;-.059]
TP				.002 n.s.		-.153***
				[-.078;.087]		[-.253;-.053]
CP				.126**		.419***
				[.036;.228]		[.310;.534]
R ²	.058**	.068**		.166**		.342**
	[.018;.103]	[.025;.115]		[.100;.227]		[.241;.430]
Model (Father) - Dependent variables						
	Cognitive appraisal		Goal orientation			
	Threat perception (TP)	Challenge perception (CP)	Ego orientation		Mastery orientation	
			Indirect effect	Direct effect	Indirect effect	Direct effect
SS	-.183+	.123 n.s.	.011 n.s.	-.328***	.081 n.s.	.052 n.s.
	[-.415;.055]	[-.168;.370]	[-.016;.073]	[-.590;-.111]	[-.058;.242]	[-.179;.266]
FE	.148+	.172+	.019 n.s.	.451***	.046 n.s.	.229**
	[-.063;.353]	[-.041;.387]	[-.010;.062]	[.255;.708]	[-.075;.158]	[.049;.439]
SP	.083 n.s.	-.013 n.s.	-.001 n.s.	.164**	-.019 n.s.	-.114*
	[-.035;.202]	[-.134;.095]	[-.018;.013]	[.031;.279]	[-.078;.035]	[-.236;-.006]
CA	-.027 n.s.	-.045 n.s.	-.005 n.s.	.077 n.s.	-.014 n.s.	.005 n.s.
	[-.186;.118]	[-.201;.136]	[-.031;.012]	[-.064;.225]	[-.102;.075]	[-.148;-.168]
TP				.008 n.s.		-.165***
				[-.083;.094]		[-.266;-.078]
CP				.101*		.411***
				[.011;.202]		[.298;.531]
R ²	.033*	.058*		.215**		.299**
	[.005;.068]	[.020;.099]		[.127;.299]		[.195;.395]

Note: in straight parenthesis are presented the 95% bias-corrected confidence intervals; n.s.: non-significant, + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

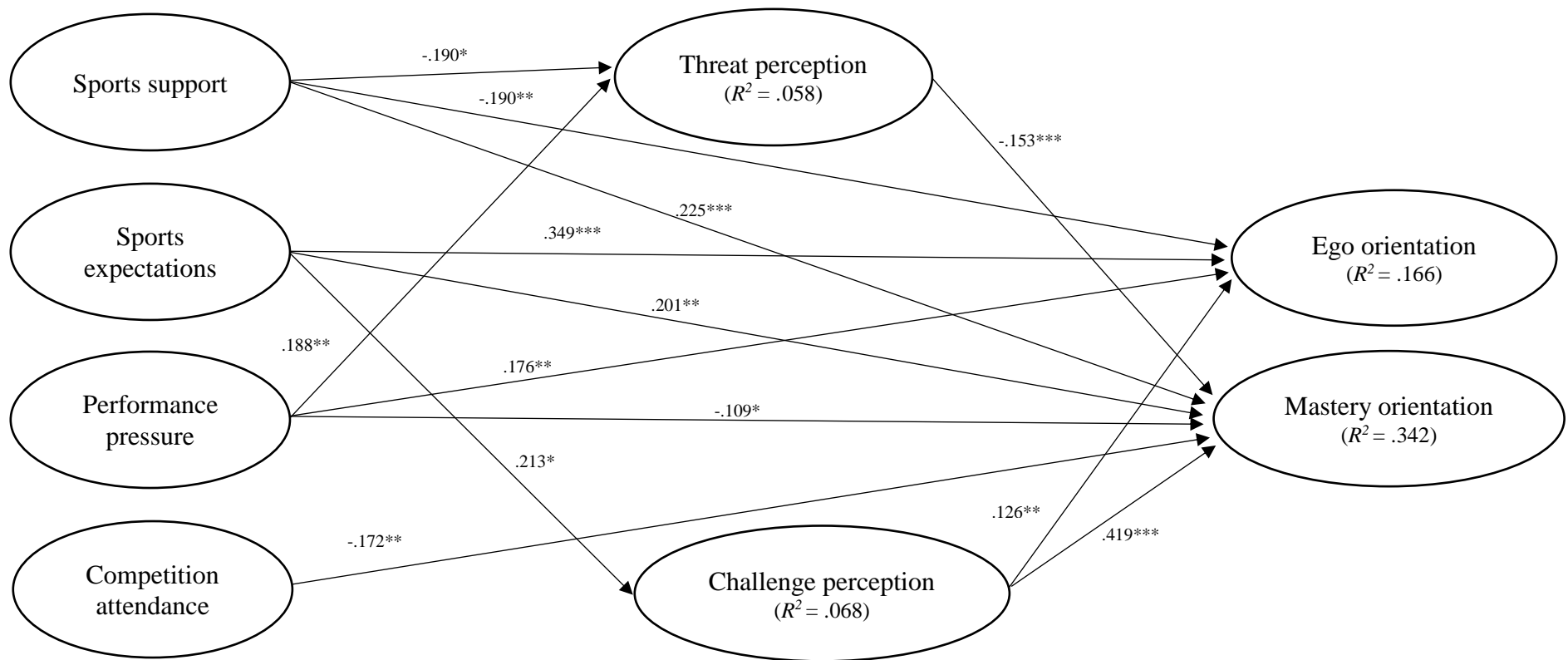


Figure 3. The partial mediation effects model with standardized regression coefficients (mother values).

Note: When the path was not significant, the arrow was removed.

* $p < .05$, ** $p < .01$, *** $p < .001$

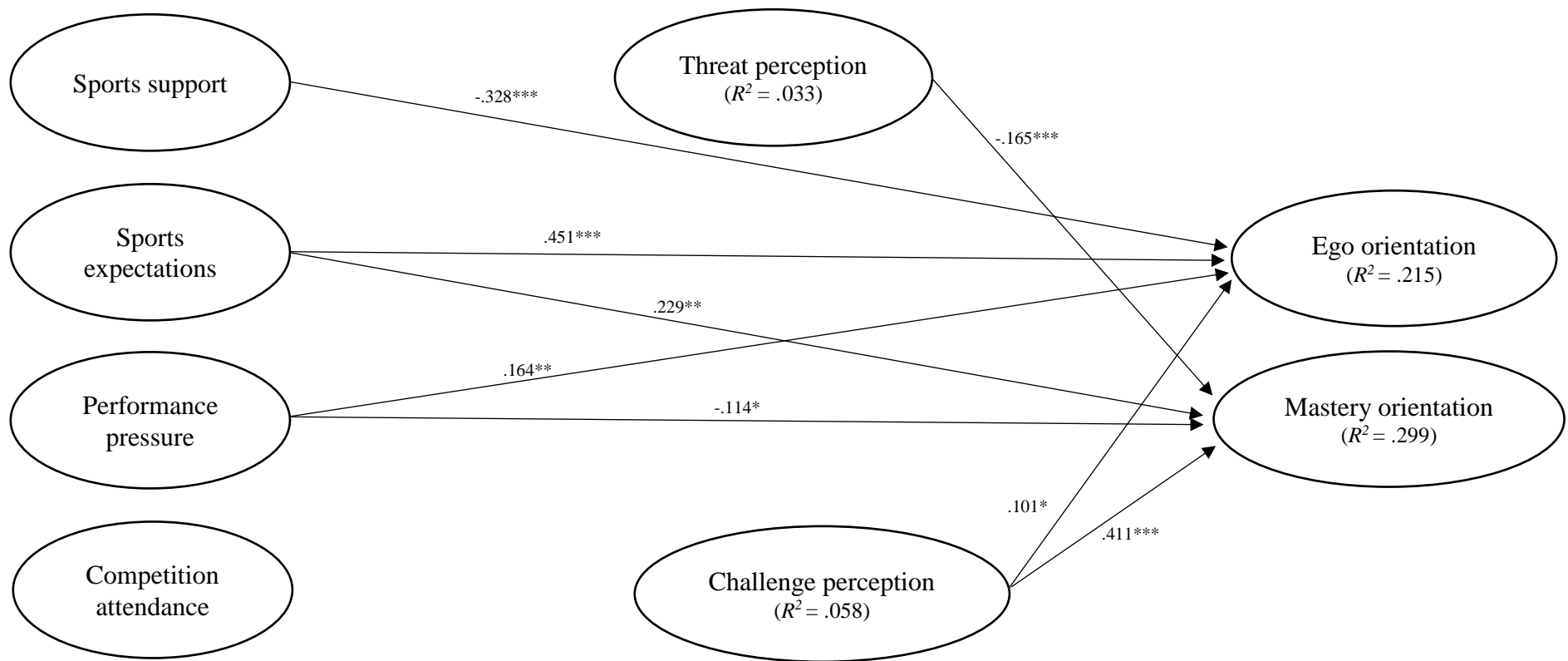


Figure 4. The partial mediation effects model with standardized regression coefficients (father values).

Note: When the path was not significant, the arrow was removed.

* $p < .05$, ** $p < .01$, *** $p < .001$

Multigroup Invariance Analysis

In this final step of data analysis, we examined the extent to which the mediation models (mothers' and fathers' models) were invariant according to two sports characteristics of the participants: competitive level (second national division and first national division) and athletes' sports records (any sports records in the career and regional and/or national levels). Model invariance was deemed to be supported if ΔCFI was less than or equal to 0.002 (Mead, Johnson, & Braddy, 2008). Additionally, we tested the Chi-square difference between the successive invariance models. After that, we assessed the same SEM model (see Figure 2) among both subsamples for the competitive level and for the sports records.

Measurement invariance was supported throughout competitive levels and sports records for the models of both fathers and mothers. The results for multigroup structural equations models of competitive levels supported the baseline structural models (configural invariance) by presenting an acceptable model fit for the mothers' model, $\chi^2(876) = 1599.29$, $p < .001$, RMSEA = 0.034, CFI = 0.944, TLI = 0.936, and for the fathers' model, $\chi^2(876) = 1541.09$, $p < .001$, RMSEA = 0.036, CFI = 0.935, TLI = 0.926. For the case of sports records, the results from the multigroup SEM also supported the baseline structural models (configural invariance) by presenting an acceptable model fit for the mothers' model, $\chi^2(876) = 1440.84$, $p < .001$, RMSEA = 0.032, CFI = 0.950, TLI = 0.943, and for the fathers' model, $\chi^2(876) = 1571.95$, $p < .001$, RMSEA = 0.036, CFI = 0.934, TLI = 0.925. It was supported model invariance because $\Delta CFI \leq 0.002$ between models and $\Delta \chi^2$ were all non-significant.

Discussion

The psychological development of young athletes is better understood when framed within a multidimensional perspective, evaluating distinct factors that can turn youth sports practice into a positive experience (Bengoechea et al., 2015). Our study is consistent with this idea, for it integrates social environmental variables (parental behaviors) and psychological variables (cognitive appraisal and motivation), organized conceptually as antecedent (parental behaviors), mediators (cognitive appraisal), and consequent (goal orientation) factors. In addition, we analyzed this relationship by considering athletes' perspective about the multiple behaviors that parents can assume in sports, and by considering mothers' and fathers' actions in sports. Although parental behaviors and goal

orientation variables represent major topics of study with young athletes (Atkins et al., 2015; Kaye et al., 2015; Schwebel et al., 2016), the multiple relations that can be established between them is less studied, especially if we consider the distinctive effects of mothers' and fathers' behaviors (Knight & Holt, 2014). On the other hand, to the best of our knowledge, there are even fewer studies of cognitive appraisal as mediator of parental behaviors and goal orientation, despite the growing interest for the concept in sport psychology research (Gomes, 2014; Lazarus, 2000; Mellalieu et al., 2006; Turner & Jones, 2014).

To analyze the relation between parental behaviors and goal orientation, a relation potentially mediated by cognitive appraisal, we formulated two hypotheses. They allowed us to verify specific paths between variables while distinguishing the differential influence produced by the parental behaviors of the athletes' mothers and fathers. Hypothesis 1 tested the relationship between the athletes' perceptions of parental behaviors and the athletes' motivations in terms of goal orientations. The results confirmed the direct relationships between both dimensions with only two exceptions, which were related to the non-significant paths between sports support and mastery orientation (for fathers' behaviors) and competition attendance and mastery orientation (for fathers' evaluation). In addition, the results indicated that the relationships between parents' behaviors and motivation have far from a simple connection. Specifically, the expression of positive expectations about the future sports success of the athletes in their sports (i.e., sports expectations) increases the athletes' ego and mastery achievement goal orientations, and these relationships were equal for mothers and fathers, supporting Hypothesis 1b.

Additionally, higher performance pressure (i.e., negative reactions) from parents with regard to the poor sports performance of the athletes, increases ego orientation and decreases mastery orientation, supporting Hypothesis 1c. The previous research indicated that when young athletes perceive their parents to be over-involved, holding excessively high expectations, and exerting too much pressure to perform, they also experience higher levels of anxiety and even burnout (e.g., Bois, Lalanne, & Delforge, 2009; Gould, Lauer, Rolo, Jannes, & Pennisi, 2008). Our results extend these findings by suggesting differential relationships between performance pressure and goal orientations, meaning that parents should conceive performance as an indicator of their children's personal improvement rather than the "gold standard" of success by comparing their children's achievements with those of other athletes.

For the other parental behaviors, the relationships were not exactly the same. An increase in parents' sports support decreases athletes' ego orientation (for both mothers and fathers), and, as expected, it increases mastery orientation (but only for mothers' behaviors). Thus, Hypothesis 1a was not totally confirmed, suggesting that when parents assume satisfaction and support with regard to the sports activity of their children, they seem to increase mastery orientation (especially for mothers) but not ego orientation. This is quite interesting because it suggests that when parents express their appreciation for their children's sports' activity, they seem to emphasize internal and controllable standards of achievement rather than external and less controllable indicators of success. If this is the case, then our data are in accordance with the literature that suggests that when parents assume sports support by emphasizing learning and enjoyment, children have a higher tendency to assume a task goal orientation (Atkins et al., 2015). Less expecting results were found regarding competition attendance, which was not related to ego orientation and negatively related with mastery orientation (for mothers' behavior), thus not confirming Hypothesis 1d. This does not comply with our expectations because we supposed positive relationships of competition attendance with both goal orientations due the competitive nature of youth sports (Harwood & Knight, 2009). Equally important, when there is a relationship between parents' behaviors and athletes' goal orientations, it decreases the athletes' mastery orientation in the mothers' case. There are two possible explanations for these results. First, when competing athletes do not seem to make stronger connections between their parents' behaviors and the tendency to be more ego- or mastery-oriented with regard to competition, this means that they value other sources of motivational influence (for example, their own personal standards of success and the influence of colleagues and coaches). Second, competition attendance may be one of the parental behaviors that is more dependent on contextual factors because it occurs when the athletes are *in situ*, i.e., competing, which makes the parents' behaviors much more dependent on volatile factors, for example, the changeable sports results during competition. This can explain why mothers seem to stimulate mastery orientation by using the sports support behavior; however, they seem to produce the opposite influence when they exhibit competition attendance behavior. If this is the case, then these results reinforce the value of contextual factors when considering parental influence on sports (Clarke, Harwood, & Cushion, 2016) and reinforce the need to educate parents about appropriate and inappropriate behaviors in the competitive environment (Lauer, Gould, Roman, & Pierce, 2010).

Overall, the results from the direct model highlighted the differential relationships between how young athletes perceive parents' behaviors and the type of goal orientation they assume with regard to sports. Quite interesting is that fathers' behaviors seem more related to ego orientation (21% of explained variance) than to mastery orientation (12% of explained variance), while mothers' behaviors seem more stable for both goal orientations (15% for ego orientation and 16% for mastery orientation). This shifts the topic of parental influence on sports toward quite complex and multifaceted conditions, forcing researchers and practitioners to look for the differential impacts produced by parents on the sports activities of their children.

Hypothesis 2 was based on the possibility of cognitive appraisal's mediation of the relationship established between the athletes' perception of parental behaviors and motivation. We found support for the hypothesis for three parental behaviors with the exception of competition attendance, which only maintained a direct relationship with mastery orientation (for mothers' behaviors). Of additional importance, all the mediations were partial, which means that although cognitive appraisal represented an important variable to consider when explaining the relationship between parental behaviors and motivation, the direct relationship between parental behavior and goal orientations remained significant. Interestingly, we observed that the cases of mediation occurred for mothers and not for fathers. Specifically, the two mediations of threat perception occurred for sports support and performance pressure. Mothers seem to reduce threat perception by increasing sports support; however, they also seem to increase threat perception when they engage in performance pressure behavior.

Moreover, and as expected, higher threat perception corresponded to less mastery orientation. The cases of challenge mediation occurred for the sports expectations in both goal orientations. Mothers seem to increase challenge perception when setting positive expectations about the future sports success of their children, and that is quite useful because challenge perception corresponded to an increase in both goal orientations. We should reinforced that by including mediation of cognitive appraisal, the explained variance of mastery orientation increased substantially from the direct model (values of 16% for mothers and 12% for fathers) to the mediated model (values of 34% for mothers and 30% for fathers). These results highlight different patterns of parental behaviors, which is already described in the literature (Ede, Kamphoff, Mackey, & Armentrout, 2012); however, they seem not to totally confirm the expected traditional roles of mothers and fathers. In fact, the young athletes in this study identified the sports support of mothers and not that of fathers

as increasing their mastery orientation (which confirms the literature). However, both parents were perceived similarly by the athletes in terms of sports expectations and even performance pressure (where we could expect a stronger influence of fathers) as well as in competition attendance where significant results were observed for mothers' behaviors. Fathers seem to exert greater influence on their children, especially in behaviors such as sports support, sports expectations, and performance pressure, where we did not find any mediation of cognitive appraisal.

Overall, the results from the mediated model indicated that cognitive appraisal can represent an important variable for understanding the relationship between parental behaviors and athletes' motivation. However, the mediation did not occur for all the parental behavior, again reinforcing the need to consider the differential influences of mothers and fathers on athletes' motivation. The results were invariant according to the athletes' competitive levels and sports records, which means that the patterns of the relationships are sustained according to these two athletes' sports characteristics.

We should reinforce some practical implications of our results. First, the way in which the young athletes perceive their parents' behaviors seem to be related to their motivation. This means that there are overall benefits in parents being trained in positive behaviors such as supporting the sports activity of athletes, setting realistic sports expectations, giving less importance to the results of competition and more importance to children's self-improvement, and being a role model when attending competitions. Based on our results, competition attendance seems to be the behavior for which parents need more information and help. Second, parents should consider the differential influences produced by their behaviors, which means that intervention should inform, incorporate, and monitor distinct patterns of action when parents interact with their children. Third, by stimulating a positive perspective of sports (as a challenging activity), parents can also influence their children's ego and mastery orientations, and it is quite useful to stimulate fathers to do that because it seems from our results that mothers already had some advantage in terms of this type of influence.

The main limitations of this study are the correlational nature of the collected data that does not allow for the inference of causality between the variables under study and the fact that the data are only related to collective sports. However, the results from our hypotheses provide some useful indications of how to improve the relationships between parents and their children to turn sports into a positive experience of growth and wellbeing in young athletes. Future studies should consider the dynamic relations between parental behaviors

and athletes' goal orientation because if we can expect changes in athletes' motivations due to parental behaviors, we can also expect changes in parental behaviors due to athletes' changes of goal orientation. These mutual interactions are best captured by longitudinal studies that take into account social relational factors (as is the case of parental influence), personal and psychological factors (as is the case of motivation and cognitive appraisal), and environmental factors (as is the case of competitive level of athletes or even team culture focused on sport success in competition). By unraveling all these mutual influences across specific periods of athletes' competition, we may gain new insights about how to turn juvenile sports into a meaningful experience for athletes.

What Does This Article Add?

Cognitive appraisal assumes to be an important variable to understand the relationship between how athletes perceive parental influence on sports and their motivation for practicing sports. Our data reinforce that athletes perceive different patterns of parental influence of fathers and mothers on their goal orientation in sports, with mothers increasing influence on aspect related to sports support, sport expectations, and even performance pressure. Theoretical approaches to parental influences on sports should consider transactional perspectives of human adaptation to stress contexts (as is the case of sports) and practitioners should be aware of differential relations produced by parental behaviors on goal orientation by considering the mediation of cognitive appraisal.

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