

The Mediating Role of Coping between Competitive Anxiety and Sport Commitment in Adolescent Athletes

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Abstract. Framed in cognitive-motivational-relational theory of emotions (Lazarus, 1999), this study aimed to test how coping mediated the relationship between competitive anxiety and sport commitment in a sample of adolescent athletes. Five-hundred adolescents ($M = 16.42$; $SD = 1.54$) participated in our study. Participants completed competitive anxiety, coping, and sport commitment measures. We defined the measurement model using confirmatory factor analysis and exploratory structural equation modeling; and compared two different models of mediation (i.e., total and partial mediation) using structural equation modeling. Results favored partial mediation model where cognitive anxiety factors predicted sport commitment. Results from this model suggest direct and mediated structural relations between concepts. Somatic anxiety had a weak influence on sport commitment (total effects = 0.090 [-.131, .311]). Worry showed a positive influence on sport commitment (total effects = .375 [.262, .486]) through direct and mediated effects. Concentration disruption showed a negative impact on sport commitment (total effects = -.544 [-.724, -.363]) through mediated effects only, showing a negative path on task-oriented coping and a positive path on disengagement-oriented coping. As a whole, our findings identify task coping efforts undertaken by adolescent athletes as a key element in the relationship between competitive anxiety and sport commitment. These findings provide preliminary evidence for the design of coping interventions in adolescents.

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Adolescence has been identified as a critical period for sport continuation, being the period where the greatest drop-out occurs. Many factors such as interpersonal constraints, lack of enjoyment, or perceptions of low competence have been associated with this phenomenon (for a review, Crane & Temple, 2014). Emotions experienced during sport activities seem to have some importance in this regard (Mohiyeddini, Pauli, & Bauer, 2009). Coping with these emotions is considered a relevant factor influencing adolescent experiences within their sport, both in a positive or in a negative way (Nicholls, Perry, Jones, Morley, & Carson, 2013). Coping is defined as the “constantly changing cognitive and behavioral efforts to manage specific internal and/or external demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984, p. 141).

Coping helps to regulate emotions generated by stressors. Specific coping strategies are often classified into task- and disengagement-oriented coping dimensions

(Gaudreau & Blondin, 2004). Task-oriented coping (TOC) represents efforts oriented to directly deal with stressful situations, meanwhile disengagement-oriented coping (DOC) is understood as thoughts and behaviors that focus attention away from the stressful events. Given the prevalence of certain coping strategies in adolescent athletes (Nicholls, Levy, & Perry, 2015; Nicholls et al., 2013), coping dimensions based on TOC (i.e., effort expenditure, thought control, and logical analysis strategies), and DOC (i.e., venting of emotions and resignation strategies) are of particular interest in our study. Although coping strategies and dimensions are not universally beneficial or detrimental (Lazarus, 1999), TOC typically predict more desirable consequences in adolescents (e.g., academic competence or psychological adjustment; Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001).

From the cognitive-motivational-relational theory of emotions (CMRT; Lazarus, 1999), coping intertwine with cognitive appraisals and emotions. As this is a

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recursive process, coping can both go before and after emotions (Lazarus, 1991). According to the theory, a person has a tendency to judge his or her person-environment relationship in order to determine if the environment endangers or has the potential to threaten personal goals. This process is known as primary appraisal. CMRT also posits that an additional evaluation (i.e., secondary appraisal) intercedes in this assessment process. Secondary appraisal identifies coping possibilities available for the person in that situation. Primary and secondary appraisals may be modulated over time due to habituation process (Tong et al., 2009). The combination of appraisals may result in four possible evaluations (i.e., harm/loss, threat, challenge, or benefit) which, in turn, generate emotions.

Lazarus (2000) defined emotions as “an organized psychophysiological reaction to ongoing relationships with the environment, most often, but not always, interpersonal or social” (p. 230). This author identified eight relevant emotions that arise in the domain of sport (i.e., anger, anxiety, shame, guilt, hope, relief, happiness, and pride). Of these emotions, competitive anxiety has received the most attention in the sport literature, and is believed to negatively influence sport continuation (Martens, Vealey, & Burton, 1990). Competitive anxiety usually implies that an athlete appraises a situation as having personal significance, and perceives not having the resources to cope with the situation (Wolf, Evans, Laborde, & Kleinert, 2015).

Martens (1977) defined competitive state anxiety as the “tendency to perceive competitive situations as threatening and to respond to them with feelings of apprehension and tension” (p. 23). These feelings include somatic and cognitive symptoms of anxiety (Martens et al., 1990). Somatic anxiety refers to “physiological and affective elements of the anxiety experience” (Martens et al., 1990, p.6). Regarding cognitive anxiety, some research (e.g., Ponseti, Sesé, & Garcia-Mas, 2016; Wolf, Eys, & Kleinert, 2015) has considered the division of cognitive anxiety components (i.e., worry and concentration disruption), which has shown differences in their relation with other constructs in adolescent athletes (Grossbard, Smith, Smoll, & Cumming, 2009). Worry is conceptualized as non-optimistic concerns regarding potential negative personal and social consequences of poor performance (Sarason, 1984). Concentration disruption implies difficulties in focusing on task relevant cues and thinking clearly in competitive situation (Nideffer & Sagal, 2006). This tri-dimensional distinction of competitive anxiety is part of a higher conceptual framework (Smith, 2008).

Morris and Kavussanu (2009) found that worry and concentration disruption in adolescents were negatively related with enjoyment. As enjoyment has strong associations with sport commitment (Garcia-Mas et al., 2010),

we expect similar relations between competitive anxiety and sport commitment. Previous exploratory research has found no conclusive relations (Pons, Ramis, Garcia-Mas, de la Llave, & Perez-Llantada, 2016). In this study, we aim to test this hypothesis from a stronger methodological approach. Sport commitment is defined as “the psychological construct representing the desire and resolve to continue sport participation” (Scanlan, Carpenter, Simons, Schmidt, & Keeler, 1993, p. 6). Following CMRT, we expect that coping may play a mediating role (i.e., total or partial) in the relationship between competitive anxiety and sport commitment (Lazarus, 1999). Therefore, understanding the association of competitive anxiety, coping, and sport commitment might resolve whether specific coping orientations strengthens or mitigate the negative association between competitive anxiety and sport commitment.

Some, but not conclusive, research in the sport context has empirically supported the relations among these variables. Ntoumanis and Biddle (2000) observed that adolescents’ intensity of cognitive anxiety symptoms was associated with DOC. Similarly, Hatzigeorgiadis and Chroni (2007) found negative associations between TOC and cognitive anxiety, and positive associations between somatic anxiety intensity and DOC. In addition, previous investigations have addressed the impact of coping on some other indicators of sport continuation such as burnout (e.g., Raedeke & Smith, 2004). For example, Kim and Duda (2003) found that sport commitment was positively related with TOC among university students. These studies have investigated the relationships between emotions and coping, or between coping and indicators of sport continuation (i.e., sport commitment). However, few studies have examined the interplay between emotions, coping, and sport commitment among adolescents. Our study aims to shed some light on this gap in the literature by examining the mediating role of coping between competitive anxiety and sport commitment.

Method

Participants

Five-hundred team sport athletes participated in the study of which 36.8% were female. Athletes’ ages were between 13 and 21 ($M = 16.42$; $SD = 1.54$) pertaining to 56 teams. All participants were Spanish and practiced the following team sports: Basketball (49.8%), soccer (19.4%), volleyball (14.6%), handball (11.2%), roller hockey (3.4%), and water polo (1.6%).

Measures

Competitive anxiety was assessed with the Sport Anxiety Scale-2 (SAS-2; Smith, Smoll, Cumming, & Grossbard, 2006), using the Spanish version (Ramis, Torregrosa,

Viladrich, & Cruz, 2010). This is a 15-item questionnaire containing the subscales of somatic anxiety (e.g., “My body feels tense”), worry (e.g., “I worry that I will not play my best”), and concentration disruption (e.g., “I lose focus on the game”). All items were rated on a 4-point Likert-style scale. The scale had good reliability with Cronbach’s alpha values of .83 for somatic anxiety, .84 for worry, and .81 for concentration disruption. Confirmatory factor analysis showed a good fit, with $\chi^2(87) = 262.7, p < .001, RMSEA = .064, 90\% CI [.055, .072], CFI = .965,$ and $TLI = .958.$

Coping was assessed through the “Inventaire des Stratégies de Coping en Compétition Sportive” [Coping Inventory for Competitive Sport] (ISCCS; Gaudreau, & Blondin, 2002). The Spanish version (Moliner, Salguero, & Márquez, 2010) is composed of 31 items. We selected items from effort expenditure (e.g., “I apply myself by giving a consistent effort”), logical analysis (e.g., “I analyse my past performances”), thought control (e.g., “I try not to be intimidated by other athletes”), venting of emotions (e.g., “I get angry”), and resignation (e.g., “I let myself feel hopeless and discouraged”) strategies, corresponding to TOC and DOC (Gaudreau & Blondin, 2004). Cronbach’s alpha values were .69 for TOC and .75 for DOC. Congruent with the idea defended by Lazarus (2006) that coping dimensions are not strictly task- or disengagement-oriented, we opted for a measurement model with less-restrictive conditions (i.e., Exploratory Structural Equation Model; ESEM). This showed a model fit of $\chi^2(76) = 352, p < .001, RMSEA = .085, 90\% CI [.076, .094], CFI = .865,$ and $TLI = .801.$

Sport commitment was assessed through the commitment subscale of the Sport Commitment Questionnaire (SCQ; Scanlan et al., 1993), using the Spanish version (Sousa, Torregrosa, Viladrich, Villamarín, & Cruz, 2007). This subscale is composed of six items (e.g., “I want to keep playing my sport this season”). All items were rated on a 5-point Likert-style scale. Cronbach’s alpha was .79 for the present study. Confirmatory factor analysis showed an excellent fit in our study, $\chi^2(9) = 16.7, p < .001, RMSEA = .041, 90\% CI [.000, .072], CFI = .995,$ and $TLI = .992.$

Procedure

This study was granted ethical approval by the university ethics committee. We contacted sport clubs and sent them an information letter. A date was arranged to administer the questionnaires with all clubs that agreed to participate. Data was collected in the clubhouse or locker rooms of the participating clubs and at least one trained researcher was present. Completion of the questionnaires took approximately 20 minutes. Those participants who requested (47.2%) were send a report with their main results.

Data Analysis

Preliminary Analysis and Measurement Models

The first step of data analysis included examining missing data, item distribution and testing possible multilevel design effects. The existence of deviant cases was also evaluated. In the second step, we estimated the measurement models. Due to the ordinal nature of subscales, we decided to use Weighted Least Squares Mean and Variance Adjusted (WLSMV) estimator in Mplus 7.0 software. Standard errors corrected for multilevel design effects were used. Goodness of fit was assessed with $\chi^2,$ root mean square error of approximation (RMSEA), comparative fit index (CFI), and tucker lewis index (TLI). According to Yu (2002), CFI and TLI values $> .95$ and $RMSEA < .06$ are indicators of excellent fit for categorical data. We used confirmatory factor analysis (CFA), and exploratory structural equation modeling (ESEM) to define the measurement model for each questionnaire.

Mediation Model

We evaluated if TOC and DOC mediated the relationships between competitive anxiety components and sport commitment. We tested a model where only mediated effects were specified (total mediation model), and a model with direct and mediated effects specified (partial mediation model) using structural equation modeling (SEM). As total mediation is nested within a partial mediation model, we selected the most appropriate mediation model based on (a) goodness-of-fit indexes of each model; and (b) differences of fit between the nested models.

Results

Descriptive Data and Measurement Model

Missing data was 0.3% and consequently, no special difficulties associated with missingness were expected. Intraclass Correlation Coefficient (ICC) of some items was sizeable for the team cluster variable, ranging from .06 to .12. To take into account the multilevel design effects we used TYPE = COMPLEX option in Mplus. Cook’s distance was below one for all participants, suggesting the absence of outliers. Some descriptive results of the sample are provided at Table 1.

With the aim to evaluate a whole measurement model, we first evaluated single measurement models for each instrument. After that, we tested the full measurement model including restrictive conditions (i.e., CFA) for competitive anxiety, and commitment factors; and less-restrictive conditions (i.e., ESEM) for coping. The full measurement model achieved acceptable goodness of fit indices (see Table 2).

Table 1. Descriptive Statistics of Study Sample (n = 500)

	M	SD	Range	α	1	2	3	4	5
1. Somatic anxiety	1.75	0.64	1–4	.83	–				
2. Worry	2.88	0.75	1–4	.84	.54**	–			
3. C. disruption	1.74	0.61	1–4	.81	.68**	.40**	–		
4. TOC	3.40	0.70	1–5	.69	.04	.24**	-.23**	–	
5. DOC	2.23	0.77	1–5	.75	.43**	.25**	.58**	-.08	–
6. Commitment	4.35	0.65	1–5	.79	-.08	.21**	-.33**	.59**	-.34**

Note: “C. Disruption” refers to Concentration disruption; “TOC” refers to task-oriented coping; “DOC” refers to disengagement-oriented coping; * $p < .05$, ** $p < .001$.

Table 2. Fit Indexes of Measurement and Mediation Models

	χ^2	df	CFI	TLI	RMSEA (90% CI)
<i>Measurement models</i>					
CFA competitive anxiety	262.768**	87	.965	.958	.064 [.055, .072]
ESEM coping	351.996**	76	.856	.801	.085 [.076, .094]
CFA commitment	16.709**	9	.995	.992	.041 [.000, .072]
Full measurement model	848.797**	545	.946	.938	.033 [.029, .038]
<i>Mediation models</i>					
Total mediation model	913.812**	569	.933	.926	.035 [.031, .039]
Partial mediation model	903.621**	566	.934	.927	.035 [.030, .039]

Note: * $p < .05$, ** $p < .001$.

Mediation Model

We tested total mediation and partial mediation models (see Table 2). Both models showed goodness of fit values close to excellence. Comparison of the two models was computed using DIFTEST option in Mplus, showing significant differences, $\chi^2(3) = 14.6$; $p < .05$, so we opted to select the best fitting model (i.e., partial mediation model).

All statistically significant regression paths of the accepted model are presented in Figure 1. Indirect effects standard errors were computed using the

delta method as bootstrapped standard errors are not available for complex data. All indirect effects are presented in Table 3. Competitive anxiety factors had a significant effect on TOC. Concentration disruption also had a positive significant effect on DOC. The coping dimensions had a differential impact on commitment. TOC showed a positive effect on commitment, and DOC showed negative effect. Finally, there was a direct effect of worry on commitment. Results suggest that coping partially mediates the relationship between worry and sport commitment.

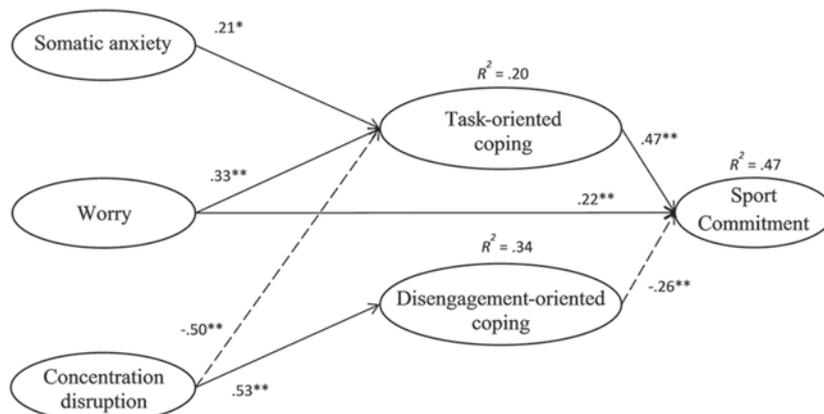


Figure 1. Structural equation model of the accepted model.

Note: Continuous lines indicate positive predictions and dashed lines indicate negative relationships. * $P < .05$. ** $P < .001$.

Table 3. Standardized Total and Indirect Effects for the Accepted Model.

	Total		Total indirect		Specific indirect	
	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
<i>Somatic anxiety</i> → <i>Commitment</i>	.090	[-.131, .311]	.081	[-.021, .182]		
TOC					.100	[.013, .188]
DOC					-.020	[-.069, .030]
<i>Worry</i> → <i>Commitment</i>	.375	[.262, .486]	.153	[.072, .234]		
TOC					.154	[.085, .223]
DOC					-.001	[-.035, .034]
<i>Concentration disruption</i> → <i>Commitment</i>	-.544	[-.724, -.363]	-.376	[-.507, -.245]		
TOC					-.238	[-.340, -.135]
DOC					-.138	[-.206, -.070]

Note: "TOC" refers to task-oriented coping; "DOC" refers to disengagement-oriented coping.

Discussion

This study assessed the mediating role of coping in the relation between competitive anxiety and sport commitment in adolescent athletes adopting the CMRT perspective. We tested two models where coping totally or partially mediated the relationship between competitive anxiety and sport commitment. Our results suggest that the partial mediation model better explained the interplay between competitive anxiety, coping and sport commitment in comparison to total mediation model. These findings support and extend previous research regarding the relation between these concepts (e.g., Kim & Duda, 2003; Morris & Kavussanu, 2009; Ntoumanis & Biddle, 2000; Pons et al., 2016).

Previous literature found that competitive anxiety had a negative impact on adolescents' predisposition to keep participating in sport (Morris & Kavussanu, 2009; Pons et al., 2016). In this study, competitive anxiety showed both positive and negative influences on sport commitment. Somatic anxiety had a weak influence on sport commitment; meanwhile cognitive anxiety components (i.e., worry and concentration disruption) showed important positive and negative influences on sport commitment. These results retake the traditional debate regarding the debilitating or facilitative role of competitive anxiety in sport competition (Jones & Swain, 1995). Our study suggests that different components may have a positive or negative impact on sport competition. Even when competitive anxiety has traditionally been considered as detrimental, it has been suggested that anxiety may have positive effects on competition, favoring sustained effort and concentration on the task (e.g., Lazarus, 2000), and helping to re-appraise it as excitement (Brooks, 2014).

This study suggests that, in particular, the cognitive anxiety components predict sport commitment directly and indirectly through coping. Worry showed a positive

direct effect on sport commitment. Greater worry was associated with more use of TOC that enhanced levels of sport commitment. Concentration disruption on the other hand was associated with greater use of DOC and less use of TOC, which in turn lowered sport commitment. Present findings suggest that those adolescents who take direct actions (i.e., effort, thinking about possible solutions, and controlling own thoughts) to face inherent demands of the competition are more likely to keep participating within their sport. This is consistent with the postulation that TOC might be associated with more desirable outcomes (Compas, et al., 2001).

Worry had positive direct and indirect (through TOC) effects on sport commitment. This finding is not in line with previous suggestions that higher levels of worry are associated with decreased TOC (e.g., Dias, Cruz, & Fonseca, 2012) and lower sport enjoyment (Morris & Kavussanu, 2009). Although the traditional conceptualization of worry describes it as a negative element of competitive anxiety (Nideffer & Sagal, 2006), previous findings on the use of the Spanish version of the SAS-2 suggest that Worry may be conceptualized by young athletes as "a sense of responsibility regarding the task at hand" (Ramis, Viladrich, Sousa, & Jannes, 2015). This conceptualization links with CMRT's primary appraisal definition (i.e., personal relevance of a situation; Lazarus, 1999), and share some nuances with the concept of perfectionistic strivings (i.e., setting of very high standards of performance; Stoeber, 2011). Similar to the findings of this study, recent research (Jowett, Hill, Hall, & Curran, 2016) found perfectionist strivings acted as enhancer of athlete engagement and as protective factor for athlete burnout. Therefore, both concepts could share some psychological processes. Future studies should investigate about the nuances of each concept and the meaning and psychological process they share.

Higher levels of concentration disruption were associated with increased use of DOC and less use of TOC which in turn reduced sport commitment. These findings are congruent with preliminary results presented by Dias et al. (2012). Previous research has also indicated that concentration disruption may limit attentional resources available for current task processing (Allen, Jones, McCarthy, Sheehan-Mansfield, & Sheffield, 2013). Concentration disruption may threaten attentional focus on the task at hand, which would interfere with the mobilization of resources for confronting competition demands, detracting attention from relevant cues of the task (i.e., TOC) and favoring the attention on alternative cues (e.g., DOC). This process might suggest that concentration disruption and DOC share some attentional resources. This idea is congruent with previous research (e.g., Carver, 2001) that suggest that anxiety may be useful in directing movement away from threats, by encouraging athletes to mobilize resources to achieve their goals.

From a practical perspective, our results suggest that future interventions based on coping fundamentals should focus on providing adolescent athletes with strategies to lower concentration disruption manifestations. In addition, training adolescent to use TOC might help them to deal with competitive anxiety in sport, and coaches might learn to judge athletes' emotional expression not only by their external expression (i.e., somatic anxiety) but also for cognitive indicators. This in turn is likely to enhance sport commitment among adolescents and lower future drop-out from sport.

Some limitations and future directions of this research must be addressed. As this is a cross-sectional study, no causal inferences can be made from our results. We acknowledge that conclusions drawn here are culturally dependent. Some studies suggest differences in coping processes among cultures (e.g., oriental versus occidental; Laborde, You, Dosseville, & Salinas, 2012). We also consider that coping actions are influenced by type of sport. In this study participants mainly practiced opposition sports so future studies should also consider other sports with other requirements (e.g., exhibition or repetition). Given the difficulties in conducting factorial analysis with coping (Perry, Nicholls, Clough, & Crust, 2015), future studies should explore alternative approaches (e.g., Pons, Viladrich, & Ramis, 2017). Furthermore, although the SAS-2 has good psychometric properties, it would be important to further examine its functional, conceptual, and/or psychometric equivalence in different ethnic or cultural groups. This would be particularly important for the worry factor. Finally, in this study, we only selected those coping behaviors of interest for our current objectives, so we acknowledge the comparability issues with other works that used the full instrument.

Present results suggest that competitive anxiety has a relevant association with sport commitment. Specially, cognitive anxiety factors seem to differ in their influence on adolescent sport commitment. This relationship is mediated by athletes' style of coping. Coping oriented to task issues such as increase of effort, analysis of the situation, and control of own thoughts seem to strengthen this relation in a positive way. Alternatively, coping strategies diverting attention away from the stressful events, such as venting unpleasant emotions or resignation, might negatively influence sport continuation.

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