

## RUNNING HEAD: TABLE TENNIS LEADERSHIP OUTCOMES

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10 Relationships between perceived coach leadership, athletes' use of coping and  
11 emotions among competitive table tennis players

12 Abstract

13 The aims of this study were to examine: (a) whether coach leadership  
14 behaviours predict athletes' use of coping and (b) whether coping predicts  
15 athletes' emotional outcomes in competition. A sample of 180 table tennis  
16 players ( $M_{\text{age}} = 33.87$ ;  $SD = 16.64$ ; 149 men and 31 women) voluntarily  
17 participated in the study. A partial least square path modelling (PLS-PM)  
18 approach was used to examine the relationships between the study variable.  
19 The results showed that: (a) coach democratic behaviour was significantly  
20 related with task-oriented coping; (b) task-oriented coping was significantly  
21 related with excitement and happiness; (c) distraction-oriented coping was  
22 significantly related with anxiety, dejection and anger. As a whole, PLS-PM  
23 results suggested that coach democratic behaviour could be the better style in  
24 relationship with positive coping and emotion outcomes in table tennis players.  
25 Keywords: Athletes' emotional outcomes, coach behaviours, competition,  
26 racket sport.

27

28

**Introduction**

29 Literature based on different sports suggested that coach leadership is central in sport  
30 as it could influence a wide variety of athletes' outcomes such as concentration,  
31 motivation, dropout, injuries, well-being or emotions (Cruz & Kim, 2017; Ekstrand,  
32 Lundqvist, Lagerbäck, Vouillamoz, Papadimitiou, & Karlsson, 2018). Coach  
33 leadership in sporting context can be conceptualized as a multidimensional construct  
34 that comprises the coach decision-making, motivation tendency of coach and the way  
35 that coaches faces the teaching process (Chelladurai & Salleh, 1980). In table tennis,  
36 coach leadership plays a salient role on the athletes' way to succeed (Kajtna &  
37 Kondrič, 2009). In particular, table tennis coaches and their players share many  
38 experiences across sport career (Kajtna & Kondrič, 2009) and it is not uncommon for  
39 coaches of young table tennis players to accompany their respective players to the  
40 senior elite level. Thus, as a difference from other sports, coaches and players spend a  
41 long career together which make stronger ties and boost the influence of leadership.

42 From a theoretical point of view, one of the most recognised sport leadership  
43 models is Chelladurai and Salleh's model (1980) and recent researches on sport  
44 leadership were grounded within this theoretical framework (Cruz & Kim, 2017;  
45 Fletcher & Roberts, 2013). This model focuses on the influence of a variety of specific  
46 coach leadership behaviours (Chelladurai & Salleh, 1980). To date, coach leadership  
47 behaviours have been related to pleasant and unpleasant emotions in competition  
48 (González-García et al., 2019; Kristiansen, Roberts, & Abrahamsen, 2010), burnout  
49 syndrome (Gillet, Vallerand, Amoura, & Baldes, 2010), and coping strategies  
50 (Nicolas, Gaudreau, & Franche, 2011). In particular, coaches using training and  
51 instruction (a coach that takes care on teach and the learning process of athlete),  
52 democratic behaviours (a coach that decides rules taking into consideration player

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53 ideas), positive feedback (a coach that gives positivism in its feedback with athletes)  
54 and social support (in case of necessity people that give a broader support and  
55 encouragement) are expected to foster athletes' positive outcomes and prevent  
56 athletes' negative outcomes (Cruz & Kim, 2017; Ekstrand et al., 2018). In contrast,  
57 coaches using authoritarian behaviours are expected to increase athletes' maladaptive  
58 outcomes such as unpleasant emotions or athlete burnout (González-García,  
59 Martinent, & Trinidad, 2019). As such, to further develop this line of research, the  
60 present study aimed at providing a novel empirical test of the entire sequence relating  
61 coach leadership behaviours, coping, and emotions among competitive table tennis  
62 players.

63 These variables were selected because they seem particularly poignant for  
64 competitive table tennis players. High psychological demands are placed on table  
65 tennis players and could lead them to struggle for controlling their emotions and in  
66 turn impact their performance (Chen, Chang, Hung, Chen, & Hung, 2010; Martinent,  
67 Campo, & Ferrand, 2012). For instance, Chen et al. (2010) highlighted that the three  
68 major psychological demands perceived by table tennis players referred to a lack of  
69 self-confidence, an oversteering and being unable to cope with opponent's tactics. As  
70 such, table tennis players have to use coping skills in order to manage their internal  
71 and/or external demands exceeding their perceived resources (Lazarus & Folkman,  
72 1984). The cognitive-motivational-relational theory (CMRT) of Lazarus (2000) is a  
73 prominent framework which has guided research on coping and emotions in sport.  
74 Within the CMRT framework, coping is dependent on the process of appraisal  
75 (cognitive interpretation of the situation) and impacts the emotions experienced by  
76 athletes (Doron & Martinent, 2017; Lazarus, 2000). Although a bulk of research  
77 provided evidence for the role of individual-related factors (e.g., appraisal, personality,

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78 motivation) as antecedents of coping, research examining the role of environmental  
79 factor (such as coach leadership) in predicting the athletes' use of coping is rather scant  
80 (Nicolas et al., 2011). Nevertheless, an examination of psychological underpinnings  
81 of coach leadership and coping based on CMRT (Lazarus, 2000) and Chelladurai and  
82 Salleh (1980) theoretical frameworks indicates a potentially crucial connection  
83 between such variables. Indeed, the cognitive interpretation of the situation – which  
84 trigger the use of coping strategies – is dependent on the environment in which athletes  
85 are involved (Lazarus, 2000). As coach plays a central role in athlete's environment,  
86 coach leadership behaviours could predict athletes' use of coping strategies in  
87 competition (Chelladurai & Salleh, 1980).

88       Although athletes are using a wide variety of coping strategies in response to  
89 stressful situations, hierarchical models of coping have been proposed to regroup the  
90 coping strategies into a meaningful and parsimonious set of coping dimensions  
91 (Gaudreau & Blondin, 2002; Lazarus & Folkman, 1984). In particular, Gaudreau and  
92 Blondin (2002) developed a conceptual framework distinguishing three types of  
93 coping dimensions in sport: Task-oriented coping (dealing directly with stressful  
94 situation and the resulting thoughts and affects), disengagement-oriented coping  
95 (withdrawing from the process of striving towards the realization of desirable  
96 outcomes) and distraction-oriented coping (focusing attention on stimuli unrelated to  
97 the stressful situation). Only a few studies examined the relationships between coach  
98 leadership and coping (Lafrenière, Jowett, Vallerand, & Carbonneau, 2011; Nicolas et  
99 al., 2011). Nicolas et al. (2011) revealed that supportive coach behaviour (the feeling  
100 that your coach encourages you) was positively linked with task-oriented coping  
101 meanwhile unsupportive coach behaviour (the feeling of discouragement from coach)  
102 was positively related to disengagement-oriented coping. In line with these

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103 preliminary results, other sport studies have shown that supportive coach behaviours  
104 were positively related to athletes' use of mental skills (Côté, Yardley, Hay, Sedgwick,  
105 & Baker, 1999) and task-oriented coping strategies (Ntoumanis, Biddle, & Haddock,  
106 1999). However, the results of the aforementioned studies are limited by the fact that  
107 the wide variety of coach leadership behaviours postulated within the Chelladurai and  
108 Salleh's model was not assessed.

109       Otherwise, athletes (and especially table tennis players) must handle a wide variety  
110 of pleasant and unpleasant emotions during competition (Kurimay, Pope-Rhodus, &  
111 Kondric, 2017; Martinent, Gareau, Lienhart, Nicaise, & Guillet-Descas, 2018;  
112 Martinent, Nicolas, Gaudreau, & Campo, 2013). Within the CMRT framework, coping  
113 and emotions have been conceptualised as core psychological processes to explain  
114 within-person variations in performance (Lazarus, 2000; Lazarus & Folkman, 1984).  
115 Especially, coping and emotions are intertwined and allow athletes to adjust to  
116 contextual demands (Lazarus, 1999). In particular, Martinent and collaborators  
117 (Martinent & Ferrand, 2009; Martinent et al., 2012) revealed that anxiety and anger  
118 were the most debilitating emotions (for upcoming performance) experienced by table  
119 tennis players during competition meanwhile joy and serenity were the most  
120 facilitative emotions for performance. As table tennis is a sport characterized by a fine  
121 technical component, experiencing anger and anxiety could lead to a surplus of energy  
122 which could in turn decrease sport performance (González, 2011; Martinent et al.,  
123 2012). However, it is noteworthy that such unpleasant emotions can also increase sport  
124 performance depending on the characteristics of the situation and the interaction  
125 between the individual and the situation (Martinent & Ferrand, 2009).

126       The relationship between coping and emotions is at the heart of stress and  
127 adaptation theoretical frameworks such as the CMRT (Lazarus, 2000; Lazarus &

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128 Folkman, 1984). This topic is particularly relevant in competitive sporting context  
129 because athletes' ability to cope with demanding environments is considered by  
130 several researchers and psychologists as one of the more important qualities that  
131 athletes (and table-tennis players) need to develop (Lazarus, 2000; Martinent &  
132 Decret, 2015). Overall, across several sport studies, task-oriented coping has been  
133 shown to be linked to pleasant emotions (e.g., excitement, happiness) whereas  
134 disengagement-oriented coping has been linked to unpleasant emotions (e.g., anxiety,  
135 anger) (Doron & Martinent, 2017; Gaudreau & Blondin, 2002; Martinent et al., 2013;  
136 Ntoumanis et al., 1999).

137 To sum up, further examination of the relationships between coach leadership,  
138 athletes' coping and emotions seems relevant and important. Specifically, despite the  
139 few studies examining this topic (Lafrenière et al., 2011; Nicolas et al., 2011),  
140 significant limitations in this area tie to the lack of works: (a) examining the role of  
141 environmental factor (such as coach leadership) in predicting athletes' use of coping;  
142 and (b) testing the entire sequence relating coach leadership behaviours and core  
143 variables postulated within the CMRT (coping and emotions). As such, the purposes  
144 of the present study were to examine (a) whether coach leadership behaviours predict  
145 athletes' use of coping and (b) whether coping predicts athletes' emotional outcomes  
146 in competition. Based on the theoretical frameworks of both sport leadership model  
147 (Chelladurai & Salleh, 1980) and CMRT (Lazarus, 2000) as well as on previous sport  
148 studies (Doron & Martinent, 2017; Lafrenière et al., 2011; Nicolas et al., 2011), we  
149 hypothesized that: (a) coach training and instructions, coach democratic behaviour and  
150 coach social support would significantly predict task-oriented coping; (b) authoritarian  
151 behaviour would significantly predict disengagement-oriented coping; (c) task-  
152 oriented coping would significantly predict excitement and happiness; and (d)

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153 disengagement-oriented coping would significantly predict anxiety, dejection and  
154 anger.

155 **Method**

156 *Participants*

157 A sample of 180 table tennis players ( $M_{age} = 33.87$ ;  $SD = 16.64$ ; 149 men and 31  
158 women) from all around Spain voluntarily participated in the present study. Regarding  
159 participants, the players were contacted directly through internet and in face. The use  
160 of an online survey was the tool to reach players from all around Spain.

161 Regarding participants characteristics, most of them were amateur ( $n = 144$ ) and  
162 some players were professionals ( $n = 36$ ). They competed at international ( $n = 17$ ),  
163 national ( $n = 106$ ) or regional levels ( $n = 57$ ). A total of 65 athletes trained between 1  
164 and 5 hours per week, 71 athletes between 5 and 10 hours per week, 21 athletes  
165 between 10 and 15 hours per week and 23 athletes more than 15 hours per week. As  
166 inclusion criteria, it was selected only table tennis players with coach (those without  
167 coach were not allowed to participate).

168 *Measures*

169 A Spanish version (Crespo, Balaguer, & Atienza, 1994) of the leadership sport scale  
170 (Chelladurai & Saleh, 1980) was used to measure players' perceived leadership style  
171 from coaches. This self-report questionnaire contains 40 items measuring the five  
172 dimensions of coach autocratic behaviour (5 items), social support (8 items), positive  
173 feedback (5 items), democratic behaviour (9 items) and training and instruction (13  
174 items). Participants responded using a 5-point Likert scale (1 = never; 5 = always).

175 A Spanish version (González-García et al., 2019) of the sports emotion  
176 questionnaire (Jones, Lane, Bray, Uphill, & Catlin, 2005) was used to assess  
177 dispositional emotions experienced in table tennis competition. This questionnaire is



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178 made up of 22 items that measure happiness (4 items), excitement (4 items), dejection  
179 (5 items), anxiety (5 items), and anger (4 items). A 5-point Likert-type scale ranging  
180 from 0 (not at all) to 4 (extremely) was used by the participants.

181 A Spanish version (Molinero, Salguero, & Márquez, 2010) of the coping inventory  
182 for competitive sport (Gaudreau & Blondin, 2002) was used to measure dispositional  
183 coping strategies used in table tennis competition. The scale is made up of 31 items  
184 that measure task-oriented coping (relaxation, 4 items; logical analysis, 7 items;  
185 seeking support, 2 items; mental imagery/thought control, 5 items), disengagement-  
186 oriented coping (resignation, 4 items, venting emotions, 3 items) and distraction-  
187 oriented coping (distancing, 3 items; mental distraction, 3 items). Participants  
188 responded to such items using a 5-point Likert scale ranging from 1 (does not  
189 correspond at all) to 5 (corresponds very strongly).

190 The Oviedo scale of infrequency response (INF-OV; Fonseca-Pedrero, Lemos-  
191 Giráldez, Paino, Villazón-García, & Muñiz, 2009) was used to identify acquiescence  
192 and dishonest participants. This scale contains 12 self-report items measured with a 5-  
193 point Likert-type rating scale ranging from 1 (totally disagree) to 5 (totally agree). The  
194 goal of this scale is to detect participants who respond randomly, pseudo-randomly or  
195 dishonestly on self-reports. The participants with more than 4 incorrect answers were  
196 deleted from the sample. In this study, 10 participants were taken out from the sample.

197 ***Procedure***

198 The study was carried out following international ethical guidelines and anonymity  
199 was preserved. The sample was selected through a non-randomized controlled trial and  
200 it was followed to ensure participants from all around Spain. In particular, the Spanish  
201 table tennis federation announced through website the conditions to participate in the  
202 study and also researchers contacted with coaches. In case that players contacted

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203 through the internet, the players directly fulfilled the only survey. In case researchers  
204 contacted in face with clubs and coaches, the coaches approved the participation of  
205 their players. Regarding the online form, the players accessed to the survey link, then,  
206 they signed an informed consent form and they could begin to fulfil the survey.

207 *Data Analysis*

208 A partial least squares path modelling (PLS-PM) approach was used to investigate the  
209 links between coach leadership style, coping and emotions among table tennis players.  
210 PLS-PM is a variance-based structural equation modelling technique (Martinent,  
211 Ferrand, Humblot, Bauvineau, & Noisiez, 2019; Nicolas, Drapeau, & Martinent, 2017;  
212 Sánchez, 2013). The PLS-PM methodology was used in the present study based on the  
213 rationale that this analytical approach was not constrained by distributional  
214 assumptions (significant deviations from normality were observed on several  
215 variables, Table 1) and can be used with relatively small sample sizes. Because each  
216 causal subsystem sequence of paths is estimated separately within the PLS-PM  
217 framework, the mandatory requirements to conduct PLS-PM analysis are that the  
218 sample size have to be equal to ten times the number of indicators of the scale with the  
219 largest number of manifest indicators, or the largest number of structural paths directed  
220 at a particular construct in the inner path model (Tenenhaus, Esposito Vinzi, Chatelin,  
221 & Lauro, 2005). Consequently, the sample size of the present study is adequate to  
222 conduct PLS-PM analysis. The confidence interval was estimated using a 95%  
223 interval, based on a bootstrap procedure with 100 replications (Martinent et al., 2019).  
224 The PLS-PM analyses were carried out through R package labelled PLS-PM (Sánchez,  
225 2013).

226 In the present study, parcels were used to maintain a reasonable number of manifest  
227 variables in the model (Coffman & McCallum, 2005). Concerning the coping

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228 construct, three or four indicators of latent variables were created using a domain-  
229 representative approach based on the rationale that it could result in stable parameters  
230 (Little, Cunningham, Shahar, & Widaman, 2002). In particular, the first, second, third  
231 or fourth items of each CICS subscale were averaged to create three or four parcels for  
232 the three dimensions of coping (task-oriented, disengagement-oriented and distraction-  
233 oriented). Coach leadership dimensions were measured by five random aggregates of  
234 items whereas the items of SEQ were used as manifest variables.

235 A two-step modelling approach was used to better identify the sources of poor  
236 overall model fit (Martinent et al., 2019). In the first step (outer model), researchers  
237 focus on the factor structure underlying the items and/or parcels of each construct in  
238 order to examine the psychometric properties of each of the constructs. In particular,  
239 standardised factor loadings, composite reliability values ( $\rho$ ), average variance  
240 extracted (AVE) values and an eigenvalue analysis of the correlation matrix of each  
241 set of manifest variables were used to assess the quality of the measurement model  
242 (Martinent et al., 2019; Nicolas et al., 2017). In particular,  $\rho$  values greater than .70  
243 (Raykov, 2001), AVE values equal or greater than .50 (Fornell & Larcker, 1981), the  
244 first eigenvalue larger than 1 and the second one smaller than 1 (Sánchez, 2013)  
245 indicate acceptable reliability. In the second step (inner model), researchers  
246 simultaneously test the structural and measurement models in order to focus on  
247 conceptual connections among the latent factors (Nicolas et al., 2019).

248

**Results**

249 Firstly, Table 1 shows the descriptive statistics and bivariate correlations between the  
250 study variables. Concerning coach leadership, participants reported: (a) moderate  
251 levels of training and instruction, democratic behaviour, social support and positive  
252 feedback; and (b) low levels of authoritarian behaviour. Regarding coping, results

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253 revealed: (a) high scores of task-oriented coping; (b) moderate scores of distraction-  
254 oriented coping; and (c) low levels of disengagement-oriented coping. Relating to  
255 emotions, participants reported: (a) moderate anxiety levels; (b) low dejection and  
256 anger levels; and (c) high excitement and happiness levels. The correlations among the  
257 study variables did not indicate multicollinearity, as they ranged from -.24 to .86 (i.e.,  
258 confidence intervals ( $\pm$  two standard errors) for all the correlations supported the  
259 discriminant validity insofar as none of the intervals included 1.0).

260 Secondly, Table 2 presented the results of the PLS-PM outer model (measurement  
261 model). Results provided strong evidence for the reliability and validity of all the  
262 constructs examined in the present study, as indicated by the loadings,  $\rho$  values, AVE  
263 values, and first and second eigenvalues reported. In particular, results of the outer  
264 model showed that: (a) standardised factor loadings ranged between .45 and .93 ( $M =$   
265  $.74$ ;  $SD = .12$ ); (b)  $p$  values ranged between .85 and .95 ( $M = .90$ ;  $SD = .03$ ); (c) AVE  
266 values ranged from .50 to .81 ( $M = .69$ ;  $SD = .10$ ); and (d) the first eigenvalues ranged  
267 from 2.19 to 4.09 ( $M = 3.08$ ;  $SD = .62$ ) whereas the second eigenvalues ranged from  
268 .36 to .85 ( $M = .53$ ;  $SD = .16$ ).

269 Thirdly, as the results of the PLS-PM outer model provided evidence for the  
270 reliability and validity of all the constructs examined in the present study, the inner  
271 model (structural model) focusing on the relationships between the latent variables  
272 was examined (Table 3). Results showed that: (a) coach democratic behaviour was  
273 significantly related with task-oriented coping ( $\beta = .52$ ;  $p < .05$ ); (b) task-oriented  
274 coping was significantly related with excitement ( $\beta = .41$ ;  $p < .05$ ) and happiness ( $\beta =$   
275  $.37$ ;  $p < .05$ ); (c) distraction-oriented coping was significantly related with anxiety ( $\beta =$   
276  $.34$ ;  $p < .05$ ) dejection ( $\beta = .41$ ;  $p < .05$ ); and anger ( $\beta = .35$ ;  $p < .05$ ).

277

**Discussion**

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278 The present study was designed to test the entire sequence relating coach leadership  
279 behaviours and core variables postulated within the CMRT (coping and emotions)  
280 among a sample of competitive table tennis players. In particular, the aims of this  
281 study were to examine: (a) whether coach leadership behaviours predict athletes' use  
282 of coping and (b) whether coping predicts athletes' emotional outcomes in  
283 competition. In line with the sport leadership model (Chelladurai & Sallee, 1980) and  
284 the CMRT (Lazarus, 2000), results of PLS-PM revealed that coach leadership was  
285 significantly related with athletes' use of coping and coping was significantly related  
286 with emotions experienced by table tennis players during competition.

287 The largest relationship was found between coach democratic behaviour and task-  
288 oriented coping. This result highlighted the role of environmental factor – an  
289 understudied topic within the realm of coping (Nicolas et al., 2011) – in predicting the  
290 athletes' use of coping. This result is consistent with those of a previous study  
291 conducting on the relationship between perceived coach behaviour and coping among  
292 athletes practicing a wide range of individual sports (Nicolas et al., 2011). They have  
293 shown that supportive coaching (inferred as a global score encompassing  
294 training/planning, technical skills, mental preparation, goal settings, competition  
295 strategies, and positive personal rapport) was significantly related with task-oriented  
296 coping which in turn was significantly related with goal attainment (Nicolas et al.,  
297 2011).

298 Results of the present study furthered this line of research in examining  
299 simultaneously the prediction of several coach behaviours – expected to foster  
300 athletes' adaptive outcomes (i.e., training and instructions, democratic behaviour,  
301 social support, positive feedbacks) – on athletes' use of coping strategies. In the  
302 present research, coach democratic behaviours but not positive feedback, social

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303 support and training and instruction, was significantly related with task-oriented  
304 coping – conceptualized as a positive outcome among table tennis players based on  
305 previous research conducting in this sport (Martinent & Decret, 2015). Nevertheless,  
306 in past researches, positive feedback, social support and training and instruction have  
307 been related to the use of and/or effectiveness of coping strategies in other sports (Cruz  
308 & Kim, 2017; Ekstrand et al., 2018). These differences could be explained by the  
309 characteristics and context of table tennis (Chen et al., 2010; Kajtna & Kondrič, 2009).  
310 In particular, table tennis is an individual sport characterized by small training groups,  
311 high number of tournaments, and high amount of practice hours (Kajtna & Kondrič,  
312 2009; Martinent & Ferrand, 2009). Therefore, coaches spend so many hours with  
313 players within small groups of training which could potentially increase the needed of  
314 democratic behaviour in coaches, because the lack of this style could force them to  
315 quit table tennis. Democratic coaches give more autonomy in players' decision and  
316 this autonomy is needed as a social need that gives well-being to player (Lafrenière et  
317 al., 2011; Nicolas et al., 2011). Therefore, table tennis context needs coaches that give  
318 autonomy in players' decision in order to foster the use of adaptive coping strategy  
319 (task-oriented coping) among table tennis players.

320 Furthermore, in line with CMRT (Lazarus, 2000); results of PLS-PM showed that  
321 task-oriented coping was significantly related with the experience of pleasant emotions  
322 (excitement and happiness) during table-tennis competition whereas distraction-  
323 oriented coping was significantly related with the experience of unpleasant emotions  
324 (anxiety, dejection and anger). Previous studies consistently showed that task-oriented  
325 coping is linked with pleasant emotions, athletes' satisfaction and sport performance  
326 (Kurimay et al., 2017; Martinent et al., 2009; Robyn, Robyn & Robert, 2010).  
327 However, at first glance the significant relationships between distraction-oriented

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328 coping and unpleasant emotions (anxiety, dejection and anger) were rather surprising  
329 as it would have been expected that disengagement-oriented coping would have been  
330 primarily significantly related with unpleasant emotions (Gaudreau & Blondin, 2002;  
331 Gaudreau et al., 2010; Kurimay et al., 2017). Nevertheless, it is noteworthy that other  
332 studies also revealed that distraction-oriented coping could be related to negative  
333 outcomes in terms of sport performance (Gaudreau, Nicholls, & Levy, 2010; Secades,  
334 Molinero, Salguero, Barquín, de la Vega, & Márquez, 2016). Also, those players that  
335 experience distraction-oriented coping in the present study are characterized to have  
336 the ability to take a time thinking in other topics different than competition and they  
337 are more use to spend time alone in competition. In this sample of table tennis players,  
338 it is possible that the use of distraction-oriented coping strategies during table tennis  
339 competitions could have disrupted players' concentration and competitive routines  
340 (Martinent & Ferrand, 2009; Robyn et al., 2010), leading them to experience a wide  
341 range of unpleasant emotions such as anxiety, anger and dejection.

342 Results of the current study could be used to help coaches in their relationships with  
343 their table-tennis players (and athletes practicing racket sports in general). In  
344 particular, results of the present study highlighted the importance to educate coaches  
345 in order to display a democratic leadership style. Indeed, democratic coach leadership  
346 behaviours was significantly related with the use of task-oriented coping which in turn  
347 was significantly related with pleasant emotional experience (happiness and  
348 excitation) during table- tennis competitions. Players need to feel that they are part of  
349 their training process and that they have the chance to decide in their sport career  
350 (Amorose & Anderson-Butcher, 2007; Gillet et al., 2010). As many studies point out,  
351 autonomy is a central factor fostering positive outcomes in athletes (Amorose &  
352 Anderson-Butcher, 2007; Gillet et al., 2010). As the democratic style is characterized

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353 by a consensus in the decision between coach and player, it is important that athletes  
354 feel that they can decide and participate in their training and competition process  
355 (Chelladurai & Salleh, 1980; Cruz & Kim, 2017; Fletcher & Roberts, 2013). As such,  
356 incrementing sport pedagogy for coaches in the coaching courses and professional  
357 seminars could be a particularly insightful action in order to develop democratic coach  
358 leadership behaviour.

359 A notable limit of the present study refers to the fact that all variables were assessed  
360 in using one source of data (athletes' self-report questionnaires). Even if the INF-OV  
361 (Fonseca et al., 2009) was used to prevent randomly responses among participants  
362 (acquiescence), other bias associated with the use of self-reported measures could be  
363 highlighted such as social desirability or common method bias. As such, future  
364 research should try to minimize such bias by complementing self-reported data with  
365 informant ratings (e.g., coach), objective indicators of performance, and/or qualitative  
366 methods (e.g., interview, focus group). Another limitation is that there are more  
367 theories that talk about the stress handle, such as the Cognitive Activation Theory of  
368 Stress (Ursin & Eriksen, 2004). The cited theory explains how stress affect athletes  
369 rather than be focused on athletes coping strategies per se, like Lazarus and Folkman  
370 (1984) theory, which was the one used in this work. For that reason, the way in that  
371 Lazarus and Folkman (1984) theory interpret the handle of stress has been shown as a  
372 limitation by other scholars (Berjot & Guillet, 2011). Thus, the choice of Lazarus  
373 theory could be a limitation from the perspective of the theoretical framework of that  
374 work. Regarding that, due to the lack of light in the comparison of Lazarus Stress  
375 Theory (Lazarus & Folkman, 1984) and the Cognitive Activation Theory of Stress  
376 (Ursin & Eriksen, 2004), another future proposal line would be to investigate in a long-  
377 term intervention the difference of the stress handle among both theories. For that



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378 reason, this body of research could shed light in the proposed limitation that lead to  
379 follow an only model of stress handle which is the Lazarus's theory (Lazarus &  
380 Folkman, 1984).

381 Notwithstanding these limits, the present results provided evidence that coach  
382 democratic behaviour was significantly related with task-oriented coping (an adaptive  
383 outcome) which in turn was related with pleasant emotions (excitement and happiness)  
384 whereas distraction-oriented coping was significantly related with unpleasant  
385 emotions (anger, anxiety, dejection). Consequently, the implementation of education  
386 programs – designed to develop and/or maintain a democratic style of leadership – that  
387 included several regular workshops had the potential to provide salient information on  
388 the literature on coach leadership in sport settings.

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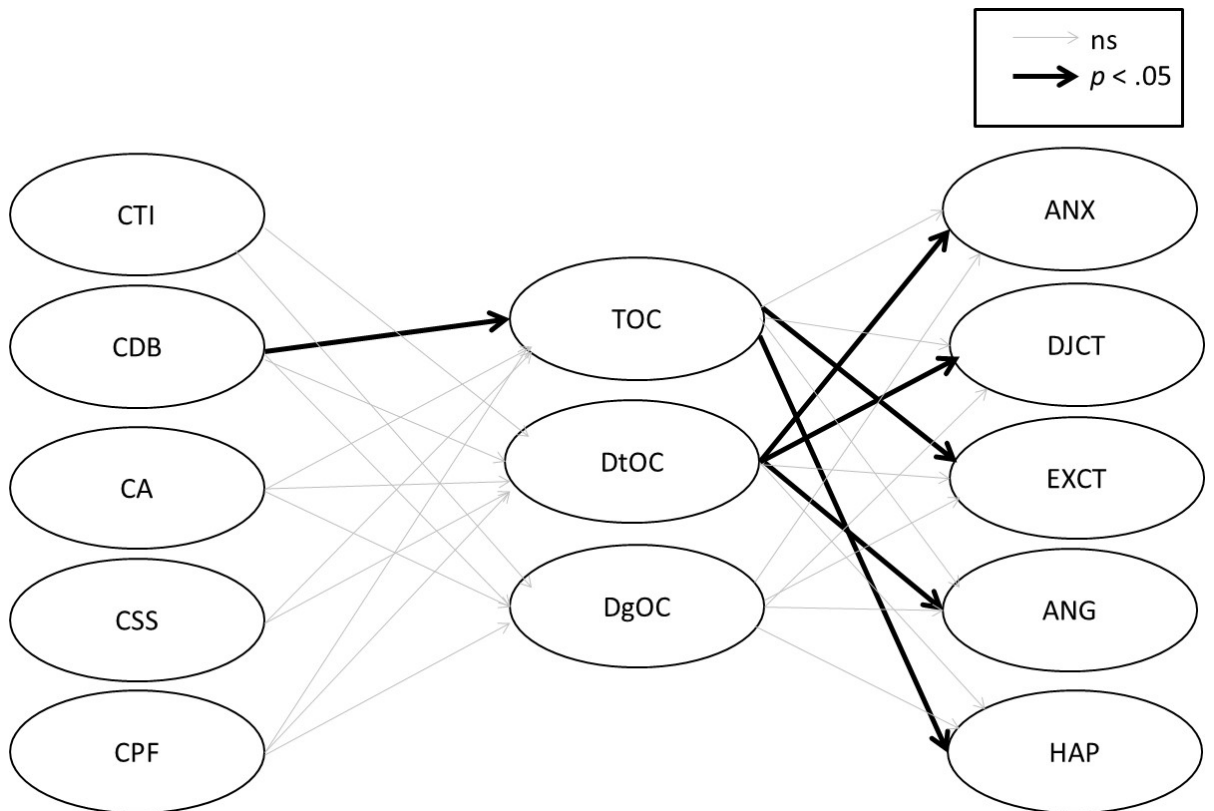
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524 Figure 1. Results of the structural model of the partial least square – path modelling.  
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530 Note. CA = Coach Autocratic Behaviour; CDB = Coach Democratic Behaviour; CTI  
 531 = Coach Training and Instruction; CSS = Coach Social Support; CPF = Coach  
 532 Positive Feedback; TOC = Task-Oriented Coping; DtOC = Distraction-Oriented  
 533 Coping; DgOC = Disengagement-Oriented Coping; ANX = Anxiety; DJCT  
 534 =Dejection; EXCT = Excitement; ANG = Anger; HAP = Happiness.



RUNNING HEAD: TABLE TENNIS LEADERSHIP OUTCOMES

Table 1. Descriptive statistics and correlations among the variables.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Training and Instruction													
2. Democratic Behaviour	.83**												
3. Authoritarian Behaviour	-.10	-.13											
4. Social Support	.81**	.81**	-.24**										
5. Positive Feedback	.78**	.74**	-.24**	.75**									
6. Task-Oriented-Coping	.19**	.31**	-.02	.21**	.17*								
7. Distraction-Oriented-Coping	-.10	-.01	.11	-.03	-.17*	.39**							
8. Disengagement-Oriented-Coping	-.03	.06	.06	.04	-.05	.31**	.59**						
9. Anxiety	-.04	-.04	.04	-.02	-.02	.06	.23**	.08					
10. Dejection	-.24**	-.20**	.04	-.18**	-.26**	-.09	.40**	.28**	.39**				
11. Excitement	.23**	.23**	.06	.21**	.21**	.35**	.06	.02	.42**	-.10			
12. Happiness	.30**	.27**	.00	.28**	.34**	.33**	-.08	-.13	.07	-.24**	.69**		
13. Anger	-.22**	-.17*	.14*	-.13	-.23**	-.06	.38**	.28**	.40**	.86**	.01	-.17*	
Mean	3.67	3.26	2.45	3.58	3.88	63.72	34.20	13.60	1.76	.80	2.80	3.03	.69
Standard Deviation	3.67	3.26	2.45	3.58	3.88	9.89	5.79	3.89	.88	.93	.78	.76	.91
Skewness	-.62	-.26	.50	-.62	-.92	-.14	.18	.51	-.10	1.17	-.74	-.93	1.50
Kurtosis	-.14	.10	-.01	.16	.44	.36	.75	.51	-.38	.71	.83	1.16	1.75

Note.  $p < .05^*$ ;  $p < .01^{**}$

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Table 2. Psychometric properties of the study variables

Variables	Construct level Statistics	Items/Parcels	SFL
1. Training and Instruction	$\lambda_1 = 4.09$ ; $\lambda_2 = .36$ $p = .95$ ; AVE=.81	1	.79
		2	.76
		3	.80
		4	.80
		5	.76
2. Democratic Behavior	$\lambda_1 = 3.37$ ; $\lambda_2 = .56$ $p = .91$ ; AVE=.66	1	.74
		2	.74
		3	.66
		4	.60
		5	.74
3. Authoritarian Behavior	$\lambda_1 = 2.73$ ; $\lambda_2 = .73$ $p = .85$ ; AVE=.50	1	.78
		2	.72
		3	.75
		4	.69
		5	.53
4. Social Support	$\lambda_1 = 3.74$ ; $\lambda_2 = .45$ $p = .93$ ; AVE=.74	1	.80
		2	.74
		3	.70
		4	.69
		5	.82
5. Positive Feedback	$\lambda_1 = 3.64$ ; $\lambda_2 = .52$ $p = .93$ ; AVE=.72	1	.90
		2	.88
		3	.87
		4	.80
		5	.78
6. Task-Oriented Coping	$\lambda_1 = 2.92$ ; $\lambda_2 = .48$ $p = .91$ ; AVE=.72	1	.45
		2	.53
		3	.59
		4	.58
7. Distraction-Oriented-Coping	$\lambda_1 = 2.32$ ; $\lambda_2 = .37$ $p = .91$ ; AVE=.77	1	.67
		2	.72
		3	.65
8. Disengagement-Oriented-Coping	$\lambda_1 = 2.19$ ; $\lambda_2 = .59$ $p = .89$ ; AVE=.73	1	.48
		2	.55
		3	.62
9. Anxiety	$\lambda_1 = 2.72$ ; $\lambda_2 = .85$ $p = .85$ ; AVE=.51	1	.52
		2	.77
		3	.76
		4	.74
		5	.70
10. Dejection	$\lambda_1 = 3.89$ ; $\lambda_2 = .39$ $p = .94$ ; AVE=.77	1	.83
		2	.84
		3	.92
		4	.88
		5	.91
11. Excitement	$\lambda_1 = 2.42$ ; $\lambda_2 = .70$ $p = .85$ ; AVE=.57	1	.80
		2	.64
		3	.85

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		4	.78
		1	.65
12. Happiness	$\lambda_1 = 2.89; \lambda_2 = .67$	2	.90
	$p = .91; AVE = .80$	3	.89
		4	.93
		1	.87
13. Anger	$\lambda_1 = 3.22; \lambda_2 = .33$	2	.89
	$p = .94; AVE = .72$	3	.89
		4	.91

Note.  $\lambda_1$ : 1st eigenvalue of the item correlation matrix;  $p$ : composite reliability; AVE: average variance extracted; SFL: standardized factor loadings. \*All SFLs were significant at  $p < 0.001$ .

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Table 3. Structural model

Variables	Total Sample ( <i>n</i> = 180)		
	BME	CI	
CTI -> TOC	-.14	-.41	.13
CTI -> DtOC	-.08	-.35	.24
CTI -> DgOC	-.24	-.49	.08
CDB -> TOC	.52*	.26	.76
CDB -> DtOC	.13	-.14	.38
CDB -> DgOC	.24	-.23	.60
CA -> TOC	-.01	-.20	.20
CA -> DtOC	.08	-.10	.25
CA -> DgOC	.10	-.12	.25
CSS -> TOC	-.01	-.22	.26
CSS -> DtOC	.09	-.21	.42
CSS -> DgOC	.18	-.16	.50
CPF -> TOC	-.07	-.28	.12
CPF -> DtOC	-.31	-.59	-.04
CPF -> DgOC	-.17	-.38	.03
TOC -> ANX	.13	-.09	.28
TOC -> DJCT	-.09	-.24	.06
TOC -> EXCT	.41*	.25	.57
TOC -> ANG	-.06	-.21	.10
TOC -> HAP	.37*	.22	.50
DtOC -> ANX	.34*	.17	.50
DtOC -> DJCT	.41*	.29	.57
DtOC -> EXCT	-.11	-.30	.10
DtOC -> ANG	.35*	.21	.49
DtOC -> HAP	-.15	-.34	.01
DgOC -> ANX	-.09	-.28	.07
DgOC -> DJCT	.11	-.04	.24
DgOC -> EXCT	-.17	-.32	.03
DgOC -> ANG	.12	-.04	.28
DgOC -> HAP	-.21	-.40	-.03

Notes: BME = Bootstrap mean estimates; CA = Authoritarian Coach; CTI = Coach Training and Instruction; CDB = Coach Democratic Behaviour; CPF = Coach Positive Feedback; CSS = Coach Social Support; TOC = Task-oriented coping; DtOC = Distraction-oriented coping; DgOC = Disengagement oriented coping; ANG = Anger; HAP = Happiness; DJCT = Dejection; EXCT = Excitement; ANX = Anxiety; CI = Confidence Interval. \**p* < .05.