Head Title: COACH LEADERSHIP AND AFFECTS

Relationships between perceived coach leadership and athletes' affective states experienced during competition

Abstract

We examined whether coach leadership behaviours predicted intensity and direction of positive and negative affects experiencing during competition controlling for affects experienced within two hours before competition. 296 athletes (33% female and 67% male; $Mage$ = 21.61; SD = 6.32) voluntarily participated in the study. A partial least square path modelling (PLS-PM) approach was used to examine the relationships between the study variables. The results showed that coach social support significant positively predicted direction of negative affects during competition controlling for pre-competitive negative affect direction. Besides, results revealed that coach democratic behaviour marginally and negatively predicted NA direction during competition whereas coach autocratic behaviour marginally and negatively predicted PA intensity. Thus, coaches social support emerged as an adaptive coaching behaviour. The usefulness of a longitudinal approach might reveal the multivariate experience of affects states and the manner to handle them from a coach leadership perspective.

Keywords: Affective states, coach leadership, competition, prospective design.

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Several studies have provided evidence for the salient role of coach leadership style in athletes' outcomes such as performance, well-being, burnout, motivation, or dropout (i.e., Cruz & Kim, 2017; Ekstrand, Lundqvist, Lagerbäck, Vouillamoz, Papadimitiou, & Karlsson, 2018; Jiménez et al., 2019). For instance, athletes belonging to perceived coach leadership profiles reported significant different scores of athlete burnout and coping (González-García, Martinent, & Trinidad, 2019).

Although the literature on coach leadership has been grounded in different frameworks (i.e., Turnnidge & Côte, 2018; Zhang, Jensen, & Mann, 1997), the multidimensional model of coach leadership of Chelladurai and Saleh (1980) was selected in the present study because this theoretical model specifically focuses on sporting context and includes many varieties of coach leadership behaviours that best fit a big number of sport modalities. This theoretical framework is based on three types of leadership behavioural states: Required behaviour (what the situation requires the leader to do), actual behaviour (details that the leader actually does, which depends on the situation, leader and member characteristics), and preferred behaviour (refers to what the team members want the leader to do) (Chelladurai & Saleh, 1980). Each of the previously mentioned types of leadership states can influence coach leadership style in many ways. For instance, the preference of athletes' coach leadership can modify the way that coach interacts with their athletes. Athletes' performance and satisfaction can modify the actual perceived coach leadership style whereas the requirements of the situation can modify the way that coach behaves with athletes (O'Boyle, Murray, & Cummins, 2015).

The multidimensional model of coach leadership (Chelladurai & Saleh, 1980) evaluates the actual coach leadership behaviours from the perspective of the athletes in detailing five distinct coach behaviours: Democratic (coaching behaviours that enable and encourage autonomy in decision making to members), autocratic (The autocratic behaviour dimension states the independence displayed by group leaders in decision making), training and instruction (the training and instruction dimension refers to coaching behaviour intended to improve athlete's performance by stressing and assisting intense training), rewarding behaviour (the rewarding behaviour dimension refers to the coaching behaviours that reinforce good performances through recognition/rewards) and social support (The social support dimension describes coaching behaviours that are characterised by emphasising relationships between members, a positive atmosphere and member well-being) (Chelladurai & Saleh, 1980; Fletcher & Roberts, 2013).

Coach leadership based on training and instruction, democratic behaviours, positive feedback and social support have been related to athletes' positive outcomes such as higher levels of athletes' sport participation, self-determined motivation, fun, group cohesion and lower levels of anxiety and burnout (Cruz & Kim, 2017; Ekstrand et al., 2018; Gillet, Vallerand, Amoura, & Baldes, 2010; Kristiansen, Roberts, & Abrahamsen, 2010; Nicolas, Gaudreau, & Franche, 2011). In contrast, authoritarian coach behaviours have been related to athletes' maladaptive outcomes such as athlete burnout, controlled motivation, or anxiety (Cruz & Kim, 2017; Ekstrand et al., 2018; Gillet et al., 2010; Kristiansen et al., 2010; Nicolas et al., 2011).

Little is known about the influence of coach leadership on athletes' affective states experienced during competition (Shipherd, Wakefield, Stokowski, & Filho, 2018). It is somewhat surprising as this issue has special appeal for practitioners in sport

psychology because it offers a foundation for their interventions. An examination of psychological underpinnings of coach leadership behaviours indicates a potential connection between coach leadership behaviours and the hallmarks of affective states. Previous studies provided evidence that the experience of affective states depends on the appraisal process and the evaluation of the transaction between the person and the environment as it is pointed on Lazarus CMRT (athletes' cognitive interpretation of the situation reflecting the transaction between the individual and the environment) (Doron & Martinent, 2017; Lazarus, 2000; Nicholls, Hemmings, & Clough, 2010). In this perspective, coaches could help their athletes to interpret their sporting experiences by providing messages about the likelihood that athletes will attain success in sport or about the value of participating and competing in this sport (Eccles, 2005; Martinent, Naisseh, Ferrand, Bois, & Hautier, 2013). Through their beliefs, coaches provide immediate and specific messages to their athletes that help them to develop cognitions related to their sport behaviours and outcomes which in turn could influence their affective states through the process of cognitive reappraisals.

The literature on affective sciences has struggled with the delimitation of the terms used in the fields such as emotion, mood, or affect as these concepts cannot be used interchangeably (Ekkekakis & Petruzello, 2000). Emotions are a psychophysiological reaction (subjective experience, facial expression, cognitive processing, physiological changes) to an ongoing relationship with the environment (Lazarus, 1999, 2000; Martinent & Nicolas, 2017a). Thus, emotions comprised an appraisal of the situation that triggers the emotion. Moods comprised the way that a person sees the world in general and its perceived place in it at a particular period (Ekkekakis & Petruzello, 2000). Therefore, the experience of a mood depends on the beliefs of people but is not related to a particular situation. The affects refer to the valence (pleasant, unpleasant)

of the experience lived by athletes (Ekkekakis & Petruzello, 2000). In this way, affects include emotions and moods (Lazarus, 1999). In particular, positive affect (PA) entails optimal states of energy, concentration, and pleasurable engagement, whereas negative affect (NA) refers to a sense of distress and unpleasant engagement (Watson, Clark, & Tellegen, 1988). These two affective dimensions represent the subjective components of broader biobehavioral systems of approach and withdrawal that are intricately linked with adaptation mechanisms (Watson, Wiese, Vaidya, & Tellegen, 1999).

Although sport researchers have traditionally focused on the level or intensity of affective states, several scholars have considered the directional interpretation of affects as an important further dimension of affective states in achievement situations (Jamieson, Mendes, Blackstock, & Schmader, 2010; Martinent & Ferrand, 2009). Directional interpretation of affects comprises in the athletes' evaluation of the effect of its affective states on their upcoming performance (Martinent, Campo, & Ferrand, 2012). As such, experience of a particular level of affect might be interpreted as debilitating or facilitating depending on the athletes' appraisal of their perceived resources to manage the demands of competition (Hanton, Wagstaff, & Fletcher, 2012; Martinent & Nicolas, 2017b). To sum up, affective states in sport can be conceptualized in terms of four core affective dimensions: Intensity and direction of PA and NA (Nicolas, Martinent & Campo, 2014).

Preliminary results were offered within the literature regarding the link between affective states and coach leadership behaviours (Strauch, Wäsche, & Jekauc, 2019). Coaches' positive feedback were related with athletes' perceived ability, efforts and performance (Chia, Pyun, & Kwon, 2015; Hollembeak, & Amorose, 2005; Ignacio, Montecalbo, & Cardenas, 2017). Coach leadership based on training and instruction, democratic behaviours, positive feedback and social support are supposed to be related

with PA, due to its ample relationship with positive outcomes (Cruz & Kim, 2017; Ekstrand et al., 2018; Gillet et al., 2010; Kristiansen et al., 2010; Nicolas et al., 2011).

In contrast, authoritarian coach behaviours are supposed to be linked with NA owing to their connexion with maladaptive outcomes in sporting context (Cruz & Kim, 2017; Ekstrand et al., 2018; Gillet et al., 2010; Kristiansen et al., 2010; Nicolas et al., 2011). In line with such hypotheses, Strauch et al. (2019) revealed in a qualitative study that specific and general coach competencies (such as social support) can influence affective states of participants in sport and exercise and can result in increased sport participation (higher commitment of sport participants). Results of another research revealed that cohesive activities (encouraging social cohesion) were significantly related to PA (Loughead, Patterson, & Carron, 2008) whereas Jiménez et al.' (2019) results suggested that autocratic coaching style (a coach characterized by punishments, negative communication and edicts) increased cortisol levels (a physiological indicator related to the intensity of Negative Affects). Nevertheless, it is noteworthy that the studies of Jiménez et al. (2019), Loughead et al. (2008) and Strauch et al. (2019) used a cross sectional design and thus were not able to provide evidence for the impact of coach behaviours on athletes' affective states. Moreover, to the best of our knowledge, no study examined the relationship between coach leadership behaviours and athletes' direction of affective states. As such, using a longitudinal prospective design (which means that in prospective designs the phenomenon is measured previously than in the target situation) could be particularly useful to highlight the prospective impact of coach leadership behaviours on athletes' intensity and direction of affective states during competition.

In sum, the role of coach leadership behaviours in athletes' experience of affects is worthy to be studied in order to better understand the impact of coach leadership in

athletes' affective states during competition – a crucial piece on the way to perform in competition (Jiménez et al., 2019; Strauch et al., 2019). Moreover, leadership has been shown to be a crucial piece in athletes wellbeing and the experiences in competition are other crucial factor related with negative outcomes such as burnout, less satisfaction, anxiety, anger, among others (Cruz & Kim, 2017; Ekstrand et al., 2018). As such, the goal of the present study was to examine whether coach leadership behaviours predicted intensity and direction of PA and NA experiencing during competition controlling for affects experienced within two hours before competition. Based on the aforementioned literature on this topic (Cruz & Kim, 2017; Ekstrand et al., 2018; González-García et al., 2019) and on the detailed theoretical frameworks (Chelladurai & Saleh, 1980; Watson et al., 1999), we hypothesized that: (a) coach training and instructions, coach democratic behaviour, reward and coach social support would significantly and positively predict direction and intensity of PA and direction of NA experienced during competition controlling for affective states experienced within two hours before the competition; and (b) authoritarian behaviour would significantly and positively predict intensity of NA during the competition (controlling for NA intensity before the competition).

Method

Participants

296 athletes (97 female and 199 male; *Mage* = 21.61; *SD* = 6.32) voluntarily participated to the present study. On average, they have been competing in their sport for 9.25 years (*SD* = 4.06). They trained 6.45 hours per week (*SD* = 4.58). Concerning the level of competition, athletes participated in regional (*n*=160), national (*n*=118) and international sport events (*n*=17). Athletes were drawn from the sports of athletics, badminton, basketball, cycling, gymnastics, handball, soccer, swimming and tennis.

Measures

The French version (Pinard, 1987) of the leadership sport scale (Chelladurai & Saleh, 1980) was used to measure players' actual perceived coach leadership behaviours in general (training, competition and in the relationship with the coach as a whole). This self-report questionnaire contains 40 items measuring the five dimensions of coach autocratic behaviour (5 items; α = .46), social support (8 items; α = .82), reward (5 items; α = .64), democratic behaviour (9 items; α = .65) and training and instruction (13 items; α = .86). Participants responded using a 5-point Likert scale (1 = never; 5 = always). It is noteworthy that Cronbach alpha of coach autocratic behaviour was too low, but according to Taber (2016) might be considered as acceptable. Nevertheless, due to several limitations, Cronbach's alpha is currently regarded as obsolete by some scholars (Sijtsma, 2009; Yang & Green, 2010). Hence, several reliability and validity indicators have been used within the partial least squares path modelling (PLS-PM) approach used in the present study to provide evidence for the validity and reliability of the construct scores used in this study.

The French version of the Positive and Negative Affect Schedule including a direction scale (PANAS-D; Nicolas et al., 2014) was used to measure affects before and during competition. The scale contains two scales for assessing intensity of PA (10 items; $\alpha_{\text{before competition}}$ = .77, $\alpha_{\text{during competition}}$ = .83) and NA (10 items; $\alpha_{\text{before competition}}$ = .80, $\alpha_{\text{during competition}}$ = .82) and direction of PA (10 items; $\alpha_{\text{before competition}}$ = .72, $\alpha_{\text{during competition}}$ = .87) and NA (10 items; $\alpha_{\text{before competition}}$ = .85, $\alpha_{\text{during competition}}$ = .84). Participants were asked to rate: (a) the intensity of each symptom on a 5-point Likert scale ranging from 1 (not at all or very slightly) to 5 (extremely); and (b) the degree to which the intensity of each symptom experienced was either facilitative or debilitative

to subsequent performance (directional interpretation) on a 7-point Likert scale ranging from - 3 (very debilitative) to 3 (very facilitative).

Procedure

The study was conducted according to international ethical guidelines. A written informed consent was obtained before the beginning of the study (and a parental consent was required for athletes under 18 years old). A longitudinal design was used in the present study. First, the athletes completed the coach leadership questionnaire two days before the competition. Second, the athletes completed the PANAS-D within two hours before the competition in order to not interfere with the preparation routines of competition (Martinent, Nicolas, Gaudreau, & Campo, 2013). Third, participants completed the PANAS-D two hours after competition to assess their affects experienced during the competition they had just completed. This procedure was followed by two previous studiesMartinent et al. (2013) and Nicolas et al. (2014).

Data Analysis

A PLS-PM approach was used to analyse the prospective relationship between coach leadership behaviours and affects experienced during competition controlling for affects experienced before competition. The PLS-PM package of the R software was used to perform the analyses (Sánchez, 2013). PLS-PM is a variance-based structural equation modelling technique (Martinent, Ferrand, Humblot, Bauvineau, & Noisiez, 2019; Nicolas, Drapeau, & Martinent, 2017; Sánchez, 2013). This approach was selected based on the rationale that this methodology was not constrained by distributional assumptions. Besides, this methodology enhances the number of common factor model parameters that can be estimated, as a consequence it is a reliable predictor to present relationships among latent variables in small sample sizes (Sánchez, 2013). The significance of the parameter estimates is assessed by

constructing 95% bias-corrected percentile confidence interval based on a bootstrap procedure with 100 replications (Martinent et al., 2019). Regarding coach leadership behaviours, three or four parcels (depending on the number of items of the subscales) (Coffman & McCallum, 2005) were created using random aggregates of items. Concerning intensity and direction of PA and NA (for both before and during competition), three parcels were made using random aggregates of items.

A two-step modelling approach was used in the present study (Martinent et al., 2019). In the first step (outer model), we examined the psychometric properties of each of the constructs and parcels. In particular, to assess the quality of the measurement model, various indicators were used: Standardised factor loadings, composite reliability values (ρ), average variance extracted (AVE) values and an eigenvalue analysis of the correlation matrix of each set of manifest variables (Martinent et al., 2019; Nicolas et al., 2017). Standardised factor loadings higher than .40 (Martinent et al., 2019), ρ values greater than .70 (Raykov, 2001), AVE values equal or greater than .50 (Fornell & Larcker, 1981), the first eigenvalue larger than 1 and the second one smaller than 1 (Sánchez, 2013) indicate acceptable reliability of latent and manifest scores. In the second step (inner model), we simultaneously tested the structural and measurement models in order to focus on conceptual connections among the latent factors (Martinent et al., 2019).

<div align="center">Results</div>

Descriptive statistics of the study variables are presented in Table 1. Moderate scores of the several coach leadership behaviours were reported by the participants (i.e., training and instruction, democratic behaviour, autocratic behaviour, social support and reward). Regarding affects experienced before and during competition, descriptive statistics revealed: (a) high scores of PA intensity (3.17 to 3.33) and

direction before and during competition (1.01 to 1.23); (b) moderate scores of NA intensity before and during competition (1.80 to 2.02); and (c) moderately low scores of NA direction before and during competition (-.04 to -.06). Moreover, correlational analyses showed that there was no multicollinearity between the study variables as correlations ranged from -.26 to .54 and none of the confidence intervals (i.e., $r \pm$ two standard errors) were close to 1.0.

Results of the inner PLS-PM model were presented in Table 2. As a whole, results provided evidence for the reliability and validity of all the variables' scores (i.e., parcels and latent variables) examined in this study, as indicated by the loadings, ρ values, AVE values, and first and second eigenvalues reported. Particularly, the standardised factor loadings ranged between .46 and .91 ($M = .80$; $SD = .10$), the ρ values ranged between .47 and .93 ($M = .76$; $SD = .12$), the AVE values ranged from .46 to .79 ($M = .68$; $SD = .09$) whereas the first eigenvalues ranged from 1.49 to 2.39 ($M = 2.09$; $SD = .25$) and the second eigenvalues ranged from .36 to .93 ($M = .54$; $SD = .18$).

Results of the structural PLS-PM model were presented in Table 3 (i.e., relationships between the latent variables). As can be expected, results revealed that affects experienced before competition significantly predicted affects experienced during competition ($\beta_{\text{PA intensity}} = .48$; $p < .05$; $\beta_{\text{PA direction}} = .39$; $p < .05$; $\beta_{\text{NA intensity}} = .39$; $p < .05$; $\beta_{\text{NA direction}} = .36$; $p < .05$). Of particular importance in the context of the present study, results also revealed that coach social support significantly and positively predicted NA direction during competition ($\beta = .12$; $p < .05$) and marginally ($p \leq .09$) and positively predicted PA intensity during competition ($\beta = .12$). Moreover, results revealed that coach democratic behaviour marginally and negatively predicted NA direction during competition ($\beta = -.13$, $p \leq .09$) whereas coach autocratic behaviour

marginally and negatively predicted PA intensity (β = -.10, $p \leq$ .09). Finally, coach training and instruction and coach reward behaviours did not significantly predict athletes' affective states during competition (controlling for pre-competitive affective states).

Discussion

The goal of the present study was to examine whether coach leadership behaviours predicted intensity and direction of PA and NA experiencing during competition controlling for affects experienced within two hours before competition. Results of PLS-PM revealed that coach social support (a coach that encourages social relationships among athletes) predicted affective states experienced by athletes during competition controlling for their pre-competitive affective states. In particular, coach social support positively predicted direction of NA during competition and marginally predicted intensity of PA during competition. These results are consistent with hypothesis and sport literature (Cruz & Kim, 2017; Ekstrand et al., 2018; Gillet et al., 2010; Kristiansen et al., 2010; Nicolas et al., 2011). Hence, this type of leadership behaviour is related with more emphasis in social relationships between members, creating a positive atmosphere and member well-being (Loughead et al., 2008; O'Boyle et al., 2015; Strauch et al., 2019). The present study complemented this literature by providing evidence of the prospective adaptive effect of coach social support behaviour on athletes' affective states during competition (increase in athletes' PA intensity and a facilitative interpretation of NA for their upcoming performance).

Although previous studies pointed out the benefits of leadership focused on training and instruction and positive feedback (Cruz & Kim, 2017; Ekstrand et al., 2018; Gillet et al., 2010; González-García et al., 2019), these two coach leadership behaviours did not significantly predicted NA and PA intensity and direction during competition

controlling for pre-competitive affective states. At first glance, these results were surprising and contradicted the formulated hypothesis. These null results could be explained by the fact that athletes could not necessarily always prefer to be under the direction of a coach in competition in all the sport situations (Cruz & Kim, 2017). Hence, although athletes generally appreciate coaches that enable instruction and positive feedbacks (Cruz & Kim, 2017; Weinberg & Gould, 2015), coach leadership behaviours could give an excessive sense of control to athletes in competition (Cruz & Kim, 2017; Weinberg & Gould, 2015), that could result in not to enrich their skills.

Results of PLS-PM also showed that coach democratic behaviour marginally negatively predicted NA direction during competition controlling for precompetitive NA direction. The direction of relationship was surprising and contradicted the formulated hypothesis. This result could be explained by the fact that athletes could not necessarily always prefer democratic coaching behaviours in all the sport situations (Cruz & Kim, 2017). Hence, although athletes generally appreciate coaches that enable and encourage their autonomy in decision making within the training context (Cruz & Kim, 2017; Weinberg & Gould, 2015), within the context of competition, autonomy in decision making could engender an incertitude and in turn lead to maladaptive outcomes. In this way, democratic coach leadership behaviours within competition settings could give an excessive cession of autonomy to athletes in competition (Cruz & Kim, 2017; Weinberg & Gould, 2015) and thus lead them to interpret their NA as debilitating for their performance. Moreover, democratic coach leadership behaviours engendered a negative affective outcome (i.e., decrease of NA direction during competition) did not mean that autocratic coach leadership behaviours is a functional coaching behaviours. Indeed, as hypothesized, autocratic coach behaviours marginally negatively predicted PA intensity during competition controlling for precompetitive

PA intensity. This result confirmed the bulk of cross-sectional studies which have showed the links between autocratic coach behaviours and athletes' maladaptive outcomes such as athlete burnout, controlled motivation, or anxiety (Cruz & Kim, 2017; Ekstrand et al., 2018; Gillet et al., 2010; Kristiansen et al., 2010). Indeed, the use of a longitudinal prospective study design supplemented sport literature by providing evidence for the influence of autocratic coach leadership behaviours on maladaptive athletes' affective outcomes in competition (e.g., decrease in PA intensity during competition).

Confirming the literature on longitudinal affective states in sport competition (Martinent & Nicolas, 2017a; Martinent et al., 2013), results of the present study provided evidence for the impact of affects experienced within two hours before competition on affects experienced during competition. Therefore, the appraisal of the athletes before competition partly conditioned their experience of NA and PA during competition. This result confirmed the importance of the pre-competitive period for implementing mental preparation techniques for optimizing the athletes' affective states for their upcoming performance (Rogissart & Martinent, 2018).

From an applied perspective, results of the present study might help psychologists, consultants, or coaches to counteract detrimental psychological outcomes related to coach leadership behaviours and to foster adaptive psychological outcomes related to coach leadership behaviours. For instance, it is worth noting that coach social support resulted in adaptive affective outcomes in sport competition (i.e., NA direction). Moreover, not only the democratic leadership could engender adaptive outcomes, but it also can lead to negative outcomes. As such, coaches should take into account that their guidance is necessary to reduce the incertitude of competition. In addition, authoritarian leadership has confirmed their negative influence, which is something

that warn coaches to do not forget that they cannot focus their leadership in an authoritarian way (excessive control, punishments and edicts). Therefore, coaches should be focused on giving instructions, social support, feedback and the need to give autonomy to athletes.

Some limitations of the present study should be addressed. Although the only use of self-report measures can have some bias (memory bias, social desirability, acquiescence), the additional use of psychobiological measures in future studies (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) could be difficult as it could result in fewer participants. Thus, it could be useful to measure the concept of coach leadership with self-report questionnaires gathered on athletes as well as with self-report questionnaires gathered on coaches themselves. Nevertheless, it is noteworthy that measuring coach leadership directly from coaches can have some bias as well (e.g., social desirability from coaches, acquiescence, memory bias). Another limitation refers to the wide variety of sports in the study. It could have impacted the results, because each modality has distinct implications and characteristics in training and competition, besides, the same may happen withgroup level depending on the sport type, that can evoke to other outcomes in sport variables.Besides, another limitation might be that coach leadership was measured in general, rather than the perception of leadership in competition, which may change depending on some personal variables of coaches (psychological adjustment, locus of control, satisfaction with life, anxiety, stress, etc.). However, it is noteworthy that this fact should be addressed in the future to detect dysfunctional coaches that differ their leadership to a negative one in competition concerning training. Furthermore, gender ratio may be another limitation factor that can make an impact on affective states, as it was previously revealed by

Cotterill, Clarkson & Fransen (2020). As a consequence, in future research should be take into account that factor.

Notwithstanding these limitations, the use of a longitudinal design allowed to provide evidence for the influence of coach leadership behaviours on athletes' affective states experienced during competition. Mostly, the usefulness of a longitudinal approach might reveal the multivariate experience of affects states in each point of competition and the necessity to handle them properly. In particular, coach social support emerged as an adaptive coach leadership behaviour whereas autocratic and democratic behaviours were characterized as dysfunctional coach leadership behaviours in the context of sport competition. Consequently, it is of prime importance to take into consideration these coach leadership behaviours in order to help coaches fostering athletes' optimal functioning and performance level.

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Figure 1. Results of the structural model of the partial least square – path modelling.
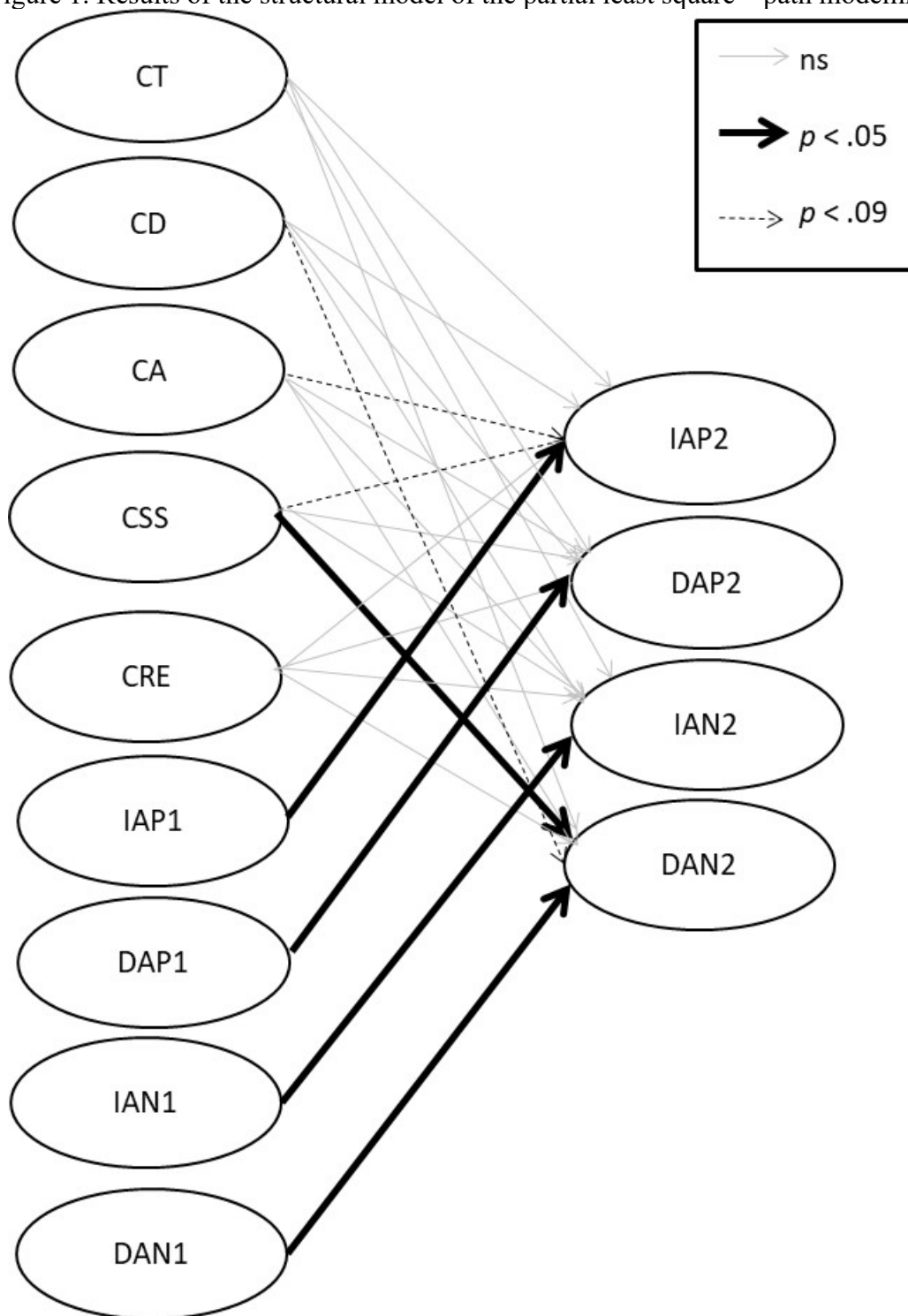
Note. CA = Coach Autocratic Behaviour; CD = Coach Democratic Behaviour; CT = Training and Instruction; CSS = Coach Social Support; CRE = Reward; IAP1 = Intensity of positive affects before competition; DAP1 = Direction of positive affects before competition; IAN1 = Intensity of negative affects before competition; DAN1 = Direction of negative affects before competition; IAP2 = Intensity of positive affects after competition; DAP2 = Direction of positive affects after competition; IAN2 = Intensity of negative affects after competition; DAN2 = Direction of negative affects after competition.

Table 1. Descriptive statistics and correlations among the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Coach Training and Instruction													
2. Coach Democratic	0.08												
3 Coach Autocratic	0.02	-0.25											
4. Coach Social Support	0.36	0.32	-0.05										
5. Coach Reward	0.44	0.25	-0.03	0.51									
6. Intensity of Positive Affects Before Competition	-0.19	0.03	-0.01	-0.26	-0.10								
7. Direction of Positive Affects Before Competition	-0.18	0.07	-0.10	-0.14	-0.08	0.56							
8. Intensity of Negative Affects Before Competition	-0.01	0.02	-0.03	0.01	0.01	0.18	-0.01						
9. Direction of Negative Affects Before Competition	-0.11	0.08	-0.13	0.04	-0.03	0.16	0.19	-.04					
10. Intensity of Positive Affects during Competition	-0.16	0.07	-0.11	-0.06	-0.09	0.47	0.36	0.20	0.10				
11. Direction of Positive Affects during Competition	-0.16	0.05	-0.08	-0.03	-0.13	0.25	0.40	-0.05	0.04	0.57			
12. Intensity of Negative Affects during Competition	-0.07	0.08	-0.06	-0.03	0.01	0.14	0.84	0.39	0.06	0.19	-0.16		
13. Direction of Negative Affects during Competition	-0.01	-0.03	-0.12	0.10	0.02	0.02	0.06	-0.06	0.37	0.12	0.37	-0.19	
Mean	2.08	3.10	3.33	2.97	2.30	3.33	1.23	1.80	-.06	3.17	1.01	2.02	-.04
Standard Deviation	.55	.60	.66	.73	.72	.64	.68	.50	.90	.68	.88	.68	.87
Skewness	.55	-.20	-.21	-.20	.44	-.53	-.35	.75	-.44	-.45	-.77	1.06	.30
Kurtosis	.53	.06	-.61	-.58	-.14	.16	.18	.41	1.32	-.01	1.62	1.82	2.09

Table 2. Psychometric properties of the study variables

Variables	Construct level Statistics	Items/Parcels	SFL
1. Training and Instruction	ʎ1 =2.35; ʎ2 =.36 ρ= .86; AVE=.78	1 2 3	.87 .91 .86
2. Democratic Behavior	ʎ1 =1.98; ʎ2 =.76 ρ = .65; AVE=.66	1 2 3 4	.66 .46 .86 .66
3. Authoritarian Behavior	ʎ1 =1.49; ʎ2 =.93 ρ = .47; AVE=.46	1 2 3	.61 .60 .79
4. Coach Social Support	ʎ1 =2.23; ʎ2 =.45 ρ = .93; AVE=.74	1 2 3	.91 .82 .83
5. Reward	ʎ1 =1.77; ʎ2 =.78 ρ = .64; AVE=.53	1 2 3	.85 .55 .74
6. Intensity of Positive Affects Before Competition	ʎ1 =2.22; ʎ2 =.42 ρ = .82; AVE=.74	1 2 3	.86 .87 .84
7. Direction of Positive Affects Before Competition	ʎ1 =1.93; ʎ2 =0.60 ρ = .72; AVE=.63	1 2 3	.81 .77 .81
8. Intensity of Negative Affects Before Competition	ʎ1 =2.01; ʎ2 =.57 ρ = .75; AVE=.66	1 2 3	.79 .83 .81
9. Direction of Negative Affects Before Competition	ʎ1 =2.34; ʎ2 =.36 ρ = .85; AVE=.77	1 2 3	.91 .88 .85
10. Intensity of Positive Affects After Competition	ʎ1 =2.15; ʎ2 =.52 ρ = .80; AVE=.71	1 2 3	.84 .84 .84
11. Direction of Positive Affects After Competition	ʎ1 =2.39; ʎ2 =.35 ρ = .87; AVE=.79	1 2 3	.91 .87 .88

12. Intensity of Negative Affects After Competition	$ʎ1 =2.15; ʎ2 =.50$ $\rho = .80$; AVE=.71	1 2 3	.79 .89 .84
13. Direction of Negative Affects After Competition	$ʎ1 =2.27; ʎ2 =.46$ $\rho = .84$; AVE=.75	1 2 3	.87 .91 .81

Note. $ʎ1$: ith eigenvalue of the item correlation matrix; ρ: composite reliability; AVE: average variance extracted; SFL: standardized factor loadings. *All SFLs were significant at $p < 0.001$.

Table 3. Structural model

Variables	Total Sample ($n = 296$)		
	BME	CI	
CT -> IPA2	-.08	-.18	.02
CT -> DPA2	-.06	-.21	.06
CT -> INA2	-.07	-.22	.08
CT -> DNA2	-.00	-0.12	.14
CD -> IPA2	.02	-.10	.14
CD -> DPA2	.02	-.11	.15
CD -> INA2	.08	-.03	.18
CD -> DNA2	-.13[†]	-.25	.01
CA -> IPA2	-.10[†]	-.19	.01
CA -> DPA2	-.03	-.13	.12
CA -> INA2	-.03	-.14	.09
CA -> DNA2	-.09	-.20	.08
CSS -> IPA2	.12[†]	-.01	.27
CSS ->DPA2	.11	-.04	.30
CSS->INA2	-.07	-.18	.10
CSS->DNA2	.12*	.05	.28
CRE -> IPA2	-.07	-.24	.16
CRE -> DPA2	.12	-.28	.14
CRE -> INA2	-.06	-.17	.21
CRE -> DNA2	.01	-.17	.13
IPA1 -> IPA2	.48*	.38	.58
DPA1 -> DPA2	.39*	.27	.49
INA1 -> INA2	.39*	.29	.49
DNA1 -> DNA2	.36*	.23	.45

Notes: BME = Bootstrap mean estimates; CA = Coach Autocratic Behaviour; CD = Coach Democratic Behaviour; CT = Training and instruction; CSS = Coach Social Support; CRE = Reward; IPA1 = Intensity of positive affects before competition; DPA1 = Direction of positive affects before competition; INA1 = Negative affects intensity before competition; DNA1 = Direction of negative affects before competition; IPA2 = Intensity of positive affects after competition; DPA2 = Direction of positive affects after competition; INA2 = Intensity of negative affects after competition; DNA2 = Direction of negative affects after competition. CI = Confidence Interval. *$p < .05$; [†]$p \leq .09$.