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Perceived coach-created and peer-created motivational climates and their associations with team cohesion and athlete satisfaction: evidence from a longitudinal study

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Abstract

In this longitudinal study, we examined the extent to which perceived coach- and peer-created motivational climates are associated with athlete-group cohesion and satisfaction with participation among Spanish soccer players competing in the Third National Division. Multilevel modelling analyses showed that perceived coach-created task climate was positively related to perceived cohesion and players’ satisfaction with their participation within their team. Also, perceived peer-created task climate related positively to perceived cohesion. The results indicate the importance of considering peer-related aspects of the motivational climate in addition to considering the coach-related aspects of the motivational climate when examining motivational group dynamics in sport.

Keywords: coach influence, peer influence, group cohesion, satisfaction, perceived motivational environment

An adaptive motivational climate within a team is essential for nurturing good relationships among team members and optimising group effectiveness (Beauchamp, 2007). Understanding how a team’s motivational climate is formulated requires consideration of the role of the coach and the team members. As the group dynamics literature has shown, both the leader and the members of a group (e.g., the coach and the players of a sports team) create the social environment within which a group evolves and operates across time (Levine & Moreland, 1990).

However, the examination of the joint role of the coach- and peer-created motivational climate in sports has been infrequent (for an exception, see Vazou, Ntoumanis, and Duda (2006)) and particularly in longitudinal research designs (Ntoumanis, Taylor, & Thøgersen-Ntoumani, 2012). This is rather unfortunate because motivational climates are dynamic and can evolve across time (Boyce, Gano-Overway, & Campbell, 2009; Reinboth & Duda, 2006). Knowing how motivational climates fluctuate across time and how such fluctuations predict variations in motivation-related outcomes and the relative importance of coach- and peer-created motivational climates may yield important insights that have not been provided by past cross-sectional studies.

Moreover, the extent to which motivation-related outcomes are best predicted by between-person differences in the perceptions of motivational climates or within-person changes in such perceptions is largely unknown. For instance, finding that within-person variability in motivational climate better predicts certain motivational outcomes than do between-person individual differences in such perceptions of the motivational environment may aid in the design of more effective interventions by focusing on how and why perceptions of such an environment fluctuate over time within a person. Further, identifying that peer-created motivational climates are more strongly and consistently associated with outcomes across time than are coach-created motivational climates would attest to...
the importance of cultivating a sustained positive peer-created motivational environment in sport.

Unlike previous studies on motivational climate which sampled amateur athletes, we recruited semi-professional athletes. In doing so, we aimed to test the role of the motivational climate in contexts where competition is salient. Specifically, in our longitudinal (season-long) study, we recruited a sample of semi-professional Spanish soccer players and investigated the extent to which different facets of coach- and peer-created motivational climates are linked (additively and interactively) to the players’ perceptions of team cohesiveness and their satisfaction with their participation within the team. We focused on team cohesion because it helps improve group performance (Carron, Colman, Wheeler, & Stevens, 2002), and only a few longitudinal studies have investigated how motivational climate is linked over time to group dynamics in high-performance sport settings (Heuzé, Sarrazin, Masiero, Raimbault, & Thomas, 2006). Similarly, players’ satisfaction within their team has received scant attention. This is an important oversight because players’ game-related participation satisfaction are closely connected with a team’s optimal functioning (Balaguer, Duda, Atienza, & Mayo, 2002; Beauchamp, Bray, Eys, & Carron, 2002). We employed a longitudinal research design because we considered team cohesiveness and player satisfaction with participation to change across time (Paskevich, Estabrooks, Brawley, & Carron, 2001). In fact, previous research has found that group cohesion changes during the sport season (Heuzé et al., 2006; Leo, Sánchez-Miguel, Sánchez-Oliva, Amado, & García-Calvo, 2012). Therefore, besides testing the trajectories of individual variables across time, we were also interested in investigating the longitudinal variability of the associations between motivational climate, group cohesion, and athlete satisfaction. In this sense, depending on the characteristics of the perceived coach- and peer-created motivational climate, a trend in the perceptions of group processes can be produced given the relationship between these variables (Heuzé et al., 2006; Leo, Sánchez-Miguel, Sánchez-Oliva, Amado, & García-Calvo, 2014).

**Coach- and peer-created motivational climate**

Coaches and peers are considered as two of the main social agents within a sport team (Duda & Balaguer, 2007). In fact, coaches and players’ behaviours have been shown to predict team cohesion (Turman, 2003; Vincer & Loughead, 2010) and satisfaction with sport participation (Loughhead & Carron, 2004).

We use the classic achievement goal theory (i.e., dichotomous approach) to define the motivational climate of a team (Ames, 1992). This approach distinguishes between two types of motivational climate, a *task-involving* climate, where effort, mastery strivings, and individual improvement are encouraged, and an *ego-involving* climate, where social comparisons, normative ability, and interpersonal standards are promoted (Duda & Balaguér, 2007). Whereas task-involving motivational climate direct individuals’ achievement strivings towards the development of personal competence and challenging strivings (Adie, Duda, & Ntoumanis, 2008), an ego-involving climate directs people’s strivings towards the demonstration of normative competence—a situation that makes them vulnerable to uncontrollable situations (see Dweck & Leggett, 1988).

Research in the sport context has predominantly examined the coach as the main shaping force of task- and ego-involving goal climates (e.g., Conroy, Kaye, & Coatsworth, 2006; Olympiou, Jowett, & Duda, 2008). In congruence with achievement goal theory, this research has shown that athletes who perceived that their coach created a task-involving climate reported more positive outcomes such as prosocial behaviour (Boardley & Kavussanut, 2009; Boixadós, Cruz, Torregrosa, & Valiente, 2004), intrinsic motivation (Newton, Duda, & Yin, 2000), and satisfaction with their level of improvement (Balaguer et al., 2002).

However, in an effort to move the focus of attention beyond the coach, Vazou et al. (2005, 2006) and others (e.g., Harwood & Swain, 2001) have proposed that peers can also play an important role in formulating the motivational climate of a team. Indeed, considering peer-created motivational climate alongside the coach-created one has revealed that peer-created motivational climate uniquely contributes to the prediction of important variables such as sportspersonship, burnout, vitality (Ntoumanis et al., 2012), physical self-worth, anxiety, and effort (Vazou et al., 2006). Moreover, it has been shown that perceived peer-created ego- and task-involving motivational climates are only moderately related to the respective coach-created climate dimensions, suggesting that coach- and peer-created task and ego climates are somewhat independent constructs. Team cohesion is an important outcome variable that has not been examined so far by the few studies that have measured both coach- and peer-created motivational climates. We focused on cohesion in this paper because it contributes to a team’s optimal functioning and growth (Paskevich et al., 2001).

**Team cohesion**

Team cohesion has been defined as “a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron, Brawley, & Widmeyer, 1998, p. 213). This definition aligns with Carron’s model (Carron, Widmeyer, &
Brawley, 1985) which proposes that team members hold (a) collective beliefs about the group as a unit in terms of its closeness, resemblance, and affinity (group integration; GI), and (b) individual beliefs regarding the degree to which the group attracts them, thereby satisfying their needs and personal goals (individual attraction to the group; ATG). Each of these classes of beliefs is further divided into two categories, depending on whether they revolve around task-related (T) or social (S) issues (Carron & Brawley, 2000; Carron & Eys, 2012). Thus, four aspects of team cohesion have been identified: (a) Group Integration-Task (GI-T) and (b) Group Integration-Social (GI-S) which reflect members’ beliefs about the degree to which the group is united to reach its objectives and to have its members socialising, respectively; and (c) Individual Attraction to the Group-Task (ATG-T), and (d) Individual Attraction to the Group-Social (ATG-S) which reflect members’ judgments about the degree to which the group is attractive for its objectives and social relationships, respectively.

Cohesion is considered as one of the key attributes of a team (Paskevich et al., 2001). Not surprisingly, it has been associated with a diverse array of positive outcomes such as lower social loafing, more behavioural control, stronger efficacy beliefs (Paskevich et al., 2001), and higher performance (Carron et al., 2002; Mullen & Copper, 1994). More relevant to the present study, group cohesion has also been studied with regard to the motivational climate of a team. Studies have shown cohesion to relate positively to coach-created task climate and negatively to coach-created ego climate (Balaguer et al., 2004; Eys et al., 2013; Horn, Byrd, Martin, & Young, 2012; Leo et al., 2014; Naylor, 1996). Such relations make conceptual sense as a task-involving motivational climate (in contrast to an ego-involving climate) promotes cooperation, emphasises the unique contribution of each athlete to the team, fosters feelings of relatedness, and downplays interpersonal rivalry among athletes (Ntoumanis & Biddle, 1999). In one of the rare longitudinal investigations in this area, Heuzé et al. (2006) showed that perceived coach-created task climate positively predicted subsequent GI-T, while coach-created ego climate negatively predicted subsequent social cohesion (i.e., ATG-S and GI-S) among female players in professional basketball and handball teams.

However, none of the studies has examined the associations between peer motivational climate and team cohesion. Further, the extent to which the links between perceived motivational climate (coach- and peer-created) and cohesion fluctuate across time within individuals is unknown. This is an important issue that deserves further investigation because perceived cohesion is by definition dynamic and undergoes changes across time (Paskevich et al., 2001). Moreover, given the relationship between the two variables (Heuzé et al., 2006; Leo et al., 2014), the perception of a task-involving climate can create a positive trend in group processes, but a perception of an ego-involving climate can create a negative trend. In this sense, the literature on group dynamics indicates that the leader and members of a group may exert varying degrees of influence on group affairs as the group develops (Carron & Eys, 2012). Thus, we aimed to examine whether the associations of perceived coach- and peer-created task and ego climate to cohesion vary across time.

**Satisfaction with participation**

Besides group cohesion, we also examined how coach- and peer-created motivational climates relate to satisfaction with participation. We opted for satisfaction with participation because it is important for a team to function optimally. When players feel satisfied with their contribution to and functioning in their group, they are more likely to develop friendship networks and cooperate with their teammates (Olmedilla et al., 2011; Weiss & Smith, 2002). The motivational climate within a team can influence an athlete’s satisfaction with the extent of participation within that team. Indeed, past research has shown a positive relationship between certain behaviours by coaches and peers (e.g., support and positive feedback, emphasis on individual effort, encouragement of cooperation) and sport satisfaction among athletes (Boixadós et al., 2004; Loughead & Carron, 2004; Loughead, Hardy, & Eys, 2006). In a task-involving motivational climate, where individual improvement and personal effort are encouraged and mistakes are considered as part of the learning process, athletes are more likely to feel satisfied with their sport participation regardless of their ability level. In contrast, in an ego-involving motivational climate, where interpersonal comparison, the demonstration of the normative ability, and competition among teammates are emphasised, athletes are likely to feel unsatisfied with their team participation when they do not do as well as their teammates (Balaguer et al., 2002; Boixadós et al., 2004; García-Calvo, Cervelló, Jiménez, Iglesias, & Santos-Rosa, 2005). In an ego-involving climate only the most able athletes are expected to get ample opportunities, whereas in a task-involving climate all players are expected to get similar chances to develop their potential and have a somewhat unique role within a team (Boixadós et al., 2004; Weiss & Smith, 2002).
Present study
Our study extends past literature by employing a longitudinal (season-long) design to examine the degree to which coach-created task and ego climates are related to team cohesiveness and players’ satisfaction with participation within their team. By examining these associations across a sport season, we tried to shed light on the dynamics of these associations because we presumed that both the motivational climate and the cohesion of a team as well as players’ satisfaction with participation fluctuate across time. In addition to examining these longitudinal associations, we also examined two important and closely related facets of a team’s motivational climate that have been relatively understudied as a pair: the coach and peer climate. Furthermore, we tried to build on the prior scarce research that studied both coach and peer motivational climate by separating within-person changes from between-person differences. To do this, we tested the main and interactive effects of coach- and peer-created climate facets on important variables linked to team dynamics in semi-professional athletes across a sport season, namely players’ perception of group cohesion and satisfaction with their participation within the team.

First, we made no specific hypotheses regarding the trajectories of the dependent variables because there are several factors that might lead to an increase or decrease in a team’s cohesion and players’ satisfaction. Yet, we expected an upward trend for players perceiving their team to be more task oriented (by either the peers, the coach, or both; Hypothesis 1a) and a downward pattern for players perceiving their team to be more ego oriented (by either the peers, the coach, or both; Hypothesis 1b). Second, we hypothesised that a perceived coach-created task and ego climate would, respectively, positively and negatively covary across the three measurement waves with group cohesion (task and social) and satisfaction with participation; we expected these associations to remain significant across time (Hypothesis 2). Further, we predicted that higher mean levels of perceived coach-created task climate would explain higher mean levels of group cohesion and satisfaction with their participation (Hypothesis 3a); we expected the opposite pattern for mean level of perceived coach-created ego climate (Hypothesis 3b). Additionally, we anticipated that the task and ego facets of peer-created climate would account for the unique incremental variance of the dependent variables at both the intrapersonal and interperson al level (Hypothesis 4). Specifically, we expected that perceived peer-created task and ego climates would show patterns of relationships to the dependent variables at both the intrapersonal and between-athlete levels that would be similar to the pattern that coach-created task and ego climate would exhibit. Moreover, we explored the extent to which a likely fit or misfit between corresponding task and ego facets of coach- and peer-created climates, as originally discussed by Vazou et al. (2006), would moderate the hypothesised relationships. In particular, we tested, in an exploratory fashion due to the absence of prior empirical evidence, whether significant interactions would emerge between (a) coach- and peer-created task climates, (b) coach- and peer-created ego climates, (c) coach-created task and ego climates, or (d) peer-created task and ego climates. Such hypotheses have not been previously tested, but we tentatively expected that the most positive outcomes would emerge under high-task conditions for both coach and peer climate (Hypothesis 5).

Method
Participants
The participants were male semi-professional soccer players from 20 teams who participated in the XIV group of the Third Division of the Spanish soccer League. At the beginning of the season (Time 0), we recruited a total of 377 players, ranging in age from 16 to 39 years with a mean age of 24.51 years (s = 3.73). At the middle of the season (Time 1), a total of 339 players from the original sample were recruited, ranging in age from 16 to 38 years with a mean age of 24.41 years (s = 4.24). At the end of the season (Time 2), there were a total of 303 players from the original sample, ranging in age from 16 to 39 years with a mean age of 24.58 years (s = 4.26). We ran a MANOVA to determine whether the participants who were absent from one or two measurements differed in some ways from those who filled in all the measurements in all three waves of assessment. These analyses suggested that the athletes of the two groups did not differ on the variables measured (Time 0: Wilks’ lambda = .99, F<sub>4,361</sub> = 1.79, P = .36, \( \eta^2_p = .01 \); Time 1: Wilks’ lambda = .99, F<sub>4,328</sub> = .32, P = .86, \( \eta^2_p = .00 \); Time 2: Wilks’ lambda = .98, F<sub>4,287</sub> = 1.58, P = .18, \( \eta^2_p = .02 \)).

From an original sample of 389 questionnaires collected, 12 (3.08%) were deleted at wave 1 due to invalid completion of the questionnaires. At the middle and end of the season we further deleted 5 (1.45%) and 6 questionnaires (1.94%), respectively, for the same reason.

Measures
Perceived coach motivational climate. The Spanish version of Perceived Coach Motivational Climate in
Sport Questionnaire-2 (PMCSQ-2: Newton et al., 2000), developed by Balaguer, Guivernau, Duda, and Crespo (1997), was used. This questionnaire consists of 33 items that measure six dimensions of task- and ego-involving coach climate. In this paper, we were interested in the two higher-order dimensions and not in the lower-order dimensions. A confirmatory factor analysis (CFA) of the data taken at the beginning of the season offered support for a higher-order structure with two factors ($\chi^2 = 178.78; P < .01; \text{df} = 53; \chi^2/\text{df} = 3.37; \text{CFI} = .91; \text{IFI} = .93; \text{RMSEA} = .07; \text{SRMR} = .07$). Participants responded to the stem “On this team...”. An example of task-involving climate item is “The coach tells us that trying our best is the most important thing”. Ego-involving climate included items such as “The coach pays the most attention to the best players”.

Perceived peer motivational climate. To measure athletes’ perceptions of the peer-created motivational climate on their team, the Spanish version of the 21-item Peer Motivational Climate in Youth Sport Questionnaire (PeerMCYSQ: Ntoumanis & Vazou, 2005), adapted to the Spanish language by Moreno et al. (2011) was used. The PeerMCYSQ consists of a task-involving and an ego-involving higher-order dimension, each of which comprise of a number of lower-order factors. Again, in this paper we were interested in the higher-order factors. A CFA with our data offered support to a higher-order structure with two factors ($\chi^2 = 179.58; P < .01; \text{df} = 53; \chi^2/\text{df} = 3.38; \text{CFI} = .91; \text{IFI} = .93; \text{RMSEA} = .08; \text{SRMR} = .07$). Participants responded to the stem “On this team, most athletes...”, using a 5-point scale ranging from strongly disagree (1) to strongly agree (5). An example item for the task-involving climate factor is “Encourage their teammates to improve their weakness”. An example of an item constituting the ego-involving climate factor is “Try to do better than their teammates”.

Group cohesion. The Spanish version of group environment questionnaire (GEQ) (Carron et al., 1985), adapted by Iturbide, Elosua, and Yanes (2010), was used to assess team cohesion. This inventory of 18 items comprises four factors: GI-T (e.g., “Team members are united in their efforts to reach their performance goals in training sessions and matches”), GI-S (e.g., “Team members would like to spend time together in situations other than training and games”), ATG-T (e.g., “On this team, I can do my best”), and ATG-S (e.g., “The team is one of the most important social groups I belong to”). A CFA with our data showed acceptable model fit ($\chi^2 = 128.59; P < .01; \text{df} = 48; \chi^2/\text{df} = 2.67; \text{CFI} = .91; \text{IFI} = .91; \text{RMSEA} = .06; \text{SRMR} = .05$). Responses were rated on a 5-point scale ranging strongly disagree (1) to strongly agree (5).

Satisfaction with participation. To assess satisfaction with participation, we wrote three items that asked players whether they were satisfied with their participation within the team and with their playing time (i.e. “Are you satisfied with your participation within the team?”, “Are you satisfied with your playing time in matches?”; and “Are you satisfied with your contribution to the team?”). Responses were rated on a 5-point scale ranging not at all (1) to very much (5).

Procedure

We used a longitudinal correlational design. We carried out three assessments at three time points: three weeks within the beginning of the sport season, at the middle, and at the end of the season, separated by a 20–22 week interval between each measurement wave.

The study received ethical approval from the University of Extremadura. All participants were treated according to American Psychological Association ethics guidelines regarding consent, confidentiality, and anonymity of responses. Questionnaires were matched over time using a coding system to protect confidentiality. Participants completed the questionnaires in the changing room before a training session. Participants completed the questionnaires individually within 15–20 min, in the absence of their coach, supervised by the research assistants and under non-distracting conditions.

Data analysis

Multilevel regression analysis, employing Mplus (Muthén & Muthén, 1998–2012), was used to examine changes in all variables over the three time points. This type of analysis is particularly useful when there are missing observations since it does not assume equal number of measurement occasions for all individuals. Two level of analysis were specified. Level 1 encompassed the repeated observations of all variables. These observations were nested within athletes, therefore the latter constituted level 2 in the analysis. Although players were nested within teams, we did not include a third level (i.e., team) in our analyses because of the small number of teams (see Maas & Hox, 2005). The analysis had two parts. The first part examined whether there were significant between-person variations in the means (intercepts) and rates of change (growth
trajectories) of all variables under investigation. The second part included a number of multilevel regressions with the repeated scores of cohesion and satisfaction with participation being the dependent variables. The aim of these regressions was to ascertain whether within-person changes and between-person differences in perceptions of coach- and peer-created task and ego climate were predictive of within-person changes in each dependent variable.

Results

Descriptive statistics and Cronbach’s alpha coefficients

Means, standard deviations, and Cronbach’s alpha coefficients for each variable at each time point are presented in Table I. Most scales, but GI-S and ATG-S, at the first measurement wave demonstrated acceptable internal consistency. In light of this finding, GI-S was removed from further analyses. In contrast, we kept ATG-S because its internal consistency coefficients at the remaining measurement waves were within acceptable limits. In general, participants reported scores above the mid-point of the scale for coach- and peer-created task climate, peer-created ego climate, cohesion, and satisfaction with participation. Participants also reported scores for coach-created ego climate which were close to the mid-point of the scale.

Main analyses

We set up a multivariate multilevel model to test our research hypotheses. Specifically, we estimated to what extent ATG-S, GI-T, ATG-T, and satisfaction with participation could be modelled as a function of (a) time effects (linear changes; wave 1 was coded as 0), and coach- and peer-created task and ego climate at level 1, that is, the intrapersonal level, and (b) person-average scores of perceived coach- and peer-created task and ego motivational climate at level 2, that is, the interpersonal level. The climate scores at level 1 were group mean centred and at level 2 were grand mean centred. At both levels we also tested for interactions between coach-created task and ego climate, peer-created task and ego climate, coach-created task and peer-created task climate, and coach- and peer-created ego climate. To test the interactions we followed the recommendations by Cohen, Cohen, West, and Aiken (2003), and for reasons of parsimony we retained in the final model only the statistically significant interactions. Also, for the interest of model parsimony and computational efficiency, we fixed all the slopes which we found to be not random (i.e., not significantly varying from person to person).

To examine the relative predictive effects of peer-created motivational climate over and above the coach-created one, we set up the model in a stepwise fashion thereby entering in Step 1 time along with task and ego coach-created motivational variables, followed in Step 2 by task and ego peer-created motivational variables and the statistically significant interactions. We only display the final model in Table II, but we briefly present the results from the unconditional (i.e., without predictors) model and those from Step 1 in which time as a predictor was also added.

Step 1: Coach-created motivational climate variables

Inspection of the unconditional model revealed considerable within-person variance for all the dependent variables (see Table II). When time (linear) change ($\beta_{10}$) and perceived coach-created task ($\beta_{20}$) and ego ($\beta_{30}$) climate were entered as predictors at the intrapersonal level, a significant decline was found for GI-T ($\beta_{10} = -0.19, s_{\beta} = 0.03, P < .01$) and ATG-T ($\beta_{10} = -0.10, s_{\beta} = 0.03, P < .01$), which suggests that team cohesiveness on the task-related dimension decreased throughout the sport season.

Nevertheless, the decrease of the ATG-T in the final model was moderated by the mean levels of athlete perceptions of coach- and peer-created motivational climate (presented in the full model — see Table II). Specifically, a significant cross-level interaction was found between time and the mean levels of peer-created task climate for ATG-T ($\beta_{12} = 0.10, s_{\beta} = 0.05, P = .041$).

Examination of the simple slopes indicated that ATG-T decreased across time for players who perceived that the peer-created task climate throughout the whole season was low ($\beta_{12} [−1 \leq s_{\beta} \leq 0] \text{ in mean peer task climate} = −0.12, s_{\beta} = 0.04, z = −3.10, P = .002$) but not for those who perceived that it was high ($\beta_{12} [+1 \leq s_{\beta} \leq \infty] \text{ in mean peer task climate} = −0.02, s_{\beta} = 0.04, z = −0.44, P = .66, n.s.$).

Regarding changes across time, the final model (see Table II) revealed two statistically significant cross-level interactions for satisfaction with participation. The first concerned between time and mean levels of perceived coach-created task climate ($\beta_{11} = 0.08, s_{\beta} = 0.03, P = .02$). Although slope was non-significant, the test of simple slopes indicated that satisfaction with participation tended to decrease across time for athletes who perceived the coach-created task climate to be low ($\beta_{11} [−1 \leq s_{\beta} \leq 0] \text{ in mean coach task climate} = −0.06, s_{\beta} = 0.04, z = −1.55, P = .12$), while it tended to increase for athletes who perceived the coach-created task climate to be high ($\beta_{11} [+1 \leq s_{\beta} \leq \infty] \text{ in mean coach task climate} = 0.04, s_{\beta} = 0.04, z = 1.01, P = .31$).

Taken together, these findings provided partial support to Hypothesis 1a because they showed that some of the negative trajectories occurred only in the
Table I. Bivariate correlations (two-tailed) and internal reliabilities (on the diagonal) of the study variables.

| Variables                      | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   | 25   | 26   | 27   | M    | s    |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| **Time 1**                     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1. Coach-created ego climate  | .85  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 2. Coach-created task climate| −.39**| .84  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 3. Peer-created ego climate  | .34**| .05  | .69  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 4. Peer-created task climate | −.20**| .61**| .28**| .88  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 5. Group integration-Social  | .01  | .20**| .12* | .31**| .51  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 6. Attraction to the group-Social | −.02 | .22**| .14**| .29**| .41**| .46  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 7. Group integration-Task    | −.06 | .43**| .07  | .51**| .25**| .26**| .73  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 8. Attraction to the group-Task | −.19**| .40**| .04  | .38**| .27**| .34**| .46**| .68  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 9. Satisfaction with Participation | −.20**| .19**| −.06 | .05  | .04  | .07  | .05  | .31**| .77  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| **Time 2**                     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 10. Coach-created ego climate | .47**| −.27**| .21**| −.09 | −.07 | −.02 | −.08 | −.24**| −.20**| .85  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 11. Coach-created task climate | −.24**| .42**| −.04 | .28**| .13* | .19**| .27**| .37**| .07  | −.38**| .83  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 12. Peer-created ego climate | .18**| .06  | .38**| .13  | .03  | .14* | .10  | .08  | −.10 | .33**| .10  | .67  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 13. Peer-created task climate | −.12 | .32**| .08  | .43**| .20**| .21**| .15**| .16**| −.04 | −.12* | .61**| .29**| .91  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 14. Group integration-Social  | −.06 | .32**| .10  | .33**| .36**| .48**| .12  | .21**| −.02 | −.06 | .33**| .18**| .42**| .58  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 15. Attraction to the group-Social | −.04 | .26**| .11  | .33**| .36**| .12* | .19**| .11  | −.09 | −.08 | .37**| .17**| .44**| .49**| .76  |      |      |      |      |      |      |      |      |      |      |      |      |
| 16. Group integration-Task    | −.01 | .39**| .15* | .31**| .14* | .17**| .20**| .38**| .13* | −.17**| .52**| .12* | .43**| .35**| .28**| .71  |      |      |      |      |      |      |      |      |      |      |
| 17. Attraction to the group-Task | .04  | .30**| .06  | .31**| .14* | .11  | .39**| .09  | −.14*| −.07 | .49**| .18**| .58**| .37**| .40**| .51**| .77  |      |      |      |      |      |      |      |      |      |
| 18. Satisfaction with Participation | −.12| .12* | .04  | .10  | .12* | .01  | .11  | .23**| .47**| −.17**| .22**| −.06 | .00  | .07  | .03  | .26**| −.04 | .78  |      |      |      |      |      |      |      |      |      |
| **Time 3**                     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 19. Coach-created ego climate | .45**| −.19**| .23**| −.07 | −.01 | .02  | −.10 | −.16*| −.16**| .55**| −.40**| .13* | −.15*| .03  | −.09 | −.16*| −.06 | −.23**| .83  |      |      |      |      |      |      |      |      |      |
| 20. Coach-created task climate | −.21**| .36**| .01  | .20**| .14* | .07  | .28**| .27**| .04  | −.37**| .60**| .00  | .41**| .17**| .23**| .43**| .40**| .20**| −.43**| .86  |      |      |      |      |      |      |      |      |

(continued)
Mentional change and cohesion

Table I. Variables

| Variables                        | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|----------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 21. Peer-created climate         | 01 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 22. Perceived ego climate       | -1 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 23. Satisfaction with participation | -1 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 24. Social climate              | -1 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 25. Group integration           | -1 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 26. Attraction to the group     | -1 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |

Note: t < .01. *t < .05, **t < .01

In support of Hypothesis 2, a perceived coach-created ego climate was found to positively relate to all the dependent variables, namely, ATG-S, ATG-T, and GI-T, positively associated with the three cohesion-related variables; interestingly, the previously significant variance for ATG-S, 67.4% for GI-T, 77.3% for ATG-T, and 41.0% of the variance for GI-T, 25.6% of the variance for ATG-T, and 24.7% of the variance for participation satisfaction. When mean-level scores of perceived coach-created task climate were entered, the model explained 32.0% of the variance for ATG-S, 20.8% of the variance for ATG-T, and 10.4% of the variance for participation satisfaction.

### Variables

1. **Participation Satisfaction**
2. **Peer-created task climate**
3. **Social climate**
4. **Social climate**
5. **Group integration**
6. **Attraction to the group**
7. **Peer-created ego climate**
8. **Perceived coach-created task climate**
9. **Perceived coach-created ego climate**
10. **Perceived peer-created task climate**
11. **Perceived peer-created ego climate**

### Hypothesis

Hypothesis 1: These findings suggest that perceived peer-created task climate was positively associated with three cohesion-related variables; interestingly, the previously significant variance explained by these cohesion-related variables was found to negatively relate to satisfaction with participation.

Hypothesis 2: In support of Hypothesis 2, a perceived coach-created ego climate was found to positively relate to all the dependent variables, namely, ATG-S, ATG-T, and GI-T, positively associated with the three cohesion-related variables; interestingly, the previously significant variance for ATG-S, 67.4% for GI-T, 77.3% for ATG-T, and 41.0% of the variance for GI-T, 25.6% of the variance for ATG-T, and 24.7% of the variance for participation satisfaction. When mean-level scores of perceived coach-created task climate were entered, the model explained 32.0% of the variance for ATG-S, 20.8% of the variance for ATG-T, and 10.4% of the variance for participation satisfaction.

Hypothesis 3a: Perceived peer-created task climate was considered (see Table II). Specifying an interaction between-player predictors explained 32.0% of the variance for ATG-S, 30.0% of the variance for ATG-T, and 28.0% of the variance for GI-T, 27.0% of the variance for ATG-T, and 26.0% of the variance for GI-T, 25.0% of the variance for ATG-T, and 24.0% of the variance for GI-T, 23.0% of the variance for ATG-T, and 22.0% of the variance for GI-T, 21.0% of the variance for ATG-T, and 20.0% of the variance for GI-T, 19.0% of the variance for ATG-T, and 18.0% of the variance for GI-T, 17.0% of the variance for ATG-T, and 16.0% of the variance for GI-T, 15.0% of the variance for ATG-T, and 14.0% of the variance for GI-T, 13.0% of the variance for ATG-T, and 12.0% of the variance for GI-T, 11.0% of the variance for ATG-T, and 10.0% of the variance for GI-T, 9.0% of the variance for ATG-T, and 8.0% of the variance for GI-T, 7.0% of the variance for ATG-T, and 6.0% of the variance for GI-T, 5.0% of the variance for ATG-T, and 4.0% of the variance for GI-T, 3.0% of the variance for ATG-T, and 2.0% of the variance for GI-T, 1.0% of the variance for ATG-T, and 0.0% of the variance for GI-T.
prediction of GI-T ($\beta = -0.17$, $s = 0.07$, $P < 0.05$). Probing this interaction – see Figure 1 – following the recommendations made by Bauer and Curran (Bauer & Curran, 2005; see also Preacher, Curran, & Bauer, 2006), revealed that the relation between perceived peer-created task climate and GI-T was weaker among athletes who perceived high ($\beta = 0.21$, $s = 0.10$, $z = 2.18$, $P = 0.029$) as compared to low peer-created ego climate ($\beta = 0.45$, $s = 0.08$, $z = 5.74$, $P < 0.01$).

The second significant interaction was that between perceived coach- and peer-created task climate ($\beta = 0.16$, $s = 0.07$, $P < 0.01$) in the prediction of ATG-T (see Figure 2). This interaction provided partial support to Hypothesis 5 and indicated that the relation between coach-created task climate and ATG-T was positive when peer-created task climate was high ($\beta = 0.35$, $s = 0.09$, $z = 4.02$, $P < 0.01$) but statistically non-significant when peer-created task climate was low ($\beta = 0.12$, $s = 0.07$, $z = 1.67$, $P = 0.10$). Collectively, the inclusion of perceived peer-created task and ego climate at the intrapersonal level along with the statistically significant
interpersonal differences in team cohesion and players’ satisfaction with their participation within their team over the course of a sport season. To the best of our knowledge, this is the first longitudinal study that looks at both within-person change and between-person differences in motivational climates and underscores the unique role of peer-created motivational climates in predicting important team dynamic aspects in competitive level athletes (i.e., semi-professional soccer players) over and above coach-created climates.

Overall, there was a significant decrease in the mean levels of the variables over time (Heuzé et al., 2006; Leo et al., 2012). Only ATG-S exhibited a short increase in the second wave, but it decreased by the end of season. However, when the interactions between time and the mean levels of coach- and peer-created task climates were analysed, it was observed that a decrease over time for ATG-T and satisfaction with participation occurred only in players who perceived low levels of task climate. Therefore, the downward trajectories of certain variables were most likely due to the low levels of task climate. These findings prompted us to examine how motivational climate predicts fluctuations of cohesion and satisfaction over time. We found that task-involving motivational climate and ego-involving motivational climate, both coach and peer-created, positively and negatively covaried, respectively, with cohesion and satisfaction over time. Therefore, these results confirmed Hypothesis 2.

To investigate these relationships further, we examined the longitudinal predictive effects of coach and peer motivational climates on the dependent variables at various levels of analysis. When only the coach dimensions of the motivational climate were included as predictors, the task-involving dimension emerged as the strongest predictor of both intrapersonal fluctuation and the mean levels of cohesion. Similar positive relationships among a coach task-involving climate and ATG-S, GI-T, and ATG-T scores were reported in a cross-sectional study by Balaguer, Castillo, and Duda (2003), which suggests that a coach-created task climate might play a key role in fostering group cohesion (Eys et al., 2013; Horn et al., 2012). Further, coach-created ego climate was negatively related to satisfaction with participation. Likewise, Balaguer et al. (2002) and Boixadó et al. (2004) showed that the promotion of a coach-created task climate and the downplaying of a coach-created ego climate can promote greater satisfaction among players. Taken together, such findings indicate that the more players perceive their coaches to praise individual effort, mastery strivings, and personal improvement, the more they are attracted by their team

### Discussion

In this study, we examined the extent to which perceptions of coach- and peer-created task and ego motivational climates among semi-professional soccer players can explain intrapersonal variation and
(Balaguer et al., 2003, 2004), and the less players perceive their coaches to encourage social comparisons and normative ability, the less they are satisfied (Balaguer et al., 2002; Boixadós et al., 2004).

Surprisingly, mean levels of coach-created ego climate were positively associated with the cohesion variables at the interpersonal level. At first glance, this finding may tempt someone to suggest that coaches who set up an ego-involving climate can facilitate team cohesion (Horn et al., 2012). We believe that this is most likely not the case for two reasons. First, perceived coach-created ego climate was negatively related or not related to cohesion across time (i.e., at the intrapersonal level). Second, mean levels of coach-created task climate were far stronger predictors of between-athlete differences in GI-T and ATG-T. Taken together, these findings supported Hypothesis 3 and indicate that the best avenue to enhance cohesion is via promoting task- rather than ego-involving coach motivational climate.

In subsequent analyses, we predicted the same outcome variables by including perceived peer-created task and ego motivational climate alongside the coach-created task and ego climate. A perceived peer-created task climate was positively associated with task and social aspects of cohesion, which explains unique variance over and above a coach-created task climate at both the intrapersonal and interpersonal level and supports Hypothesis 4. Further, the regression coefficients for peer climate were in general stronger than those for coach climate. These findings indicate that peers, in addition to coaches, play an important role in shaping the motivational atmosphere of a team and, thus peer influence should be taken into account when examining the links between motivational climate and team cohesion.

When predicting satisfaction with participation, a perceived peer-created motivational climate failed to account for any additional variance over and above coach-created climate. The task facet of the coach-created task climate predicted satisfaction with participation at the interpersonal level. An ego-involving coach-created climate was weakly but negatively related to satisfaction with participation at the interpersonal level. These results could be explained by bearing in mind that a task-involving coach climate gives the opportunity for all players to contribute in some important and unique ways within their team (Balaguer et al., 2002; Boixadós et al., 2004). The absence of incremental effects for the peer-created climate variables over and above the coach-created ones might reflect the possibility that athletes’ satisfaction with participation are primarily determined by their coach and to a much lesser extent by their peers.

Further evidence for the need to consider a peer-created motivational climate alongside a coach-created climate emerged from the interaction that showed a perceived coach-created task climate to relate positively to ATG-T across time and more strongly so when a perceived peer-created task climate was also high (see Figure 2). Nevertheless, it should be underscored that coach- and peer-created climates may not operate completely independently. For instance, coaches, as leading authorities on their team, can have an impact on the peer-created climate. Therefore, coach-created climates may be associated not only directly with team cohesion and players’ satisfaction but also indirectly via a peer-created climate.

An additional noteworthy finding that highlights how a peer-created motivational climate relates to cohesion is evidenced by the interaction that shows that the task facet of this motivational climate was more strongly associated with GI-T when the ego facet of this climate was low (see Figure 1). Previous work on coach-created motivational climates has indicated that a combination of high task-involving and low ego-involving facets is related to positive cognitive and affective outcomes in sport (Balaguer et al., 2002; Boardley & Kavussanu, 2009; Boixadós et al., 2004).

Conclusions, limitations, and future research directions

The present results indicate that perceptions of both coach- and peer-created motivational climates at the interpersonal and intrapersonal levels can predict changes in the social and task cohesion levels as well as satisfaction with participation within a team amongst semi-professional players. However, the observed effects differed as a function of the measurement wave, level of analysis, and variable under investigation. Future research that employs qualitative methods (e.g., interviews) is needed to identify the potential reasons for this. Research on the importance of a peer motivational climate and how the coach climate might set the tone for the peer climate is still in its infancy.

A limitation of our study was that the findings, although longitudinal with three measurements across the sport season, were correlational, and no causal inferences can be drawn as to the relationships between motivational climates and satisfaction with participation. Nevertheless, our results are consistent with theoretical predictions and previous empirical research concerning the association between motivational climates and team dynamics variables (Balaguer et al., 2004; Boixadós et al., 2004; Heuzé et al., 2006). Moreover, it should be noted that the results pertaining to ATG-S should be viewed with caution because this variable showed a low reliability at the first measurement wave. Furthermore, the scale we used to assess players’ satisfaction with participation has not been
previously validated. Nevertheless, the apparent face validity of the items, the high internal consistency of the three-item scale, and their modest inter-correlations across all three measurement waves provide us with some confidence in our operational definition.

Another limitation of this study was that it relied exclusively on self-reports, and thus our findings are subject to potential influences of shared method variance to some extent. Future longitudinal research in this area will do well to assess objective markers of motivational climate and team cohesion (e.g., observation instruments). Nevertheless, there are published studies that suggest that a task-involving motivational climate is associated with group cohesion and satisfaction (Balaguer et al., 2004; Boixadós et al., 2004; Heuzé et al., 2006; Leo et al., 2014); thus, it is unlikely that our findings can be solely attributed to shared method variance. Finally, the generalisation of our findings to other population samples and sports should be made with caution because our sample comprised only males from a particular sport (i.e., soccer) and from a particular country (i.e., Spain).

Despite the aforementioned limitations, we believe that this work makes a unique contribution to the literature by examining the concurrent predictive effects of peers’ and coaches’ motivational climate on a variety of important team dynamics variables in semi-professional sport at two different levels over a 12-month period. Future research should examine the development and interconnectedness of coach and peer motivational climates over time. Furthermore, future research can build upon this work by incorporating measures of coaches’ reports of the motivational climate they create as well as their perceptions of the peer climate within their team, and such research can subsequently compare variations between athletes’ and coaches’ perceptions of both types of climates (Keegan, Spray, Harwood, & Lavallee, 2010). This approach would represent an important development because similar research in school physical education has identified large discrepancies between students’ and teachers’ ratings of the teacher motivational climate (Taylor & Ntoumanis, 2007).

References


