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Research article

Interactive effects of team cohesion on perceived efficacy in semi-professional sport

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Abstract
The present study examined the relationships among cohesion, self-efficacy, coaches' perceptions of their players' efficacy at the individual level and athletes' perceptions of their teammates' efficacy. Participants (n = 76) recruited from four semi-professional soccer and basketball teams completed cohesiveness and efficacy questionnaires who. Data were analyzed through a correlational methodology. Results indicated significant correlations between self-efficacy and task cohesion and social cohesion. Regression analysis results suggest task cohesion positively related to coaches and teammate´s perception of efficacy. These results have implications for practitioners in terms of the importance of team building to enhance team cohesion and feelings of efficacy.

Key words: Cohesion, self-efficacy, perceived efficacy, football, basketball.

Introduction

Cohesion and perceived efficacy are factors with potential to influence the dynamics of sport teams. Researchers have found that cohesiveness and efficacy positively relate with team performance (Carron et al., 2002; Heuzé et al., 2006a; Myers et al., 2004; Watson et al., 2001). Cohesion is defined as a dynamic process that is reflected in part by the tendency of 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 and Brawley, 2000). This definition reflects the fact that there is both a task-oriented basis (team members work together to achieve common identifiable goals) and a socially oriented basis (how well team members like one another and derive personal enjoyment from being a part of a team) for group functioning and unity (Carron et al., 1985).

Regarding efficacy, there are a variety of ways to assess the efficacy of group members and efficacy beliefs (Beauchamp, 2007). One of the most well-known forms is self-efficacy which has been defined by Bandura (1997) as an individual's belief in their ability to organize and execute a specific task. Another important type of efficacy for our area of interest is perceived efficacy by the coach of the team. This is defined by a coach´s confidence in his or her player´s abilities to perform given tasks (Chase et al., 1997). Perceived peer efficacy in sport is proposed to represent each players' belief about their teammates' abilities to accomplish a task successfully (Lent and Lopez, 2002).

It is well-known that thoughts and behaviors are crucial in sport performance (Weinberg and Gould, 2007). In sport, efficacy is believed to be an important component of the thoughts and behaviors of athletes (Beauchamp, 2007; Milne et al., 2004). Team sport athletes spend a great deal of time with their teammates and coaches and the nature of these interactions during practices and competitions contributes toward shaping efficacy beliefs (Beauchamp, 2007). In this way, it is understandable that an individual's perceived efficacy as well as the efficacy expectations of others will be influenced by social factors in the sport context. This fact will also depend to some extent upon the position played, function and role of players within the team and the nature of the relationships (Eys and Carron, 2001; Heuzé et al., 2006a; Paskevich et al., 1999).

In relation to research on coach efficacy, we highlight the study conducted Hoyt et al. (2003). Hoyt et al. (2003) found that coaches who communicate high efficacy beliefs to players in their team, and such teams become more efficacious and performance subsequently improves.

As has been previously noted, feelings of efficacy within the group are likely influenced by social factors and the interdependent relationships that have developed within the team. Group cohesion represents the strength of bonding of group members and has been found to be strongly related to group efficacy (Heuzé et al., 2006a; 2006b; Kozub and McDonnell, 2000; Myers et al., 2004; Paskevich et al., 1999; Spink, 1990).

A body of knowledge exists that has examined collective efficacy and cohesion (Heuzé et al., 2006a; Heuzé et al., 2006b; Paskevich et al., 1999). However, only a few studies have been conducted that have examined individual athletes' efficacy perceptions in relation to group outcomes such as cohesiveness and group efficacy (Leo et al., 2010). This research study was designed to address this shortcoming in the literature.

Positive relationships have been found between group efficacy and group cohesion (Heuzé et al., 2006a; 2006b; Kozub and McDonnell, 2000; Myers et al., 2004; Paskevich et al. 1999; Spink, 1990). It has found that teams with greater cohesion tend to have more favourable appraisals of their team's performance capacities which can translate to greater success in competition (Carron et al., 2002). Furthermore, group success can increase athletes' feelings of collective efficacy, which can also contribute to the development of the group's cohesion (Heuzé et al., 2006a; Paskevich et al. 1999). Thus, collective

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efficacy has been found to be a stronger predictor of team performance than the sum of the team members' own self-efficacy beliefs (Lent et al., 2006).

Spink (1990) found that teams higher in collective efficacy also had stronger task cohesion and social cohesion than teams lower in collective efficacy. More recently, Paskevich et al. (1999) reported high correlation coefficients between task-related aspects of cohesiveness and members' shared beliefs about collective efficacy. Players who perceived high task cohesion tended to perceive higher overall collective efficacy in their team.

Similar outcomes were found by Kozub and McDonnell (2000) in a study involving seven rugby union teams. They found that the two task cohesion dimensions were positive predictors of collective efficacy, with group integration-task being slightly better predictors than were individual attraction to the group task (Feltz and Lirgg, 2001; Myers et al., 2004).

As has been previously mentioned, several studies have highlighted the important of the relatedness in the group, as well as the role that each player plays in the team (Carron and Hausenblas, 1998). Some authors have pointed out the relevance of using sociograms to identifying interactions in a team as well as clarifying the different role that each player performs in and out the match (Díez and Márquez, 2005; Weinberg and Gould, 2007), because each athlete plays a key role in team functioning and affects group cohesion. Eys and Carron (2001) studied relationships among role ambiguity, cohesion and self-efficacy in six university basketball teams. They found that those players who did not have clear role responsibilities perceived less task-cohesion and less group cohesion compared to players who roles were more clearly defined. Moreover, these results are consistent with Beauchamp and Bray's (2001) findings indicating players who had higher levels of role ambiguity and role conflict had lower levels of efficacy with regard to tasks associated with their responsibilities within the team.

The first purpose of this study was to examine patterns of relationships among team cohesion, players' individual and group efficacy beliefs, and coaches` perceptions of their players' self-efficacy. The second purpose was to determine which of the variables could best predict athletes' efficacy outcomes. We hypothesized that group cohesion would be positively related to individual self-efficacy and perceived efficacy by coaches and teammates. Secondly, we hypothesized task cohesion factors would predict self-efficacy and perceived efficacy by coaches and teammates.

Methods

Participants

The sample for this study was comprised of 76 participants who were recruited from four semi-professional Spanish teams; two soccer teams from the Third Division and two basketball teams from the Third Division. These athletes averaged 23.2 years of age (*SD* = 3.4) and averaged less than six years of experience in the sport. Four coaches were selected for the study, two of them had federative formation in their sport, and the other two coaches owned a degree in physical activity and sport sciences.

Measures

Cohesion. A version of the Multidimensional Sport Cohesion Instrument (MSCI: Yukelson et al., 1984) that had been previously translated into Spanish by García et al., (2006) was used to assess team cohesion. This inventory consists of 22 items and assesses four aspects of cohesion: Teamwork (i.e. "What do you believe is your contribution to this team?"), valued roles (i.e. "Do you think your role or contribution to the team is valued by the other team members?"), unity of purpose (i.e. "How would you evaluate the level of help and mutual respect among the players on your team?"), and attraction to the group (i.e. "Are you satisfied with the friendships you have on the team?"). The attraction to the group dimension reflects the level of social cohesion whereas the other aspects are related with task cohesion. Responses were made on a 5-point Likert scale anchored at the extremes by *"strongly disagree"* (1) and *"strongly agree"* (5).

In addition to this instrument, a sociogram was developed that characterized the social and task relations of the players on the team. The sociogram let us explore the cohesiveness level and the group structure through the manifestation of attraction or refuse of their members, determining the role of each one regarding others (Díez and Márquez, 2005). This sociogram based on the considerations showed by Díez and Márquez (2005) consisted of 16 items, divided into two dimensions. One of these dimensions is related with the social aspects, and is comprised of four positive items (i.e. "Who would you prefer to sit with on the bus?") and four negative items (i.e. "Who would you not discuss a personal problem with?"). The other dimension was related to task aspects with four positive items as well (i.e., "Who is the teammate you like playing with the most?") and four negative (i.e. "Which teammate do you not like playing with in a two-on-two situation?"). For each question on this instrument, items assess task positive relations (PR Task), task negative relations (NR Task), social positive relations (PR Social) and social negative relations (NR Social). Participants had to fill in the blank answer and write one teammates` name.

Efficacy. To assess efficacy characteristics, a questionnaire based on Bandura`s (2006) suggestions was used to measure players' and coaches' perceptions of team members efficacy levels. Responses were provided on a 5-point Likert scale anchored at the extremes by *"strongly disagree"* (1) and *"strongly agree"* (5). The different dimensions assessed included offensive and defensive technical skills (i.e. "How favourably do you evaluate this player's offensive technical skills?"), tactical strategies (i.e. "How favourably do you evaluate this player's defensive skills?"), psychological aspects (i.e. "How favourably do you evaluate his psychological skills?") and a last item of general assessment of the player (i.e. "How do you value him as a player in general?"). All items, besides being measured in every player, were combined to a common coach perceived efficacy score that represented their overall beliefs about the player's efficacy in all phases of the game.

Procedure

Before data were collected, we received informed consent from the coaches, players, and the players' parents and explained the general purpose of the study. After permission was obtained from all participants, the data was collected. Participants completed the questionnaires in the changing room taking approximately 15-20 minutes for completion. A researcher was always present and encouraged the participants to ask questions as needed. They also were asked to answer the questions as honestly as possible and were reassured that their responses would remain strictly confidential.

Data analysis

Data analysis proceeded in sequential stages to address each of the three purposes in the study. In the calibration sample, descriptive analysis and correlational analysis were used to develop the first hypotheses. Regression analysis was conducted to verify the assertions of the second hypotheses, where we looked for the strongest predictor of the perceived efficacy. The statistics program SPSS 15.0 was used to analyze the data.

Internal consistency reliability of the self-efficacy measures was assessed and each measure attained a Cronbach alpha above 0.80. Each of the additional scales also demonstrated adequate internal validity except for the unity of purpose subscale of the cohesion measure which had a Cronbach alpha value near 0.70 and was considered to be "borderline acceptable".

Results

Table 1 summarizes the descriptive statistics for cohesion, sociogram variables, and efficacy levels as reported by individual players, teammates and coaches. Moreover, Table 1 shows correlations among the studied variables. Thus, coaches' perceptions of their athletes' efficacy significantly associated with all variables, including teammates' efficacy ratings ($r = 0.88$, $p < 0.01$), individual athletes' own self-efficacy ratings, and the four dimensions of cohesiveness, with all correlations exceeding $r > 0.30$ ($p < 0.01$). In this regard, when coaches perceived higher levels of athlete efficacy, individual athletes also reported higher efficacy levels, received more favourable estimates of their efficacy from teammates, and reported stronger perceptions of group cohesion. Coaches' perception of their athletes' efficacy significantly correlated with positive social relations and negatively associated with negative task relationships, as hypothesized.

Results show a significant relationship between team members' perceptions of efficacy and each of the four sociogram factors, with correlations exceeding .30 in each case and in the hypothesized direction. With regard to its relationship with the cohesion factors, we found that individual level self-efficacy was significantly correlated with each of the cohesion dimensions except for unity of purpose. Self-efficacy by itself was only significantly related to positive social relations, and to the two cohesion dimensions of teamwork and attraction to group.

Relationships were also identified among the cohesion factors. Teamwork had a significant relationship with the rest of the components and attraction to the group and valued roles had a particularly strong relationship ($r = 0.69$, $p < 0.05$). Attraction to the group and valued roles were related to the sociogram variables and in the anticipated direction.

In order to more fully understand the relationship between team cohesion and coaches' perceptions of efficacy, a hierarchical regression analyses was conducted with the coaches' perceptions of their athletes' efficacy serving as the dependent variable (Table 2). Overall, 43% of the variance in coaches' perceptions of efficacy was explained by the variables of valued roles, unity of purpose, and positive social relations. The strongest predictor was valued roles, which accounted for 22 % of the variance. Those players who tend to have an important role tend to also be rated by their coaches as having greater efficacy. On the second step of the analysis, unity of purpose was entered and an additional 9% of variance was explained. At the third step, positive social relations accounted for an additional 12 % of the variance.

Table 3 provides the hierarchical regression analysis, including as a dependent variable the team members' efficacy perceptions. Overall, the regression analysis was significant and 51% of the variance in teammates' perceptions of efficacy could be explained by the linear combination of four variables. At the first step, negative task relations was included in the explanation and accounted for 26 % of the variance in teammates' efficacy

Table 1. Descriptive Statistics and Correlations among the variables of the study.

	M	SD	α	1	2	3	4	5	6	7	8	9	10
1. PR Task	4	3.12	-	-									
2. PR Social	4	3.67	-	.50**	-								
3. NR Task	4	5.16	-	-.24*	-.13	-							
4. NR Social	4	4.58	-	-.33**	-.07	.74**	-						
5. Teamwork	3.84	.69	.79	.02	-.00	-.03	-.04	-					
6. Attraction to group	4.12	.66	.81	.25*	.14	-.31*	-.28*	.56**					
7. Valued roles	3.69	.69	.77	.25*	.11	-.31*	-.25*	.41**	.69**	-			
8. Unity of purpose	3.64	.74	.65	-.05	-.21	-.18	-.17	.33**	.13	.13	-		
9. Self-efficacy	3.75	.51	.82	.19	.28*	.02	-.02	.24*	.29*	.18	.10	-	
10. Teammates efficacy	3.37	.56	.95	.51**	.31*	-.52**	-.50**	.31*	.39**	.50**	.21	.30*	-
11. Coach efficacy	3.29	.73	.88	.44**	.24*	-.27*	-.28*	.41**	.38**	.47**	.36**	.33**	.88**

* $p < 0.05$, ** $p < 0.01$.

Table 2. Regression Analysis step by step coefficients taking as a dependent variable the Coach's perception of their athletes efficacy.

Variable	β	R^2	t	p
Step 1		.22		
Valued Roles	.47		4.29	.00
Step 2		.31		
Valued Roles	.43		4.10	.00
Unity of purpose	.31		2.92	.00
Step 3		.43		
Valued Roles	.34		3.38	.00
Unity of purpose	.36		3.67	.00
PR Social	.36		3.60	.00

perceptions. In this case, this variable is negatively associated with teammates' efficacy so that more negative relationships around the task weaken players' perceptions of their team's efficacy. On the second step, valued roles entered the equation and explained an additional 13% of the variance. At the third step, positive social relations contributed an additional 8% to the explanation. Finally, on the fourth step individual self-efficacy contributed an additional 4% to the explanation.

Table 4 summarizes the regression analyses of individual players' self-efficacy levels. As is evident, only coaches' perceptions of their players' self-efficacy emerged as a significant predictor of the personal self-efficacy levels of the players and explained 11% of the variance in this variable.

Discussion

The primary purpose of this study was to examine the relationships among cohesion, athletes' individual self-efficacy characteristics, and coaches` perceptions of their players' efficacy. The findings supported the hypothesis that a positive and significant relationship existed between group cohesion and individual players' own self-efficacy beliefs, efficacy evaluations of them provided teammates, and perceptions of efficacy provided by the coach.

The results also indicated that efficacy as perceived by coaches and teammates is related to the four components of group cohesion, including both social cohesion and task cohesion. It was important to note that relationships were related with task and social cohesion which is not consistent with the findings of Paskevich et al. (1999) who only found correlations between task-related aspects of cohesiveness and efficacy.

Significant relationships were also present between coach reports of athlete efficacy levels and social and task cohesion. Nevertheless, correlations levels between athlete efficacy level and task cohesion were higher than social cohesion and athlete efficacy. This result indicates that players who are judged to have stronger task-related behaviors are judged by their coaches as having greater efficacy. These results are consistent with previous studies which have indicated that collective efficacy is more strongly related to task cohesion than to social cohesion (e.g., Kozub and McDonnell, 2000; Leo et al., 2010; Paskevich et al., 1999).

Teammates' perceptions of efficacy were significantly related with the sociogram data. These findings indicated that the players who were judged by teammates as having higher levels of efficacy also had more positive relationships and lower frequencies of negative relationships with teammates than did those players who were considered by their teammates to have lower levels of efficacy.

Furthermore, we have found that cohesion and self-efficacy were significantly but weakly correlated with the teamwork and attraction to group dimensions of cohesion. Self-efficacy was also weakly related to the positive social relationship dimension of the sociogram.

The first hypothesis was supported except for the influence of personal self-efficacy in which case cohesion was not found to be related to personal levels of efficacy. However, positive relationships were found between group efficacy and the perceptions of efficacy reported by teammates and coaches. Spink (1990) obtained similar results in that he found that individual attraction to the group-task and group integration-social differentiated

Table 3. Regression Analysis step by step coefficients taking as a dependent variable the Teammates` perception of efficacy.

Variable	β	R^2	t	p
Step1		.26		
NR Task	-.51		-4.76	.00
Step 2		.39		
NR Task	-.39		-3.80	.00
Valued Roles	.38		3.73	.00
Step 3		.47		
NR Task	-.38		-3.89	.00
Valued Roles	.32		3.21	.00
PR Social	.29		3.10	.00
Step 4		.51		
NR Task	-.39		-4.18	.00
Valued Roles	.28		2.93	.00
PR Social	.25		2.65	.01
Self-efficacy	.19		2.05	.04

Table 4. Regression Analysis step by step coefficients taking as a dependent variable the Self-efficacy.

Variable	β	R^2	t	p
Step 1		.11		
Coach's perception of efficacy	.33		2.85	.01

between elite volleyball players in high and low collective efficacy groups and that the high collective efficacy teams reported greater group cohesion.

In relation to the second hypothesis, we expected that factors comprising task cohesion would be the best predictors of self-efficacy as well as the efficacy perceived by the coach and by teammates. Findings suggest that player' feelings of valued roles and unity of purpose emerged as the strongest predictors of coaches' perceptions of efficacy. However, players reporting higher levels of group cohesion possessed more favorable efficacy perceptions as assessed by the coach. These outcomes are consistent with the work of Heuzé et al. (2006a) and Paskevich et al. (1999), who found that players on more cohesive teams tend to hold stronger shared beliefs in their team's competence, which may translate to greater team success. The relationships between cohesion and efficacy have been found at the group level but had not previously been found at the individual level, as was encountered in this study.

Consistent with this finding, we can reaffirm that efficacy as perceived by teammates was associated with positive and negative patterns of social interaction within the group. In this case, it was both the absence of negative task-related interactions and the presence of positive social interactions that contributed to higher efficacy as perceived by teammates. Furthermore, valued roles also emerged as predictor of perception of efficacy by teammates (Leo et al., 2010). Similar results were found by Beauchamp and Bray (2001) who showed that players who had high levels of role ambiguity and role conflict also possessed low levels of efficacy with regard to the tasks to be performed for their team. Finally, self-efficacy emerged to predict teammates' perceptions of the individual's efficacy. This finding is important because whether personal self-efficacy levels were not correlated with perceptions of efficacy provided by teammates, this could indicate that individual self-efficacy assessments were either too high or too low and group cohesion might be affected.

However, regression analysis indicated that valued roles seemed to be an important contributor to efficacy outcomes. This result leads us to conclude that a fundamental consideration for the relationship between teammate and coaches` perception of efficacy is the role that each athlete assumes in the group and the recognition that players receive of being part of it. This finding is consistent with Eys and Carron (2001) study regarding their examination of relationships among role ambiguity, cohesion and self-efficacy and found that players who did not have clear role responsibilities perceived less task-cohesion and lower levels of attraction to the group than those players with clearer role responsibilities.

Along this same line, individual efficacy perceived by coach was the only significant predictor of individual players' self-efficacy levels which reflects consistency in these two assessments of efficacy. It is important to note that players and coaches shared common viewpoints and this fact is relevant because each athlete recognizes their level and the role that has been identified in the group not only as perceived by teammates but also on behalf of the coach.

By the reasons above, the second hypothesis was generally supported with the exception of self-efficacy which is to say that factors related with task cohesion appeared as predictors of efficacy as perceived by coach and teammates but not as predictors of individual athletes' self-efficacy levels. In terms of cohesion-related variables, coaches identified valued roles and positive social relationships as the key predictors of athlete efficacy whereas players identified the absence of negative task relationships and the presence of positive social relationships as key contributors to athlete efficacy. As such, a set of variables form the key contributors to efficacy beliefs. Nevertheless, positive social relationships were cited as important by both coaches and teammates even though the magnitude of contribution may be small. In contrast, as has been previously mentioned, individual self-efficacy was not predictive of coach or teammate efficacy beliefs.

The first limitation of this study involved the relatively small sample size, contrary to a larger sample which would have permitted a greater capacity to generalize to the population as a whole. Another modification that the investigators will implement in future studies is to measure the collective efficacy as perceived by each team member and the collective performance of the team which would be beneficial in understanding group outcomes.

Conclusion

One of the most relevant issues to emphasize is that perceptions of efficacy as perceived by teammates or coach are positively related to group cohesion. In addition, efficacy and cohesiveness are linked to the performance of valued roles on behalf of individual players. Logically, when players feel they are executing valued and important roles they will experience a greater sense of cohesion within the team. Thus, a research about organization of the team could reveal whether team processes are effective or ineffective. Furthermore, the level of social interaction that is promoted or inhibited could provide clues about the eventual level and type of cohesiveness developed.

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Key points

- This paper increases the knowledge about soccer and basketball match analysis.
- Give normative values to establish practice and match objectives.
- Give applications ideas to connect research with coaches' practice.

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