



## Profile of high-performing college soccer teams: An exploratory multi-level analysis



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### ARTICLE INFO

#### Article history:

Received 17 October 2013

Received in revised form

25 May 2014

Accepted 26 May 2014

Available online 8 June 2014

#### Keywords:

Team expertise

Team Mental Models

Cohesion

HLM

Soccer

### ABSTRACT

**Objective:** To determine the profile of high-performing college soccer teams through the use of exploratory hierarchical linear modeling (HLM) based on a socio-cognitive approach.

**Design:** A correlational design was employed in this study. The sample consisted of 340 college soccer players of both genders (178 female and 162 male), representing 17 different teams (8 female and 9 male) ranked in the top-32 of the National Association of Intercollegiate Athletics (NAIA).

**Methods:** Numerous demographic and soccer-related variables represented level-1 in the HLM model. Group Environment Questionnaire and Team Assessment Diagnostic Measure were entered as level-2 variables, representing cohesion and team mental models, respectively. Perceived performance potential (PPP) served as the dependent variable. Objective performance scores were correlated with PPP, attesting a moderate to high-level of criterion related validity ( $r = .78$ ).

**Results:** The final model suggested that: (a) International athletes perceive their performance lower than others, (b) different field positions share different covariance coefficients with PPP, and (c) perception of social cohesion from a group, rather than individual, standpoint is positively associated with perceptions of team performance.

**Conclusions:** High performing teams have clearly defined task-related and team-related goals. Accordingly, social rather than task related factors may represent a competitive edge, further energizing the interactions and performance of top-ranked teams. International athletes perceive team performance lower than locals, perhaps due to differences in preferred game-style and acculturation experiences. Players from different field positions (i.e., goalkeepers, defensive, and offensive players) relate differently to team performance in college soccer.

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There is a general agreement that people achieve more when working in synchrony towards a shared goal: “the whole is greater than the sum of its parts.” In this regard, team expertise is a cross-domain research topic and numerous scholars seek to understand how successful sport teams, airline pilots, music orchestras, and even global diplomats evolve implicit and explicit coordination mechanisms (Salas, Rosen, Burke, Goodwin, & Fiore, 2006). Nonetheless, capturing team expertise is challenging because both individual and team-level factors influence the development of high-performing teams (Eccles & Tenenbaum, 2004). In a nutshell, previous research suggests that team expertise is about finding the “ideal mix” of individuals’ backgrounds and skills, while promoting

team values and coordination (i.e., synchronized action and effort among teammates) (see Gratton & Erickson, 2007). Therefore, we advanced an exploratory hierarchical linear model considering both individual and team-level factors related to team performance. Specifically, we assessed the influence of soccer players’ personal characteristics on team performance. We subscribed to a socio-cognitive approach based on the notion that teammates’ social dynamics (e.g., cohesion) influence individuals’ beliefs and cognitions (e.g., performance expectations), which in turn influence team members’ social dynamics (Eccles & Tenenbaum, 2004). To this extent, social cognition has been defined as “information processing in social setting” (Frith, 2008, p. 2033) and considered the result of how social stimuli influence perceptions of group processes. Moreover, with numerous frameworks to choose from (e.g., collective-efficacy, leadership), we opted to limit the scope of our inquiry to the notions of team cohesion and team mental

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models. From a theoretical standpoint, cohesion has been associated with the development of team processes such as team mental models (Carron & Hausenblas, 1998), while found to be moderated by a number of personal factors (see Carron, Colman, Wheeler, & Stevens, 2002) considered in the model tested herein. Finally, both cohesion and team mental models have been linked to team performance and expertise in sports (Carron, Eys, & Burke, 2007; Eccles & Tenenbaum, 2004).

## Introduction

### Team Cohesion

Team cohesion is defined as “a dynamic process that is reflected in the tendency of a group to stick together and remain untied in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron, Brawley, & Widmeyer, 1998, p. 213). Task and social cohesion are the two sub-dimensions underlying the overarching notion of team cohesion. Task cohesion refers to the degree that members of a team bond to accomplish a task, thus remaining united to achieve shared performance related goals. Social cohesion pertains to the notion of teammates bonding for social reasons, thus reflecting the extent that members of a team like to interact and enjoy each other's company (Carron et al., 2007; Carron, Widmeyer, & Brawley, 1985; Widmeyer, Brawley, & Carron, 1985). Based upon the notions of task and social cohesion, Carron et al. (1985) proposed the Conceptual Model of Group Cohesion for Sport. This framework considers each athlete's perceptions about his/her particular social and task attraction to the team (“I, my, or me” perceptions). Furthermore, this framework considers athletes' perceptions about “team unity” (“us, our, or we” perceptions), as related to “the similarity, closeness, and bonding, within the team as a whole around the group task” (Widmeyer et al., 1985, p. 17). In the present study, “I” beliefs were entered as level-1 factors, and “us” beliefs were treated as level-2 factors, with performance serving as the dependent variable.

It is important to note that performance has also been hypothesized to influence team cohesion and vice-versa (Carron et al., 2002). In fact, the relationship between cohesion and performance has been extensively studied across domains, and two meta-analytic reviews have summarized the magnitude of the cohesion–performance relationship (Carron et al., 2002; Mullen & Copper, 1994). Mullen and Copper's meta-analysis (1994) included 49 studies from general, military, and sport psychology. Results revealed a significant, positive, and small effect size for the cohesion–performance relationship ( $d = .25, p < .01$ ). In another meta-analytic review, Carron et al. (2002) found a large effect size for the cohesion–performance relationship in sports. Carron et al. also reported a strong relationship between performance and social ( $d = .70$ ) and task cohesion. ( $d = .61$ ).

Research based on Carron et al.'s (1985) Conceptual Model of Group Cohesion for Sport has also revealed that team members' attributes may serve as moderators of the cohesion–performance relationship (Carron et al., 2002, 2007). To this extent, Carron and Hausenblas (1998) have long noted that team member attributes influence group structure which in turn impact the cohesion–performance relationship. Based on this rationale, we focused on statistically modeling the influence of team members' attributes (individual characteristics, level-1 variables) on team performance. In particular, we examined the influence of both team members' demographic and role attributes on team performance. Pertaining to team members' demographic attributes, we assessed athlete gender and nationality. This is consistent with previous research suggesting that the cohesion–performance relationship differ among female and male teams (Schutz, Eom, Smoll, & Smith, 1994),

and that cultural issues may impact group cohesion in sports (Popp, Hums, & Greenwell, 2010). Furthermore, we used class status (i.e., freshman, sophomore, junior, senior) as an indicator of athletic experience, another factor influencing performance in college sports (Watt & Moore, 2001).

Regarding team members' role attributes, we explored the influence of individuals' soccer characteristics (i.e., field position, laterality, starter status) on team performance. In this regard, field position has been linked to the development of group processes and performance in team sports (Filho, Gershgoren, Basevitch, Schinke, & Tenenbaum, 2014). For instance, midfielders occupy centralized positions where the access to information is maximized, whereas other players (goalkeepers, defenders and offensive players) have unique assignments during competition (Di Salvo et al., 2007). Also noteworthy, laterality has been proposed as a factor linked to performance in team sports (Carey et al., 2001). Specifically, Carey et al. noted that left-footed players are rare and thus may have advantages because (a) defenders are most practiced against right foot opponents, and (b) left-footed plays are more likely to access visuo-spatial creativity networks in the right cerebral hemisphere. Finally, athletes' starter status have been found to influence team dynamics, with higher status athletes (e.g., starters) showing greater perceptions of satisfaction and cohesion than lower status athletes (e.g., substitutes) (see Jeffery-Tosoni, Eys, Schinke, & Lewko, 2011). Previous research on expert performance in soccer revealed that highly skilled athletes tend to possess greater awareness of their performance outcomes than their less skilled counterparts (Basevitch, Ward, Ericsson, Ehrlinger, & Filho, 2010). Accordingly, given starters are (in principle) the more skilled players, it is plausible that they evaluate performance differently than substitutes. In all, we examined the relationship among athletes' personal factors (i.e., starter status, laterality, field position and college experience), perceptions of cohesion (social and task), and team performance. Moreover, we were also interested in testing the influence of team mental models on team performance.

### Team Mental Models

The term “Team Mental Models” (TMM) has been used to denote research on team cognition because it clearly conveys that “the locus of interest is on team functioning, and it is stated broadly enough to encompass both similarity and accuracy properties” (Mohammed, Ferzandi, & Hamilton, 2010, p. 4). More specifically, TMM is defined as “the collective task and team relevant knowledge that team members bring to a situation” (Cooke, Salas, Cannon-Bowers, & Stout, 2000, p. 153). Accordingly, TMM are thought to enhance team performance through the development of (a) coordination mechanisms, and (b) task-specific and team related knowledge (see Eccles & Tenenbaum, 2004; Ward & Eccles, 2006).

Team coordination was recently defined as “the process of arranging team members' actions so that, when they are combined, they are in suitable relation for the most effective result” (Eccles & Tran, 2012, p. 32). Noteworthy, the importance of explicit and implicit coordination mechanisms has been noted by scholars from various domains (Eccles & Tenenbaum, 2004; Entin & Serfaty, 1999; Mohammed et al., 2010). Explicit coordination refers to verbal communication used to facilitate division of labor among teammates, whereas implicit coordination pertains to the ability of teammates to articulate team level actions without the need for verbal communication (Ward & Eccles, 2006). To this extent, Entin and Serfaty (1999) noticed that naval teams adapt to highly stressful situations by creating implicit coordination mechanisms.

When developing team coordination, one should also keep in mind that team actions must be synchronized in function, time,

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