Effect of the coaches' leadership style perceived by athletes on team cohesion among elite Brazilian futsal players

Efecto del estilo de liderazgo de los entrenadores percibido por los atletas sobre la cohesión del equipe entre jugadores brasileños de futsal de élite

Efeito do estilo de liderança do treinador percebido pelos atletas na coesão de grupo em jogadores brasileiros de futsal

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ABSTRACT

This study investigated the effect of the coach leadership style as perceived by athletes on team cohesion among elite futsal athletes. Participants were 120 athletes from the top-8 teams participating in the Paraná's state Professional League 2013. Instruments used were the Leadership in Sport Scale and the Group Environment Questionnaire. For data analysis, Confirmatory Factor Analysis and Structural Equation Modelling were conducted, as well as Latent Profile Analysis. Results showed significant relationships between leadership style and both social (10%) and task cohesion (31%); in addition, the coach leadership style perceived by athletes characterized as democratic and based on social support, reinforcement and training-instruction influenced positively task cohesion (FL=0.55) and moderately social cohesion (FL=0.31). It is concluded that, for the futsal from the state of Parana, the coach's leadership style based on democratic, reinforcement, social support and training-instruction behaviours is determinant to the development of task cohesion, however, does not have the same strong influence in social cohesion.
Keywords: Leadership style, team cohesion, futsal.

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Sociedad Iberoamericana de Psicología del Deporte

Coaches' leadership style perceived by athletes on team cohesion

RESUMEN

Este estudio investigó el efecto del estilo de liderazgo del entrenador percibido por los atletas sobre la cohesión del equipo entre los atletas de futsal de élite. Los participantes fueron 120 atletas de los ocho mejores equipos que participaran en la Liga Profesional del estado de Paraná-Brasil en 2013. Los instrumentos utilizados fueron la Escala de Liderazgo en el Deporte y el Cuestionario de Medio Ambiente Grupal. Para los análisis de datos, se realizaron análisis factorial confirmatoria, modelado de ecuaciones estructurales y análisis de perfil latente. Los resultados mostraron relaciones significativas entre el estilo de liderazgo y la cohesión social (10%) y la cohesión para tarea (31%); Además, el estilo de liderazgo del entrenador percibido por los atletas caracterizados como democráticos y basados en el apoyo social, el refuerzo y la instrucción de entrenamiento influyó positivamente en la cohesión de la tarea (FL = 0,55) y la cohesión social moderada (FL = 0,31). Se concluye que, para el futsal del estado de Paraná, el estilo de liderazgo del entrenador basado en comportamientos democráticos, de refuerzo, de apoyo social y de instrucción de entrenamiento es determinante para el desarrollo de la cohesión de la tarea, sin embargo, no tiene la misma influencia fuerte en la cohesión social.
Palabras clave: Estilo de liderazgo, cohesión de grupo, futsal.

RESUMO

Este estudo investigou o efeito do estilo de liderança do treinador, como percebido pelos atletas, sobre a coesão de grupo de atletas de futsal de elite. A amostra foi composta por 120 atletas das oito melhores equipes participantes da Série Ouro do Campeonato Paranaense de Futsal em 2013. Os instrumentos utilizados foram a Escala de Liderança no Esporte e o Questionário de Ambiente de Grupo. Para análise dos dados foram conduzidas a Análise Fatorial Confirmatória, Modelagem de Equações Estruturais e Análise de Perfil Latente. Os resultados mostraram relações significativas entre o estilo de liderança e a coesão social (10%) e coesão para tarefa (31%); além disso, o estilo de liderança do treinador, percebido pelos atletas, caracterizado como democrático e baseado no apoio social, no reforço e no treino-instrução influenciou positivamente a coesão para tarefa (FL = 0,55) e a coesão social (FL = 0,31). Concluiu-se que, para o futsal do estado do Paraná, o estilo de liderança do treinado baseado em comportamentos democráticos, de reforço, de apoio social e instrução ao treinamento é determinante para o desenvolvimento de coesão voltada a tarefa, entretanto, não tem a mesma influência forte na coesão social.
Palavras-chave: Estilo de liderança, coesão de grupo, futsal.

Nascimento-Júnior, J.R.A.; Vissoci, J.R.N.; Codonhato, R.; Fortes, L.S.; Oliveira, D.V.; Oliveira, L.P.; Nascimento, J.V.; Fiorese, L.

INTRODUCTION

The development of sport teams is a dynamic process with constant changes in the processes of interaction, comprising a system of mutual connections of roles and relationships among group members (Carron & Eys, 2012). In this context, the relationship between athletes and coaches is considered as an important element for the dynamics of such groups (Chelladurai, 2007). Coaches play a significant role in a team's atmosphere, a good social environment can promote athletes' performance and development (Bianco & Eklund, 2001), while negatively-perceived environments may increase athletes' stress and exhaustion (Davis, Appleby, Davis, Wetherell, & Gustafsson, 2018). Describing such complexity of group dynamics in sports, team cohesion is the most widely investigated concept (Eys & Brawley, 2018), highlighting its importance for team performance and success (Carron & Eys, 2012). In this sense, coach leadership style is considered a crucial factor for the development of cohesion (Kim & Cruz, 2016), being also linked to the satisfaction of athletes' basic psychological needs and, consequently, their well-being (Jowett, Adie, Bartholomew, Yang, Gustafsson, & López-Jíménez, 2017).

Reviews examining cohesion in sports have acknowledged its important influence on team performance, besides other variables such as one's self-efficacy, well-being, satisfaction, trust in teammates and ability to cope with stressors (Carron, Colman, Wheeler, & Stevens, 2002; Carron, Eys, & Martin, 2012; Filho, Dobersek, Gershgoren, Becker, & Tenenbaum, 2014; Eys & Brawley, 2018), therefore, building/increasing team cohesion in sports

has been target of both research and work in this area (Bruner, Eys, Beauchamp, & Côté, 2013). The coach, as a team leader, is believed to play a significant role in a group's cohesiveness, where employing training and instruction behaviours, social support, positive feedback and a democratic style seem to have a positive impact on team cohesion, while an autocratic style would negatively influence cohesion levels (Kim & Cruz, 2016). Effective coaching strategies have also been related to positive group environment (Becker, 2009), performance improvements (Jowett & Chaundy, 2004) and successful sports career (Beauchamp, Jackson, & Lavallee, 2008).

In order to study and understand such construct of leadership, the Multidimensional Model of Leadership (Chelladurai & Saleh, 1980) takes in account trait and situational variables to predict leadership effectiveness in sport context, and will be used as theoretical framework for the present study. According to the model, leadership effectiveness is a product of the right interactions between leader characteristics (e.g.: interpersonal skills, experience and decision making), athlete's characteristics (e.g.: age, gender, skill level, experience and motivation) and the context (e.g.: group size, type of sport and competition/game importance).

Despite all of the presented evidences, there are still some inconsistencies in the literature regarding leadership and cohesion. For instance, most of the studies stablishing the presented evidences were found in non-professional sport settings such as high-school, junior elite/junior college and university levels (Kim & Cruz, 2016). On the other hand, it is theorized that mature male players pursuing high

Coaches' leadership style perceived by athletes on team cohesion

performance and excellence would prefer a more demanding approach, with some characteristics most often found in autocratic coaches (Chelladurai, 2013; Weinberg & Gould, 2015).

Positive correlations between autocratic style and social cohesion were found in professional Iranian and Turkish players, as well as a positive correlation between task group integration and autocratic behaviour pre-tournament for such Turkish players, but not after-tournament (Mohades, Ramzaninezhad, Benar, Khabiri, & Kazemnezhad, 2011; Toros, 2010). Japanese university athletes preferred more autocratic behaviours, along with social support (Chelladurai et al., 1988). Some studies found no significant correlation between team cohesion dimensions and autocratic leadership style in elite Iranian (Sarpira, Khodayari, Mohammadi, 2012) and Ethiopian players (Alemu & Babu, 2012), while Crăciun & Rus (2009) found negative correlations between coach's leadership style in general and overall team cohesion for Romanian athletes, but their competitive level was not clearly stated.

In this sense, there is still a gap in the understanding of the relationships between coach leadership style and team cohesion in professional sports, as well as regarding the cultural aspects of such relationship. Therefore, our study investigated the effect of coaches' leadership style perceived by athletes on team cohesion among Brazilian elite futsal athletes. According to the presented literature, we hypothesized that leadership style based on democratic behaviour, social support, reinforcement, and training-instruction will positively impact both social and task cohesion, while the autocratic

behaviour will have no significant effect on team cohesion.

MATERIAL AND METHODS

Participants

Subjects were 120 male adult futsal teams' athletes, with age average of 25.55 ± 4.35 years old, participating in a Brazilian Professional League and belonging to the state of Paraná-Brazil. The selection criteria was the performance level, thus, the top eight teams ranked in Paraná State Championship were invited to participate in the study, representing the elite of the futsal in the state of Paraná, one of the most competitive leagues in Brazil.

Instruments

The Leadership in Sport Scale (LSS) (Chelladurai & Saleh, 1980) validated to Portuguese (Serpa, Pataco, & Santos, 1991) was used to assess coaches' leadership styles. This instrument is constituted by 40 items in a 5-point-Likert-type scale (1-never to 5-always) and results are distributed into five dimensions: 1) Training-Instruction, Social Support, Reinforcement, Democratic, and e) Autocratic. There are three LSS versions: (i) to evaluate the coaches' perceptions about his own behaviour (self-perception); (ii) to evaluate the athletes' perception about the coach's behaviour; and (iii) to evaluate the athletes' preferences. In order to assess the athlete's perception about the coach leadership style on team cohesion, only the athlete's perception version was used. To test the factor structure of the LSS for the study sample, Confirmatory Factor Analysis (CFA) did not present acceptable fit in its original structure, due to factor loading values under 0.70 for items 1, 2, 11, 14, 15,

Nascimento-Júnior, J.R.A.; Vissoci, J.R.N.; Codonhato, R.; Fortes, L.S.; Oliveira, D.V.; Oliveira, L.P.; Nascimento, J.V.; Fiorese, L.

16, 20, 21, 24, 25, 26, 33, 36, 39 and 40. Authors opted for the exclusion of such items, resulting in a model with 25 items (factor loadings were above 0.70) and acceptable fit [$X^2/df=1.89$; CFI=.90; GFI=.90; TLI=.90; SRMR=.08; RMSEA=.08; P(rmsea<.05)=.02], which, although does not invalidate the scale, does add limitations to the present study. Composite reliability (CR) for internal consistency was satisfactory (Training-Instruction=.75; Social Support=.72; Reinforcement=.80; Democratic=0.77), except for the Autocratic dimension (CR=.67). Cronbach's alpha for all dimensions were higher than .70, except for the Autocratic dimension with a value of .52 (Table 1). The average variance extracted values (AVE) for convergent validity were as it follows: Training-Instruction=0.53; Social Support=0.51; Reinforcement=0.60; Democratic=0.56; Autocratic=0.45). The AVE values were compared with the squared correlations (SC) between the factors in order to evaluate the discriminant validity. We observed that all factors are discriminant to each other (AVE>SC).

We also correlated the autocratic subscale with the other variables in order to observe their association, however it obtained small and negative correlation (r<-.40) with all the other indicators, thus, we decided to exclude this subscale from the study's SEM analysis due to its low values of internal reliability and negative correlation, however, the information provided by such subscale was still taken in consideration for the Latent Profile Analysis, which is described in the Data Analysis section.

To identify cohesion level, the Group Environment Questionnaire (GEQ) (Carron, Widmeyer, & Brawley, 1985) was used, as validated for the Brazilian context (Nascimento Junior, Vieira, Rosado, & Serpa, 2012). It consists of 16 items in a 9-point-Likert-type scale (1- strongly disagree to 9-strongly agree), divided into four dimensions: 1) Group-Integration Task (GI-T); 2) Group-Integration Social (GI-S); 3) Individual Attraction to Group-Task (IA-T); and 4) Individual Attraction to the Group-Social (IA-S). CFA showed acceptable fit [$X^2/df=1.75$; CFI=.92; GFI=.91; TLI=.92; SRMR=.05; RMSEA=.06; P(rmsea<.05)=.035] and all standardized factor loadings were above 0.70. CR was satisfactory (GI-T= .83; GI-S=.79; ATG=.86; ATS=.75). Cronbach's alpha for all dimensions were higher than .70. The average variance extracted values (AVE) for convergent validity were as it follows: GI-T = 0.63; GI-S = 0.51; AI-T = 0.64; and AI-S = 0.48. We observed that all factors are discriminant to each other (AVE>SC).

Procedures

This study was approved by the Ethic Committee in Human Research of the Maringá State University (Opinion nº336/2011). After the authorization from the federation, teams' managers and head coaches were contacted in order to arrange the data collection during the beginning of the 2011 season at the teams' local training facility. We decided to collect data in this period due to the performance in the beginning of the season does not affect significantly the group environment. All subjects signed the free and

Sociedad Iberoamericana de Psicología del Deporte

Coaches' leadership style perceived by athletes on team cohesion

informed consent term, and had a 40 minutes average of response time.

Statistical Analysis

Descriptive statistics were displayed by mean (x), Skewness (Sk) and Kurtosis (Ku) and standard deviation (Sd). These analyses were performed through SPSS 18.0.

Main analyses were performed through Structural Equation Modelling (SEM) through the software Amos 18.0. SEM was used to test the hypotheses described by the conceptual model, checking whether coaches' leadership style affect the social and task cohesion. We theorized the existence of three latent variables, which have been formed from the dimensions of the respective questionnaires, considered as observed variables in the model. The latent variables were: Leadership Style (LS), Task Cohesion (TC) and Social Cohesion (SC). Similar procedures of using the questionnaire dimensions as observed variables to form new latent variables have been adopted by several researchers in sport psychology (Bruner, Boardley, & Côté, 2014; Saybani, Yusof, Soon, Hasson, & Zardoshtian, 2013). SEM was tested by the two-step method. This procedure expects the adequacy of the measurement variables before the structural equations, defining model's identification with the latent variables before testing. Therefore, a two-step strategy is defined: 1) Specify and identify the causal model by performing a CFA of the measurement model; and 2) Specify and identify the structural model, establishing paths and disturbances for the endogenous latent variables (Marôco, 2010). Thus, the three-factor measurement

model was tested by the CFA, including the following latent variables: Leadership Style (LS), Task Cohesion (TC) and Social Cohesion (SC) (Byrne, 2010; Kline, 2012).

Step 1. Measurement model's was analysed according to the goodness of fit indicators and local adjustment was assessed by factor loadings and items reliability. The verification of the existence of outliers was assessed by Square Mahalanobis distance (D^2), since the absence of such cases is a prerequisite for this analysis (Byrne, 2010). We also verified the normality, which is one of the requirements for performing SEM, having checked data's univariate distribution by Skewness (Sk) and Kurtosis (Ku), and multivariate distribution (Mardia coefficient for multivariate kurtosis) (ISkI<3.0 and IKuI <10.0) (Kline, 2012). Since our data did not obtain normality (Mardia = 20.153) and our sample was small, we performed a Bollen-Stine bootstrap procedure (500 samples) to obtain a corrected Chi-squared value of the estimated coefficients for the Maximum Likelihood Estimator (Marôco, 2010). Further, power analyses were conducted to test our sample adequacy, based on RMSEA estimation. Thus, considering a RMSEA varying from .06 to .09 with 5% significance, our sample showed 71% power (MacCallum, Browne, & Cai, 2006).

Model fitness indicators were: Chi-square (X^2 and p-value), Goodness Fit Index (GFI >.90), Root Mean Square Error of Approximation (RMSEA<.08, I.C. 90%), Normalized Fit Index (NFI>.95-.90), Tucker-Lewis index (TLI> .90), Adjusted Goodness Fit Index (AGFI> .90), Normalized Chi-Square (X^2/degrees of freedom, recommended between 1.0

Nascimento-Júnior, J.R.A.; Vissoci, J.R.N.; Codonhato, R.; Fortes, L.S.; Oliveira, D.V.; Oliveira, L.P.; Nascimento, J.V.; Fiorese, L.

and 3.0), Comparative Fit Index (CFI> .90) and Standardized Root Mean Square Residuals (SRMR<.08). These indices aim to assess whether the model shows a good fit to the data, as proposed in the literature (Byrne, 2010; Hair, Black, Babin, Anderson, & Tatham, 2005; Marôco, 2010).

Step 2. SEM for the effect of LS on SC and TC was tested using the same indicators described for the measurement model evaluation (Step 1) as well as factor loadings and item individual reliability (Hair et al., 2005). Based on the recommendations of Kline (2012), the interpretation of the paths had as reference: small effect for factor loadings <.20; medium effect for factor loadings until .49; and large effect for factor loadings >.50 (p<.05).

We have also estimated the significance of the direct effects of the model. Thus, a bias corrected (BC) bootstrap method has been performed for establishing confidence intervals (CI 90%) for the direct effects (Cheung & Lau, 2008). This procedure reduces bias caused by non-normality in the sampling distribution of direct effects, especially for small samples. SEM was then theoretically constituted by one exogenous variable (predictor – LS, Leadership) and two endogenous (receive the prediction path - SC and TC, Social Cohesion and Task Cohesion). The theoretical model was tested and analysis of modification indexes were developed until a satisfactory model was acquired (significant paths, adequate fitness indicators and theoretical justification).

To further investigate coaches' specific profiles perception on team cohesion we opted to apply a Latent Profile Analysis (LPA) to define taxonomies derived from the LSS dimensions association patterns (Lanza, Flaherty, & Collins, 2003). This derivation created a conjunction of latent categorical variables grouping individuals with similar LS profiles. Classification was performed through maximum likelihood estimation, and through several different iterations of modelling. Thus driving the categorization through the probability of classifying properly an individual, giving the best possible model fitness. Model fitness was assessed through: a) model interpretability, or the ability of the model to represent a theoretical hypothesis, b) class size, with classes containing <5% of the sample considered possible false classes (Hipp & Bauer, 2006), and c) BIC and AIC (Nylund, Asparouhov, & Muthen, 2006). Both are descriptive fit indices used for model comparison with lower values indicating better fit. These LPA were performed using R Language version 3.0.1.

RESULTS

Descriptive analysis

Participants had shown the following team cohesion scores: GI-T= 7.64 ± 1.12; GI-S = 5.81 ± 1.53; AI-T = 7.87 ± 1.15; AI-S = 6.90 ± 1.18. Regarding Coach's leadership, we observed the following results: Training-Instruction = 4.16 ± 0.55; Social Support = 3.76 ± 0.69; Reinforcement = 4.00 ± 0.77; Democratic = 3.47 ± 0.55; Autocratic = 2.58 ± 0.85 (Table 1).

Measurement model

We assessed a five-factor measurement model (Step 1-SEM) by checking the relations of the observed variables on their respective factors through CFA. Measurement model of latent variables showed

appropriate adjustment [$X^2(16)=35.851$; ^{BS}p=.032; X^2/df=2.241; CFI=.96; GFI=.94; TLI=0.93; NFI=.93; RMSEA=.08 (I.C. 90% .05-.09); P(rmsea<.05)=.057; PCFI=.651] and the local fit after items internal reliability was also confirmed, given that all paths showed significant factor loadings and higher than .50. These results support the latent model and allow the test for the SEM itself (Step 2).

SEM

First attempt to test the model with simple paths from LS to SC and TC (Model A) resulted in non-adequate fitness indicators [$X^2(19)=91.73$; X^2/df=4.83; RMSEA=.12 (I.C. 90% .10-.15); P(rmsea<0.05)= .043; GFI=.85; AGFI=.82; CFI=.84; TLI=.86; NFI=.82; SRMR=.13; PCFI=.553]. Nevertheless, Model A showed significant paths coefficients (p<.01).

Modification indexes indicated a need for changes in the model, specifically a covariance between SC and TC disturbance and the errors of some indicators (Training-Instruction and Social Support, ATI-GIT). Such changes in the model allowed an improvement in the fitness indicators [$X^2(16)=30.01$; X^2/df=1.81; RMSEA=.08 (I.C. 90% .06-.09); P(rmsea<.05)=.130; GFI=.95; AGFI=.89; CFI=.98; TLI=.95; SRMR=.08; PCFI =.611]. Parsimony indicator (PCFI) was lower in Model B than in Model A. All paths trajectories in Model B were statistically significant (p<.05). The difference of the chi-square statistics is 61.72 (df = 3; p<.01), indicating that the final model (Model B) had shown significantly better fit. LS demonstrated a strong and positive effect over TC (.55) and moderate and positive effect (.31) over SC. LS explained

around 31% of TC variability and 10.0% of SC variability of the futsal teams (Figure 1).

The examination of the bootstrap-generated Bias Corrected (BC) Confidence Interval (C.I.) revealed the significant direct effect of LS on SC and TC. The estimate for the effect of the LS on SC is .31 (p < .01; 90% C.I. is .19 to .48) and on TC is .55 (p < .01; 90% C.I. is .43 to .72). This finding supports the direct effect of LS perceived by the athletes on SC and TC.

Leadership profiles influence on sports cohesion

After observing the effect of LS on TC, we evaluated coaches LS latent profiles emerging three different groups with specific leadership behaviour configurations (Figure 2). All three profiles were differentiated by (1) the dichotomy autocratic and democratic behaviour and (2) participation in training with training-instruction, social support and reinforcement behaviours. The first profile, Democratic-Participative, classified athletes perceiving their coaches as highly democratic and with low autocratic scores, while were also considered participative showing the highest scores of training-instruction, social support and reinforcement behaviours in relation to the other profiles. Other two clusters of athletes perceived their coaches as more autocratic differing by the perception of participation in training. A profile, called Ambivalent, was characterized with both autocratic and democratic behaviours, and an average sense of training participation. While the last profile, Autocratic-Non-participative, was marked by autocratic scores and focus on training-instruction behaviour.

Table 1. Descriptive statistics and bivariate correlation of study variables (n = 120.)

Variables	Coach's Leadership					Cohesion			
	1	2	3	4	5	9	10	11	12
1. Training-Instruction		0.60*	0.63*	0.32*	-0.39*	-0.02	0.66*	0.62*	0.44*
2. Social Support			0.65*	0.46*	-0.21*	0.17	0.52*	0.39*	0.45*
3. Reinforcement				0.37*	-0.29*	0.10	0.46*	0.48*	0.30*
4. Democratic					-0.05	0.08	0.41*	0.42*	0.40*
5. Autocratic						0.10	-0.29*	-0.26*	-0.20*
9 . GI-S							0.28*	0.07	0.50*
10. GI-T								0.64*	0.55*
11. IA-T									0.57*
12. IA-S									
x	4.16	3.76	4.00	3.47	2.58	5.81	7.64	7.87	6.90
Sd	0.55	0.69	0.77	0.55	0.85	1.53	1.12	1.15	1.18
α	0.72	0.70	0.74	0.75	0.52	0.76	0.77	0.79	0.71
CR	0.75	0.72	0.80	0.77	0.67	0.83	0.79	0.86	0.75
Sk	-0.30	-0.32	-0.80	-0.46	-0.19	-0.36	-1.53	-1.69	-0.49
Ku	-0.80	-0.07	0.46	1.09	-0.84	-0.60	4.17	3.96	-0.13

Note. * = Significance level at $p<.05$.

GI-S=Group interaction – Social; GI-T= Group interaction – Task; IA-T=Individual attraction – Task; IA-S=Individual attraction – Social.
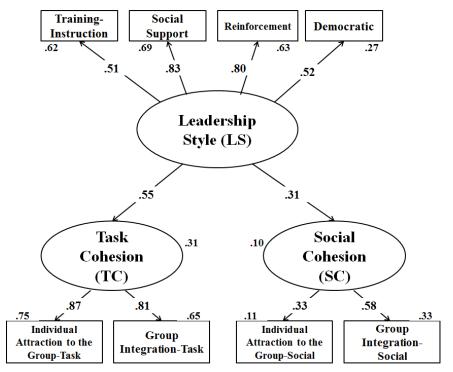

Figure 1. Structural equation model of the effect of coach's leadership style (LS) over social (SC) and task cohesion (TC) of futsal athletes from Paraná state-Brazil.
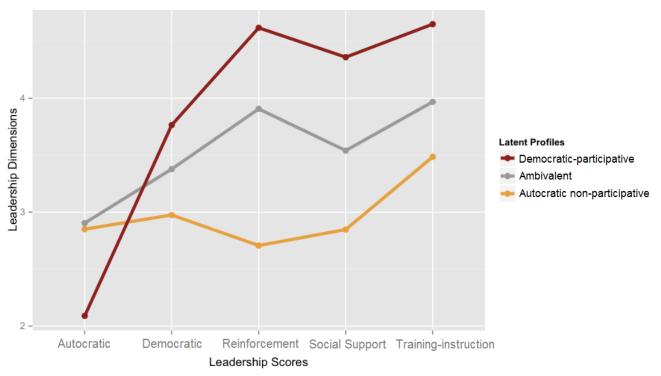
Coaches' leadership style perceived by athletes on team cohesion

Figure 2. Leadership profiles based on athlete's perception of coach behaviour in futsal athletes from Paraná state-Brazil.

DISCUSSION

The main goal of the present study was to evaluate the influence of athletes-perceived coach's leadership style on the team cohesion. To the best of our knowledge, this is one of the few studies to use SEM to investigate the effect of coaches' leadership style on group's social and task cohesion, and the first one to do so among professional futsal teams. Our findings suggest that the coach's leadership style, although it can positively influence both task and social cohesion, has a much higher impact on task cohesion. In addition, we observed that these athletes' perception of leadership style did not include an autocratic behaviour as a substantial characteristic of their coaches.

It is noteworthy that the coach's influence on team cohesion differs when considering the dimensions of

cohesion (task and social) (Callow et al., 2009; Jowett & Chaundy, 2004; Nascimento Junior & Vieira, 2013), moreover, a meta-analysis of studies performed in mostly non-professional settings found a similar small-to-moderate influence of leadership over task (0.22) and social (0.20) cohesion. In contrast, only 10% of social cohesion's variance was predicted by the leadership style in our study, indicating that, in elite futsal, the coach's behaviour does not strongly influence social aspects such as athletes' friendship or closeness, while it is more impactful for task cohesion compared to non-professional teams.

These findings are consistent with previous evidence found in semi-professional football players (Leo, Sánchez-Miguel, Sánchez-Oliva, Alonso, & Calvo, 2013), as well as the conceptual model of cohesion in

sport (Carron & Eys, 2012) and the multidimensional model of leadership (Chelladurai, 2007), suggesting that in high performance sports, social aspects related to athletes are less detached by the coach, who is more likely to have influence in task related aspects of team cohesion than it can impact on how the athletes relate to each other in a social convenience. Although our findings do not contradict the coach's potential to influence social cohesion, they suggest a much smaller effect on it. Moreover, athletes' social orientation, as a part of their leadership role within their groups, might also contribute to the team's task engagement (López, Rocha, & Castillo, 2012), highlighting how the competitive level might shape a team's cohesiveness towards task goals. Still, some studies (Caperchione, Mummery, & Duncan, 2011; Leo, Calvo, González, Miguel, & García-Mas, 2009) suggest that the coach plays an important role in developing social cohesion within their teams, however, both studies were not performed with professional athletes.

Findings in the literature report autocratic behaviour as a key factor with the largest presence and relevance in the high performance teams (Chelladurai, 2007; Chelladurai, 2013; Weinberg & Gould, 2015). In this sense, it seems that culture plays a significant role, as support for positive impacts of autocratic leadership has been found in Iranian and Turkish professional settings (Mohades, Ramzaninezhad, Benar, Khabiri, & Kazemnezhad, 2011; Toros, 2010), as well Japanese collegiate-level athletes (Chelladurai et al., 1988), but were not evidenced in our study with Brazilian elite athletes. Culture seems to influence athletes' preferences in

regards to peer behaviours and how they interact each other, also, the interaction between athlete's preferred leadership style and their perception of the coach's behaviour will influence their sport satisfaction (Duarte, Teques, & Silva, 2017), which might have implications towards cohesiveness of the group.

As a way to provide practical information about a supposed ideal leadership style for the work with Brazilian futsal athletes, based on the athlete perspective, we developed leadership profiles through latent variable analysis. The Democratic-Participative profile incorporates behaviours identified through our model as highly important for team cohesion development. In other words, adopting such coaching profile can be a way to benefit task and social cohesion on Brazilian elite futsal teams. These findings strengthen previous evidences regarding leadership style in futsal, which described a similar profile, but in the coach's perspective (Noce, Teixeira, Lopes, Samulski, & Souza, 2013).

As professional teams in elite competitive leagues around the globe often hire athletes from different countries, understanding athletes' characteristics as a function of their culture is highly relevant to obtain maximum performance from them. However, studies are still required in order to understand if such characteristics remain true even outside their home country, as well as to investigate if the presented results can be generalized to Brazilian athletes from other team sports, such as football and volleyball, which often have athletes hired to play in elite leagues in Europe.

Besides the contributions, the limitations of our study must be presented. By only considering the athletes'

perception of the coach leadership style, the multidimensional model of leadership is not fully addressed. Choosing only one sport limits the generalizability of our findings, thus, the inclusion of other sports would provide a broader understanding of the investigated variables. Furthermore, the sample size can also be considered a limitation, however, it is important to notice that these were top athletes representing part of the elite in Brazil, the leading country in the sport of Futsal. Moreover, data had statistical significance for the analysis (MacCallum et al., 2006) and satisfactory fit indices for SEM were met (Byrne, 2010; Hair et al., 2005). Another important limitation was the cross-sectional characteristic of our study, which did not follow how leadership would affect team cohesion throughout the season, as Toros (2010) evidenced differences in the impact of leadership style over cohesion before and after competitions.

Future studies should investigate how the leadership style can impact team cohesion in other contexts, in order to provide comparisons between its influence in different sports and cultures. Larger samples allied with SEM analysis could contribute to the strength and reliability of the results. The congruence between coach's self-perception, athletes' perception and athletes' preferences for leadership should also be considered in order to better understand the interaction between these constructs. As practical implications, coaches should evaluate the cohesion level of their teams as well as consider players' cultural aspects, adjusting leadership behaviours to improve group cohesion. Sport psychologists can benefit from our results and discussions to better

understand aspects related to culture and competitive level, and design proper interventions.

REFERENCES

1. Alemu, S. M., & Babu, M. S. (2012). The relationship between coaches' leadership styles, team cohesion and team success: the case of premier league soccer clubs in Ethiopia. *International Journal of Social Science & Interdisciplinary Research*, 1(11), 1-13.

2. Beauchamp, M. B., Jackson, B., & Lavallee, D. (2008). Personality processes and intra-group dynamics in sports teams. In M. R. Beauchamp & M. Eys (Eds.), *Group dynamics in sport and exercise psychology: Contemporary themes* (pp. 25-41). London: Routledge.

3. Becker, A. J. (2009). It's not what they do, it's how they do it: athlete experiences of great coaching. *International Journal of Sports Science & Coaching*, *4*, 93–114. DOI: 10.1260/1747-9541.4.1.93.

4. Bianco, T., & Eklund, R. C. (2001). Conceptual considerations for social support research in sport and exercise settings: The case of sport injury. *Journal of Sport & Exercise Psychology*, 23, 85–107.

5. Borsboom D. & Cramer A. O. (2013). Network analysis: an integrative approach to the structure of psychopathology. *Annual review of clinical psychology*, *9*, 91-121. DOI: 10.1146/annurev-clinpsy-050212-185608

6. Bruner, M. W., Boardley, I. D., & Cotè, J. (2014). Social identity and prosocial and antisocial behaviour in youth sport. *Psychology of Sport and Exercise*, *15*, 56-64. DOI: 10.1016/j.psychsport.2013.09.003

7. Bruner, M. W., Eys, M. A., Beauchamp, M. R., & Côté, J. (2013). Examining the origins

Nascimento-Júnior, J.R.A.; Vissoci, J.R.N.; Codonhato, R.; Fortes, L.S.; Oliveira, D.V.; Oliveira, L.P.; Nascimento, J.V.; Fiorese, L.

of team building in sport: A citation network and genealogical approach. *Group Dynamics: Theory, Research, and Practice*, 17, 30–42. DOI: 10.1037/a0030114

8. Byrne, B. M. (2010). *Structural equation modelling with AMOS: Basic concepts, applications, and programming*. Trenton, NJ: Lawrence Erlbaum.

9. Callow, N., Smith, M., Hardy, L., Arthur, C. A., Hardy, J. (2009). Measurement of transformational leadership and its relationship with team cohesion and performance level. *Journal of Applied Sport Psychology*, 21, 395–412. DOI: 10.1080/10413200903204754

10. Caperchione, C., Mummery, K. & Duncan, M. (2011). Investigating the relationship between leader behaviours and group cohesion within women's walking groups. *Journal of Science and Medicine in Sport*, *14*, 325–330. DOI: 10.1016/j.jsams.2011.03.005

11. Carron, A. V., & Eys, M. A. (2012). *Group Dynamics in Sport*. Fitness Information Technology: Morgantown, WV.

12. Carron, A. V., Colman, M. M., Wheeler, J., Stevens, D. (2002). Cohesion and performance in sport: A meta-analysis. *Journal of Sport & Exercise Psychology*, *24*, 168-188. DOI: 10.1123/jsep.24.2.168

13. Carron, A. V., Eys, M. A., & Martin, L. J. (2012). Cohesion. In G. Tenenbaum, R. C. Eklund, & A. Kamata (eds.), *Measurement in sport and exercise psychology* (pp. 411-422). Champaign, IL: HKP.

14. Carron, A. V., Widmeyer, W. N. & Brawley, L. R. (1985). The Development of an instrument to assess cohesion in sport teams: The Group Environment Questionnaire. *Journal of Sport Psychology*, *7*(3), 244-266. DOI: 10.1123/jsp.7.3.244

15. Chelladurai, P. (2007). Leadership in sports. In G. Tenembaum, R. Eklund (Eds). *Handbook of Sport Psychology* (pp. 113-135). New Jersey:Wiley.

16. Chelladurai, P. (2013). A personal journey in theorizing in sport management. *Sport Management Review*, 16, 22–28. DOI: 10.1016/j.smr.2011.12.003

17. Chelladurai, P., & Saleh, S. D. (1980). Dimensions of leader behaviour in sports: development of a leadership scale. *Journal of Sport Psychology*, *2*, 34-45. DOI: 10.1123/jsp.2.1.34

18. Chelladurai, P., Imamura, H., Yamaguchi, Y., Oinuma Y., Miyauchi, T. (1988). Sport leadership in a cross-national setting: the case of Japanese and Canadian university athletes. *Journal of Sport and Exercise Psychology*, 10, 374–389. DOI: 10.1123/jsep.10.4.374

19. Cheung, G.W., & Lau, R. S. (2008). Testing mediation and suppression effects of latent variables: Bootstrapping with structural equation models. *Organizational Research Methods*, *11*(2), 296–325. DOI: 10.1177/1094428107300343

20. Côté, J. & Gilbert, W. (2009). An integrative definition of coaching effectiveness and expertise. *International Journal of Sports Science and Coaching*, *4,* 307-323. DOI: 10.1260/174795409789623892

21. Crăciun, M. & Rus, C. (2009). The relationship between perceived coach leadership behaviours and team cohesion among Romanian athletes. *Revista Iberoamericana de Psicología del Ejercicio y el Deporte*, 4(2), 217-232.

22. Davis, L., Appleby, R., Davis, P., Wetherell, M., & Gustafsson, H. (2018). The role of coach-athlete relationship quality in team sport athletes' psychophysiological exhaustion: implications for physical and cognitive performance. *Journal of Sports*

Sciences, 36(17), 1985-1991. DOI: 10.1080/02640414.2018.1429176

23. Duarte, D., Teques, P., Silva, C. (2017). Liderança e satisfação no futebol: testagem da congruência com recurso a análise de equações estruturais. *Revista Iberoamericana de Psicología del Ejercicio y el Deporte*, 12(1), 71-82.

24. Duda, J. L. & Balaguer, I. (2007). Coach-created motivational climate. In S. Jowett & D. Lavallee (eds.), *Social psychology in sport* (pp. 117-130). Champaign, IL: HKP.

25. Eys, M. A., & Brawley, L. R. (2018). Reflections on cohesion research with sport and exercise groups. *Social and Personality Psychology Compass*, 12, e12379. DOI: 10.1111/spc3.12379

26. Eys, M. A., Carron, A. V., Bray, S. R., & Brawley, L. R. (2007). Item wording and internal consistency of a measure of cohesion: The Group Environment Questionnaire. *Journal of Sport & Exercise Psychology*, 29(3), 395-402. DOI: 10.1123/jsep.29.3.395

27. Filho, E., Dobersek, U., Gershgoren, L., Becker, B., Tenenbaum, G. (2014). The cohesion-performance relationship in sport: A 10-year retrospective meta-analysis. *Sport Sciences for Health*, 10, 165-177. DOI: 10.1007/s11332-014-0188-7

28. Gibb, C. (1969). Leadership. In G. Lindzey & A. Aranson (Eds.). *The Handbook Social Sociology* (2nd ed.). Reading, MA: Addison-Wesley.

29. Hair, J. F., Black B., Babin B., Anderson R. E., Tatham R. L. (2005). *Multivariate data analysis* (6th ed.). New Jersey, Prentice - Hall.

30. Hipp, J. R. & Bauer, D. J. (2006). Local solutions in the estimation of growth mixture models. *Psychological Methods*, 11, 36-53. DOI: 10.1037/1082-989X.11.1.36

31. Jowet, S. & Chaundy, V. (2004). An investigation into the impact of coach leadership and coach-athlete relationship on group cohesion. *Group Dynamics: theory, research and practice*, 8(4), 302-311. DOI: 10.1037/1089-2699.8.4.302

32. Jowett, S., Adie, J., Bartholomew, K., Yang, S., Gustafsson, H., & López-Jiménez, H. (2017). Motivational processes in the coach-athlete relationship: A multi-cultural self-determination approach. *Psychology of Sport and Exercise*, 32, 143-152. DOI: 10.1016/j.psychsport.2017.06.004

33. Judge, T. A., Ilies R., Bono J. E., Gerhardt M. W. (2002). Personality and leadership: a qualitative and quantitative review. *Journal of Applied Psychology*, 87, 765-780. DOI: 10.1037/0021-9010.87.4.765

34. Kim, H., & Cruz, A. B. (2016). The influence of coaches' leadership styles on athletes' satisfaction and team cohesion: A meta-analytic approach. *International Journal of Sports Science & Coaching*, 0(0), 1-10. DOI: 10.1177/1747954116676117

35. Kline, R. B. (2012). *Principles and Practice of Structural Equation Modelling*. New York: The Guilford Press.

36. Lanza S. T., Flaherty B. P., & Collins L. M. (2003). Latent class and latent transition analysis. In: J. A. Schinka, & W. A. Velicer (Eds.). *Handbook of psychology: Research methods in psychology* (pp. 663-685). New York, NY: Wiley.

37. Leo, F. M., Calvo, T. G., González, I. P., Miguel, P. A. S., & García-Mas, A. (2009). Aplicación de un programa de intervención para la mejora de la cohesión y la eficacia en jugadores de baloncesto. *Cuadernos de Psicología del Deporte*, 9(1), 73-84.

38. Leo, F. M., Sánchez-Miguel, P. A., Sánchez-Oliva, D., Alonso, D. A., & Calvo, G. C. (2013). El liderazgo y el clima motivacional

Sociedad Iberoamericana de Psicología del Deporte

del entrenador como antecedentes de la cohesión y el rol percibido en futbolistas semiprofesionales. *Revista Psicología del Deporte*, 22(2), 361-370.

39. López, E. L., Rocha, D. C., & Castillo, L. (2012). Relación entre cohesión y liderazgo en equipos deportivos del departamento de Boyacá – Colombia. *Cuardernos de Psicología del Deporte*, 12(1), 33-44. DOI: 10.4321/S1578-84232012000100004

40. MacCallum, R. C., Browne, M. W. & Cai, L. (2006). Testing differences between nested covariances structure models: Power analysis and null hypotheses. *Psychological Methods*, *11*, 19-35. DOI: 10.1037/1082-989X.11.1.19

41. Marôco, J. (2010). *Análise de Equações Estruturais: Fundamentos teóricos, Software e Aplicações* [Structural Equation Analysis: Theoretical fundaments, software and applications]. Pêro Pinheiro: Report Number.

42. Mohades, F., Ramzaninezhad, R., Benar, N., Khabiri, M., & Kazemnezhad, A. (2011). Coaching leadership styles and team cohesion among Iranian professional teams. *World Journal of Sport Sciences*, 4(3), 252–258.

43. Nascimento Junior, J. R. A. & Vieira, L. F. (2013). Coesão de grupo e liderança do treinador em função do nível competitivo das equipes: um estudo no contexto do futsal paranaense [Group cohesion and coach leadership based on the competitive level of teams in the context of Paraná's indoor soccer]. *Revista Brasileira de Cineantropometria e Desempenho Humano*, *15*, 89-102. DOI: 10.5007/1980-0037.2013v15n1p89

44. Nascimento Junior, J. R. A., Vieira, L. F., Rosado, A. F. B., Serpa, S. (2012). Validação do Questionário de Ambiente de Grupo (GEQ) para a língua portuguesa [Validation of the Group Environment Questionnaire (GEQ) for Portuguese language]. *Motriz, 18*,

770-782. DOI: 10.1590/S1980-65742012000400015

45. Noce, F., Teixeira, T. M., Lopes, M. C., Samulski, D. M., & Souza, P. R. C. (2013). El liderazgo de los entrenadores de fútbol sala. *Revista Psicología del Deporte*, 22(1), 11-17.

46. Nylund K. L., Asparouhov T., & Muthen B. (2006). Deciding on the number of classes in latent class analysis and growth mixture modelling. A Monte Carlo simulation study. *Structural Equation Modelling*, *14*, 535-569. DOI: 10.1080/10705510701575396

47. Sarpira, M., Khodayari, A., & Mohammadi, S. (2012). The relationship between leadership coaching style and team cohesion in team and individual sports. *Australian Journal of Basic and Applied Sciences*, 6(12), 297–302.

48. Saybani, H., Yusof, A., Soon, C., Hasson, A., Zardoshtian, S. (2013). Athletes' satisfaction as mediator of transformational leadership behaviour of coaches and football players' sport commitment relationship. *World Applied Sciences Journal*, *21*, 1475-1483. DOI: 10.5829/idosi.wasj.2013.21.10.269

49. Serpa, S., Pataco, V. & Santos F. (1991). Leadership patterns in Handball international competition. *International Journal of Sport Psychology*, *22*, 78-89.

50. Smith, M. J., Arthur C. A., Hardy J., Callow N., Williams D. (2013). Transformational leadership and task cohesion in sport: The mediating role of intrateam communication. *Psychology of Sport and Exercise*, *14*, 249-257. DOI: 10.1016/j.psychsport.2012.10.002

51. Toros, T. (2010). The relationship between perceived coaching behaviors goal orientation team cohesion perceived motivational climate and collective efficacy. *Journal of Human Sciences*, 7(2), 1118–1142.

52. Vincer, D. J. E. & Loughead, T. M. (2010). The relationship among athlete leadership behaviours and cohesion in team sports. *The Sport Psychologist, 24*(4), 48-67. DOI: 10.1123/tsp.24.4.448

53. Weinberg, R., & Gould, D. (2015). *Foundations of sport and exercise psychology*, 6th ed. Champaign, IL: Human Kinetics, 2015.

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Iberoamericana de
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Deporte