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Coach-athlete relationship, team cohesion, and motivation in Brazilian youth athletes: a cluster analysis

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ABSTRACT

Purpose. This study investigated whether coach-athlete relationship development through sport was influenced by demographic factors, team cohesion, and motivation variables in Brazilian youth sport participants.

Methods. The research involved 301 young athletes (136 boys and 165 girls) participating in the final phase of the School Games. They were aged 14–17 years (mean: 16.03 ± 0.83 years). The survey used assessed demographic variables, the Coach-Athlete Relationship Questionnaire, the Sport Motivation Scale, and the Youth Sport Environment Questionnaire. The data were investigated with a cluster analysis, chi-squared test, and multivariate analysis of variance ($p < 0.05$).

Results. The study revealed more female participants in the high coach relationship cluster ($p = 0.010$), as well as a stronger association of futsal and handball with high coach-athlete relationship quality, and of basketball with low coach-athlete relationship quality ($p = 0.002$). When compared with the low coach relationship cluster, youth sport participants in the high coach relationship cluster presented higher scores for social cohesion ($p = 0.001$), task cohesion ($p = 0.001$), and autonomous motivation regulations (p: 0.003–0.001).

Conclusions. Such findings suggest that coaches should seek to encourage group cohesion for both task and social cohesion, thus motivating athletes to meet the demands of the sporting context.

Key words: interpersonal relations, self-determination, sport

Introduction

Social interactions in the sporting context have been an object of studies for more than 30 years [1–5]. Among these interactions, which involve athletes and their peers, coaches and athletes, coaches-athletes-family and team staff, the coach-athlete relationship (CAR) is considered the most important since it is seen as the heart of the training environment [1, 2].

In this perspective, this psychological concept is characterized as a situation in which thoughts, feelings, and behaviours of coaches and athletes are mutually interrelated, presenting positive or negative ramifications, depending on how these experiences occur [6]. Moreover, in addition to the training provided by sports coaches to prepare athletes to reach high technical and physical abilities, the establishment of good quality relationships, through effective communication and connection, is also required [1, 2, 6].

Studies that evaluate CAR have identified that a high-quality perception of the relationship positively reflects on other psychological aspects, such as group cohesion [4, 7, 8], achievement of goals [9, 10], leadership [11], and hope [12]. Among the negative factors derived from low-quality CAR are the burnout syndrome [9], stress [13], disrespect, anger, and lack of support [14].

The identification of these aspects can be analysed through the 3+1C Integrated Model developed for the study of CAR, which is constituted by affective, cognitive, and behavioural elements, represented by the English terms: closeness, commitment, complemen-

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tarity, and coorientation [15]. The affective closeness component corresponds to proximity, involving trust, respect, and affection in the relationship. Commitment refers to the cognitive component of the relationship, indicating the intentions and connections of thoughts of coaches and athletes in order to maintain a long-lasting relationship. Complementarity corresponds to a behavioural aspect, which indicates how reciprocal and friendly behaviours and attitudes of athletes and coaches can be. Coorientation refers to the congruency of the perceptions of coaches and athletes regarding relationship, ideas, beliefs, and values [15].

The Integrated Model also presents factors preceding CAR, such as personal characteristics (sex, age, time in the sport, personality); the social context of the modality (group/individual, rules, competitive level); and the characteristics of the relationship (parent bond, time of relationship, relationship in transition, relationship with people from the same/opposite sex) [15]. Regarding the consequences of the quality of relationships, interpersonal (satisfaction, motivation, performance) and group (group efficacy, group cohesion, social acceptance) aspects are observed [7].

These consequences have been investigated in a systematic review that gathered 31 studies using the 3+1C Model, highlighting as result the importance of cooperative work, responsibility, partnership, commitment, acceptance, and intention to maintain a long-term relationship [16]. Other variables associated with CAR were leadership and group cohesion [17], as well as athletic satisfaction, motivation, and group efficacy [18]. As proof of this, investigations have pointed that the quality of CAR directly affects group cohesion of sports teams and, consequently, the performance and positive development of athletes [4, 17].

Group cohesion refers to a dynamic process that aims to favour the unity of the group in order to reach common goals, as well as to obtain members' satisfaction [19]. Considering these aspects, sports coaches are seen as necessary support figures to build cohesion in their teams, since a good relationship between team members contributes to a better performance and sports achievements [8, 18]. In addition, coaches that demonstrate the ability of establishing positive dyadic relationships with their athletes are capable of building harmonic environments for training, reflecting on the relationships established between athletes and their peers, as well as on the achievement of common goals [1, 2].

Despite the relevance of this theme to the sporting context, until the extension of what has been researched, only 2 studies have been developed analysing the associations of CAR with the cohesion of sports teams, being the one performed by Jowett and Chaundy [17], associated with sports leadership, and the one conducted by Fiorese et al. [4], referring to motivation. In the former study, leadership was identified as a predictor of cohesion for the task and social cohesion when in the presence of relationship variables; also, together, relationship variables and leadership turned out to be stronger predictors of task cohesion than social cohesion [17]. The latter study was performed with soccer athletes and revealed that CAR was determinant so that motivation derived from behaviour regulated by external factors did not negatively influence the perception of group cohesion [4].

Through the investigations presented and in accordance with what is proposed by the 3+1C Integrated Model, it is possible to verify that relationship factors are intervenient over intrapersonal and interpersonal factors of coaches and athletes [20], among which are group cohesion and motivation. Motivation, specifically, is a well investigated variable when it comes to studies regarding relationship, since maintaining good relationships can contribute to abidance in the sports environment, having an implication for engagement/involvement in the sport.

The present study

Thus, especially in studies involving youth athletes, it is observed that the creation and development of positive environments favour the athletes' autonomy and competence and, for this reason, coaches assume a relevant role by adapting behaviours, thoughts, and feelings [2, 21]. Other indicators, such as effort, dedication, goals, and importance of roles were also evidenced in qualitative research referring to motivational aspects experienced from good relationships between athletes and coaches [20, 22].

Even though the presented investigations are relevant, a concentration of research regarding CAR quality in European countries is verified [1, 2, 23]. These countries have contributed to the scientific knowledge in the area of sports psychology, mainly when one considers the need of building a unity between the social actors, which enhances performance, happiness, well-being, and human development [1].

In South America, Brazil is one of the countries where research groups are emerging in the focus of these investigations [4, 5, 16, 24], which, despite being recent, have focused on identification and construction

of environments for coaching relationships. Therefore, with the purpose of advancing the scientific knowledge, the present study examined the quality of CAR, group cohesion, and motivation in youth Brazilian athletes with the use of cluster analysis.

Material and methods

Participants

The study involved a cross-sectional research design with all data collected at one time point. The participants were 301 youth athletes partaking in the final phase of the School Games of the state of Pernambuco, Brazil. There were 136 boys and 165 girls aged 14–17 years, representing the following sports: basketball (n = 20), futsal (n = 124), handball (n = 24), and volleyball (n = 133). The athletes had an average age of 16.03 ± 0.83 years, 54.84 ± 36.63 months of experience with the sport, and 23.52 ± 18.22 months in the team. They were selected in a non-probabilistic way, by convenience, and the inclusion criteria were as follows: (1) having practised the sport for more than 1 year; and (2) having participated in some regional/state level competition during the 2016/2017 seasons.

Instruments

Coach-Athlete Relationship Questionnaire

CAR quality was measured by using the Coach-Athlete Relationship Questionnaire (CART-Q) – Athlete Version, developed by Jowett and Ntoumanis [25] and validated for Brazil by Vieira et al. [26]. It consists of 11 items divided into 3 subscales: closeness (e.g., 'I respect my coach'), commitment (e.g., 'I am committed to my coach'), and complementarity (e.g., 'When I'm trained by my coach, I am at ease'). Answers are given on a 7-point Likert-type scale (1 – strongly disagree, 7 – strongly agree). Previous research has demonstrated the factorial validity, test-retest reliability, and internal consistency reliability of this scale in youth sport participants [18, 23]. The Cronbach's alpha (α value: 0.79–0.88) indicated strong internal consistency for the present study [27].

Sport Motivation Scale

The Sport Motivation Scale (SMS-II) [28], adapted to the Portuguese language by do Nascimento Junior et al. [29], was used to assess the subjects' sports motivation. This scale asks participants to report the extent to which the listed reasons for practising their sport correspond with their own personal reasons. This 18-item questionnaire has 6 subscales that refer to the 6 motivation subtypes: amotivation (e.g., 'I used to have good reasons for playing sports but now I am asking myself if I should continue'), external regulation (e.g., 'because people around me reward me when I do'), introjected regulation (e.g., 'because I would not feel worthwhile if I did not'), identified regulation (e.g., 'because I have chosen this sport as a way to develop myself'), integrated regulation (e.g., 'because practising sport reflects the essence of who I am'), and intrinsic regulation (e.g., 'because it gives me pleasure to learn more about my sport'). All items are assessed on a 7-point Likert scale ranging from 1 ('does not correspond at all') to 7 ('corresponds exactly'). Previous research has supported the factorial validity, test-retest reliability, and internal consistency reliability of this scale with youth sport participants [5, 30]. The Cronbach's alpha (α value: 0.72–0.88) indicated strong internal consistency for the present study [27].

Youth Sport Environment Questionnaire

The Youth Sport Environment Questionnaire (YSEQ) was developed by Eys et al. [31] and validated for Portuguese-speaking athletes (P-YSEQ) by do Nascimento Junior et al. [32]. YSEQ assesses team cohesion in youth aged 13–17 years and consists of 16 items that evaluate task and social cohesion, and 2 spurious items that do not enter the analysis, totalling 18 items. Task cohesion involves 8 items, and a sample item is 'We all share the same commitment to our team's goals'. Social cohesion involves 8 items, and a sample item is 'I spend time with my teammates'. All items are scored on a 9-point Likert-type scale, anchored at the extremes of 1 (strongly disagree) and 9 (strongly agree). The literature has demonstrated the factorial validity, test-retest reliability, and internal consistency reliability of this scale in youth sport participants [18, 33]. The Cronbach's alpha (α value: 0.79–0.81) indicated strong internal consistency for the present study [27].

Procedures

Initially, contact was made with the Secretary of Sports of the State of Pernambuco to request permission to investigate School Games from Pernambuco 2017. Data were collected in the hotels where the teams were housed, as well as at the sites of the competitions; the procedure lasted for approximately 35 minutes. The order of the questionnaires was randomized among

the participants and the researchers performed the application individually.

Data analysis

Preliminary analysis

The preliminary analysis for the correlation and comparison was carried out with the Kolmogorov-Smirnov normality test. Since the data distribution was normal, the correlation of Pearson was used to verify the relationship between variables. We then performed various multivariate analyses of variance (MANOVA) to examine the differences between the clusters identified in the regulations of motivation and team cohesion. The effect size (d) was also calculated, by using the model proposed by Cohen [34] for differences in the values of 2 independent groups. According to Cohen's criteria, a value of d = 0.20 represents a small effect size; d = 0.50, average; and d = 0.80, large. All analyses were conducted in the SPSS 22.0 software, with the adopted level of significance of $p < 0.05$.

Cluster analysis

In the first step, before the cluster analysis, we standardized the raw scores because the 4 subscales did not contain the same number of items. Youth athletes were grouped/classified by using hierarchical and non-hierarchical cluster analysis. Second, the nearest neighbour hierarchical cluster analysis was conducted, with the squared Euclidean distance as a measure of dissimilarity. The R-squared served as a criterion for the retention of the number of clusters. From this analysis, 2 clusters were retained. For the validation and classification of the youth athletes in the 2 clusters retained, a K-means non-hierarchical cluster analysis was conducted. According to the criterion by Cumming and Duda [35], z scores below –0.5 are considered to be low levels; z scores between –0.5 and +0.5, moderate; and z scores over +0.5 are considered high.

Ethical approval

The research related to human use has complied with all the relevant national regulations and institutional policies, has followed the tenets of the Declaration of Helsinki, and, as integrated into an institutional project, has been approved by the Ethics Committee of the Federal University of Vale do São Francisco (opinion 1.648.086).

Informed consent

Informed consent has been obtained from the parents and coaches (responsible for the athletes in the sports event) of all individuals included in this study.

Results

Descriptive statistics and correlational analyses

Table 1 presents the intercorrelations, scale ranges, means, standard deviations, and reliability estimates

Table 1. Summary of intercorrelations, scale ranges, means, standard deviations, and reliability estimates

Variables	CAR		Cohesion			Motivation					
	1	2	3	4	5	6	7	8	9	10	11
1. Complementarity	–	0.77**	0.71**	0.44**	0.36**	–0.12*	–0.03	0.15**	0.24**	0.20**	0.21**
2. Closeness		–	0.72**	0.35**	0.25**	–0.12*	–0.09	0.06	0.19**	0.13*	0.17**
3. Commitment			–	0.37**	0.32**	–0.19**	–0.05	0.15**	0.29**	0.22**	0.26**
4. Task cohesion				–	0.70**	–0.17**	0.08	0.33**	0.46**	0.42**	0.46**
5. Social cohesion					–	–0.09	0.20**	0.30**	0.39**	0.33**	0.33**
6. Amotivation						–	0.45**	–0.07	–0.15**	–0.17**	–0.18**
7. External regulation							–	0.22**	0.21**	0.17**	0.09
8. Introjected regulation								–	0.57**	0.56**	0.55**
9. Identified regulation									–	0.71**	0.70**
10. Integrated regulation										–	0.66**
11. Intrinsic regulation											
Mean score	6.40	6.59	6.16	7.83	6.86	2.74	3.34	5.50	6.10	5.84	6.14
Standard deviation	0.73	0.69	0.85	1.31	1.38	1.66	1.76	1.19	1.04	1.15	0.96
Scale range	1–7	1–7	1–7	1–9	1–9	1–7	1–7	1–7	1–7	1–7	1–7
Alpha coefficient	0.79	0.81	0.88	0.72	0.75	0.77	0.88	0.71	0.79	0.80	0.81

CAR – coach-athlete relationship
* $p < 0.05$, ** $p < 0.01$

for all variables. Regarding the mean scores of the 1–7 response scale of CART-Q, the results revealed that the young players felt a strong relationship with the coach (*M* range: 6.59–6.16, *SD* range: 0.85–0.69). The mean scores on the 1–9 response scale of P-YSEQ demonstrated that the players felt high task cohesion (*M* = 7.84, *SD* = 1.31) and high social cohesion (*M* = 6.86, *SD* = 1.38). The mean scores on the 1–7 response scale of SMS-II indicated that the players, in their own opinion, were developing motivation from sport. The mean scores from highest to lowest were as follows: intrinsic regulation (*M* = 6.14, *SD* = 0.94), identified regulation (*M* = 6.11, *SD* = 1.05), integrated regulation (*M* = 5.84, *SD* = 1.16), introjected regulation (*M* = 5.50, *SD* = 1.20), external regulation (*M* = 3.35, *SD* = 1.76), and amotivation (*M* = 2.75, *SD* = 1.66).

The correlations (Table 1) revealed that all of the CAR dimensions were significantly and positively associated with team cohesion (*r* range: 0.44–0.25). Regarding regulations of motivation, the results implied that all of the CAR dimensions were significantly and negatively associated with amotivation (*r* range: –0.19 to –0.12) and positively associated with introjected regulation, identified regulation, integrated regulation, and intrinsic regulation (*r* range: 0.29–0.15). Task cohesion was significantly and negatively associated with amotivation (*r* = –0.17) and positively associated with introjected regulation, identified regulation, integrated regulation, and intrinsic regulation (*r* range: 0.46–0.33). Social cohesion was significantly and positively associated with external regulation, introjected regulation, identified regulation, integrated regulation, and intrinsic regulation (*r* range: 0.20–0.39).

Cluster analysis

In accordance with the above criteria, the first cluster, which included 62 individuals (20.6%), was characterized by low scores of proximity, commitment, and complementarity. Consequently, this cluster was called low CAR quality. The second cluster was made of 239 participants (79.4%) who scored moderate in all CAR dimensions. Thus, we decided to call this cluster high CAR quality (Figure 1).

Inter-group differences in demographic variables

Table 2 shows the association of CAR profile with sex and team sports. The low CAR quality cluster presented a higher proportion of boys (59.7%), whilst high CAR quality involved a higher proportion of girls. Through the analysis of standardized residuals, we

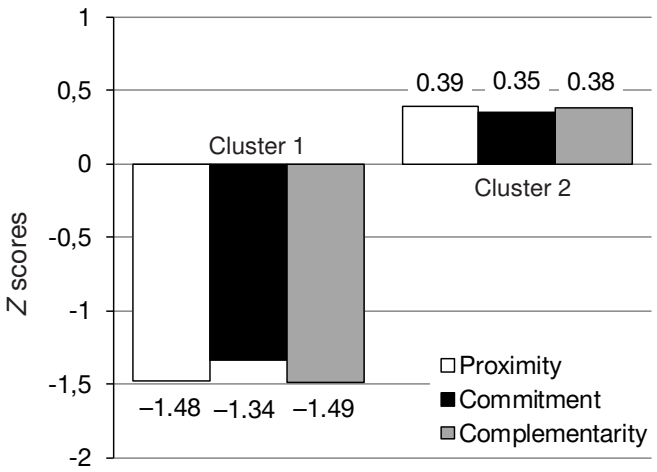

Figure 1. Graphic representation of the profiles of youth athletes' perception of the quality of the relationship with the coach through cluster analysis

Table 2. CAR quality profiles depending on sex and sports characteristics

Variables	Clusters		χ^2	*p*
	Low CAR quality (*n* = 62)	High CAR quality (*n* = 239)		
Sex				
Male	37 (59.7)	99 (41.4)	6.624	0.010*
Residuals	2.6	–2.6		
Female	25 (40.3)	140 (58.6)		
Residuals	–2.6	2.6		
Sport				
Futsal	20 (32.3)	104 (43.5)	9.507	0.002*
Residuals	–1.6	1.6		
Volleyball	28 (45.2)	105 (43.9)		
Residuals	0.2	–0.2		
Handball	2 (3.2)	22 (9.2)		
Residuals	–1.5	1.5		
Basketball	12 (19.4)	8 (3.3)		
Residuals	4.5	–4.5		

CAR – coach-athlete relationship
* significant association, chi-squared test ($p < 0.05$)

observed a strong association of female sex with high CAR quality and of male sex with low CAR quality. Furthermore, there was a stronger association of futsal and handball with high CAR quality, and of basketball with low CAR quality.

Table 3 demonstrates that there was no significant difference in age ($p = 0.284$), months of experience ($p = 0.269$), or time within the team ($p = 0.101$) between the profiles of CAR. It is noteworthy that the athletes of the 2 profiles presented a similar average of

Table 3. CAR quality profiles depending on age, experience, and time within the team

Variables	Clusters		*p*	*d*
	Low CAR quality (*n* = 62) *M* (*SD*)	High CAR quality (*n* = 239) *M* (*SD*)		
Age	15.93 (0.85)	16.06 (0.82)	0.284	0.15
Sports experience (months)	50.09 (41.18)	56.14 (35.55)	0.269	0.15
Time within the team (months)	19.88 (14.56)	24.25 (18.58)	0.101	0.26

CAR – coach-athlete relationship

Table 4. Comparison of team cohesion and regulations of motivation between clusters

Variables	Clusters		*p*	*d*
	Low CAR quality (*n* = 62) *M* (*SD*)	High CAR quality (*n* = 239) *M* (SD)		
Team cohesion				
Task cohesion	6.75 (1.21)	8.10 (1.17)	0.001*	1.13
Social cohesion	5.93 (1.25)	7.06 (1.32)	0.001*	0.87
Regulations of motivation				
Amotivation	3.02 (1.68)	2.66 (1.65)	0.137	0.21
External regulation	3.44 (1.62)	3.29 (1.78)	0.569	0.08
Introjected regulation	5.09 (1.27)	5.61 (1.17)	0.003*	0.42
Identified regulation	5.49 (1.28)	6.26 (0.93)	0.001*	0.68
Integrated regulation	5.29 (1.37)	5.96 (1.08)	0.001*	0.54
Intrinsic regulation	5.70 (1.17)	6.26 (0.88)	0.001*	0.54

CAR – coach-athlete relationship
* MANOVA $p < 0.05$

age but not a similar average of months of experience or time within the team.

Inter-group differences in team cohesion and regulation of motivation

When high and low CAR quality clusters were compared with regard to team cohesion (Table 4), a significant difference was observed between groups for task cohesion ($p = 0.001$) and social cohesion ($p = 0.001$). As shown in Table 4, youth athletes with high CAR quality had higher scores at task cohesion ($M = 8.10$, $SD = 1.17$) and social cohesion ($M = 7.06$, $SD = 1.32$) when compared with low CAR quality athletes. This effect can be considered large ($d > 0.50$).

There were also significant differences between high and low CAR quality clusters concerning the scale of motivation (Table 4): in introjected regulation ($p = 0.003$), identified regulation ($p = 0.001$), integrated regulation ($p = 0.001$), and intrinsic regulation ($p = 0.001$). As shown in Table 4, youth athletes with high CAR quality had higher scores at introjected regulation ($M = 5.61$, $SD = 1.17$), identified regulation ($M = 6.26$, $SD = 0.93$), integrated regulation ($M = 5.96$, $SD = 1.08$), and intrinsic regulation ($M = 6.26$, $SD = 0.88$). This effect can be considered large ($d > 0.50$).

Discussion

The aim of the present study was to analyse, using clusters, if CAR in young Brazilian athletes was influenced by demographic variables (sex, sport modality, age, time of experience, and time in the team), group cohesion, and motivation. The main findings indicate that young athletes with high CAR perception exhibited higher levels of self-determined motivation and group cohesion (Table 4), while sociodemographic variables (age, time of practice, and time in the team) did not intervene in CAR quality in this group of athletes (Table 3). On the other hand, sex and sport modality influenced CAR quality (Table 2).

One of the main findings of the present study refers to the higher perceived CAR quality in athletes who obtained higher values for self-determined mo-

tivation (Table 4). Such findings indicate that cognitive affection (commitment), respect, trust (proximity), and affiliation (complementarity) with the coach seem to act as factors that promote self-determined motivation of youth in the sporting context. These results agree with the 3+1Cs Model [15], demonstrating that youth athletes in the Brazilian sporting context acknowledge a good communication, respect, and trust with their coaches, and thus feel more motivated to practise sports.

Corroborating the findings of the present study, do Nascimento Junior et al. [5] observed, in a cross-sectional study with Brazilian young school athletes, that a positive relationship with the coach, based on admiration, respect, trust, and affiliation, seems to be an incentive for motivation in the context of school sports. Rottensteiner et al. [36] examined CAR and the motivational environment in young European athletes within the same age group and concluded that athletes with profiles of high CAR perception seemed to be the most benefic in the motivational perspective in the sporting context. On the basis of the information presented, it is possible to verify that the present study agrees with the previous research regarding the theme, indicating that for young Brazilian athletes, factors such as affection, proximity, and friendly behaviours with the coach are considered important components for motivation in sports and good quality relationships [1, 2, 4, 5, 24].

In addition, it is worth highlighting that the cognitive aspects of the relationship (commitment), affection, and affiliation (complementarity) with the coach presented a positive association with autonomous motivation (integrated and intrinsic regulations) of young athletes (Table 1), indicating that when thoughts and behaviours of youth are mutually related to those of the coach, there is a higher tendency that they present a behaviour regulated by intrinsic factors towards sports practice. Therefore, these findings can be explained through the micro theory of the cognitive evaluation of the self-determination theory [37, 38], which postulates that intrinsic motivation suffers great effects of the social contexts in which the individual is inserted, with the possibility of leading to long-term demotivation [38]. This micro theory highlights that the support of autonomy of the social peers has a critical role in the promotion of self-determined motivation, especially in the contexts of education and sports [2]. These findings demonstrate that the quality of the relationship based on factors such as feelings, thoughts, and mutual behaviours seems to develop pleasure for sports practice in young athletes.

Another finding of the present study refers to the higher group cohesion perceived by the young athletes with high CAR when compared with participants who presented low quality in the relationship with the coach (Table 4). The results showed that when athletes share feelings, thoughts, and mutual behaviours with the coach, their intentions of unity are reinforced, leading to a higher involvement in tasks and group goals and also to the creation of bonds and social life with the team.

Jowett and Chaundy [17], aiming to verify if the perception of English college athletes regarding their relationship with the coach increased group cohesion, demonstrated that variables associated with CAR positively predicted both social cohesion and strength for the task (Table 1). Such evidence indicates that CAR has a significant role for young athletes to demonstrate higher effort, determination, and interest in performing tasks, as well as involvement in group goals [7, 18]. Felton et al. [39] specifically observed if the complementarity dimension of CAR was directly associated with well-being and group cohesion of English athletes of group sports. Hampson and Jowett [11] pointed that the more positive the perception of CAR was, the higher the development of personal skills in the sporting context turned out. Thus, the coach has an essential role to unify the pursuit of goals and the involvement of the athletes in the social group, passing principles and values that favour the positive development of youth athletes.

Another finding of the present study refers to the higher quality of CAR perceived by girls when compared with boys (Table 2). Such findings agree with previous studies that show that sex and sport modality affect the quality of CAR [17, 20]. In addition to these results, Freire et al. [40] observed, in young Brazilian school athletes, that girls presented more positive perceptions of CAR quality in all dimensions: proximity, commitment, and complementarity, when compared with boys. On the other hand, Cheuczuk et al. [10] verified that both male and female volleyball players exhibited a higher perception of CAR quality in all dimensions of the relationship.

Regarding the sport modality (Table 2), the findings of the present study corroborate research revealing that young athletes perceive higher proximity, commitment, and complementarity to their respective coaches [2, 5, 18, 24]. According to the 3+1Cs Model [15], athletes who perceive good communication, respect, and trust with their coach consequently feel more pleasure, motivation, and joy in sports practice. Jowett et al. [2] state that dyadic relationships between coaches and athletes allow the transformation of both, in such

a way that an efficient connection is benefic to the feelings of belonging and appreciation within the team.

With reference to the demographic variables of age, time of experience in the sport, and time in the team, no differences were found between the profiles of perception of CAR quality of the young athletes (high and low) (Table 3). Such results disagree with the 3+1C Model [15], which demonstrates that age, time of experience, and time in the team are intervenient factors in the perception of affective, cognitive, and behavioural aspects of the relationship with the coach. Findings similar to the ones of the present study were presented by Contreira et al. [21], who observed that young Brazilian athletes required a higher level of affective, cognitive, and behavioural bonds in the relationship with the coach, while older athletes were more independent to perform their activities in the sporting context. These results could be interpreted on the basis of the consideration that younger athletes, with less experience and a shorter time of training in the team, may require more bonding with coaches in order to feel motivated as a part of the team and of the sporting context, while older athletes show more autonomy in their actions, not necessitating so much attention from the coach, as their feeling of belonging to the sporting context is more consolidated.

Limitations and future research directions

Despite the findings, the present study has some limitations that need to be addressed. Firstly, the variables of the study were evaluated by self-reported instruments. Thus, the data obtained allow correlations between variables, but not inferences of causality. Secondly, the lack of participants of individual sports impairs the comparisons between individual and group sports. Thus, future research should recruit athletes that also practise individual sports in order to observe the variables achieved in this population. Lastly, the present study has a cross-sectional design, evaluating the athletes in only one moment of the season, not making it possible to analyse cause and effect associations between the variables. Therefore, future research should observe the behaviour of these variables in a longitudinal design, as well as other aspects of the self-determination theory.

Conclusions

It can be concluded that the quality of CAR seems to promote group cohesion and more self-determined motivation in young athletes. From a practical point of view, we highlight the importance of developing an interpersonal environment based on support of autonomy, trust, commitment, and proximity by coaches and physical education professionals, since this environment tends to contribute to the development of the intrinsic motivation of adolescents within the sports context.

Disclosure statement

No author has any financial interest or received any financial benefit from this research.

Conflict of interest

The authors state no conflict of interest.

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