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Unravelling the Links between Coach Behaviours and Coach-Athlete Relationships

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ABSTRACT

The study examined whether the quality of the coach-athlete relationship associates with a range of behaviours coaches manifest in training and competitions. The Coach Behaviour Scale for Sport (CBS-S) and the Coach-Athlete Relationship Questionnaire (CART-Q) measured coaching behaviours and relationships respectively. As neither of these scales was validated in French, the psychometric properties of both scales were examined indicating that they were psychometrically sound. Analysis revealed that athletes' perceptions of good quality relationships reflected in high levels of closeness and commitment were better and stronger predictors of a range of coach behaviours while high levels of complementarity only predicted positive personal rapport. Moreover, high levels of closeness (trust, respect, appreciation) predicted low levels of negative personal rapport. Overall, these results support the assumptions that good quality coach-athlete relationships supply the context within which athletes interact with their coaches. It is possible that athletes who develop strong connections with their coaches receive better coaching. Thus relationships may play a key role in developing effective coaching environments.

Keywords: Coach behaviour, Coach-athlete relationship, Coaching effectiveness, Reliability, Validity

INTRODUCTION

The coach-athlete relationship is viewed as a key component to athletes' performance and wellbeing outcomes [1]. Although knowledge and understanding of interpersonal relationships in sport were constrained at both theoretical and empirical levels [2,3] progress has been made in recent years. This progress is reflected in two special issues dedicated to coach-athlete relationships [4,5]. While coach-athlete relationships have been a relatively new area of inquiry, coach behaviours and leadership have been at the forefront of research since the 1970's [6-9]. Although, both coach leadership behaviours and coach-athlete relationships have been viewed as central to coaching effectiveness [10-13] due to their associations with positive and negative psychosocial, emotional, motivational and performance outcomes [14-31], these constructs have been typically studied in isolation with limited attempt to integrate them [32-46].

Following a review paper which encourages research in this area, a handful of studies emerged that aimed to integrate coach-athlete relationships and coach leadership behaviours. For example, Vella et al. [47] found that the best predictor of developmental experiences in youth sport (personal and social skills, cognitive skills, goal setting, initiative and negative experiences) is a combination of coach transformational leadership behaviour (individual consideration, intellectual stimulation, and appropriate role modelling) and the quality of the coach-athlete relationship (closeness, commitment and complementarity). It would appear that coach leadership behaviours and coaching relationships act synergistically (i.e., leadership and relationship work together in ways that is greater than if each works separately). Krukowska and Jowett [48] found that coach leadership (0.26) and coach-athlete relationship (0.47) dimensions promoted athlete (harmonious) passion for and engagement with sport through the satisfaction of their basic psychological needs in a sample of University athletes. In two further studies [14,15], it

was found that athletes' perceptions of their relationship with the coach add to the prediction of team cohesion and collective efficacy beyond what is predicted by perceptions of coach leadership behaviour alone. Overall, research evidence supports that coach-athlete relationship and coach leadership when considered together are better and stronger predictors of performance-related outcomes.

However, these empirical studies have only attempted to examine the constructs of coach leadership behaviours and coaching relationships in parallel or side by side and thus it is still unclear how these constructs may actually relate to one another. Research work conducted in organisational leadership psychology seems to recognise the potential links between the two constructs of leadership and relationship. For example, Graen and Uhl-Bien [49] were amongst the first to conceptualise the links between leader behaviours and relationships through the Leader-Member Exchange (LMX) theory. LMX defines relationships by such qualities as mutual respect, trust and obligation. While LMX is not without criticisms [16,50-57], it is a framework that has been used over the years to demonstrate the links between leaders' behaviours and leader-follower relationships [17,18,58-64]. Guided by the LMX theory and associated empirical research conducted within the organisational context, Jowett and Arthur [65] proposed 4 hypotheses for future research one of which stated that "The quality of the relationship predicts and/or causes coaches' behaviours" and they further explained that "This is an entirely plausible direction and one that has been tested in organisational psychology" (p 0.38). For example, Howell and Hall-Merenda [17] found that leader-member relationship (as defined by LMX leadership model) predicted both transformational and transactional types of leadership behaviours. As this association was never explored in sport before, the preset study aimed to test the proposition that coach-athlete relationship predicts coach behaviours.

In this study, the dyadic coach-athlete relationship was operationalized and measured via the 3Cs model [19]. Accordingly, the coach-athlete relationship is defined as a social situation where coaches and athletes' closeness (affective bond experienced), commitment (intention to maintain a close bond over time), and complementarity (the type of interaction that underlines co-operation) are interdependent [20]. Over the past two decades, the 3Cs model and its accompanied measure [21,22] have been employed to investigate the correlates of the coach-athlete relationship. The quality of the coach-athlete relationship has been found to associate with motivation [12,23], passion [24], performance [25,26], satisfaction [27], physical self-concept [28], support and conflict [21], team cohesion [14], collective efficacy [29], communication [30], personality [31,32] and psychological wellbeing [33].

Moreover, coach leadership was defined from a behavioural perspective in this study and was measured by athletes' perceptions of what coaches do to influence them in terms of skill development, mental preparation, and performance more generally. Over the past 40 years, researchers have examined coach behaviours and their influence on athlete's growth and development using diverse conceptualisations including leadership [34,35], social-cognitive [36,37], coach efficacy [38], competence [38-41] models and approaches. Collectively, this research has revealed that coaches' behaviours can have a significant impact on athletes' satisfaction, motivation, self-esteem, anxiety, competence, and drop out to mention a few [36,40,42].

Based on the theoretical and empirical research highlighted above, Côté et al. [43] developed the Coach Behaviour Scale for Sport. In the absence of a measurement tool that considered coach behaviours as these manifested across the breadth of sport types (individual and team) and performance levels (rass-roots and elite), Côté et al. [43] developed and validated the CBS-S. The CBS-S measures a much broader range of the most frequently and influential coach behaviours found in diverse sports and performance levels that are both positive and negative. Specifically, the CBS-S measures a coach's behaviours to influence athletes in such areas as mental preparation, goal setting, and competition strategies. It also measures a coach's behaviours to build rapport (positive versus negative) with each athlete in the team or squad. The CBS-S has undergone two important stages of validation and the analytical processes therein have enhanced the psychometric properties of the scale. The scale has been translated and validated in different languages including Swedish [44] and Singaporean [45]. The CBS-S has been used in research to examine associations between coaches' behaviours and athletes' outcomes [46]. For example, it was found that perceived coach behaviours reflective of negative personal rapport and specific competition strategies were associated with student-athlete competition anxiety. In another study, researchers found that while increased positive and decreased negative coach behaviours were associated with athletes' satisfaction, this association was more pronounced for team sport athletes than individual sport athletes. These findings were consistent with Smith [2] findings, where coaches' behaviours were associated with athletes' satisfaction and performance.

The present study

While there is a handful of studies that has examined coaching relationships and coaching behaviours in parallel to predict important outcomes such as team cohesion team success and positive youth development [47], as well as

wellbeing in terms of passion and engagement [48], there is no study to our knowledge that has examined the links between coach-athlete relationships and coach behaviours. Thus, the primary aims of this study was to contribute to the extant literature by (a) examining the associations between coaching relationships and behaviours and (b) exploring whether coach-athlete relationship quality is a likely predictor of athletes' perceptions of their coaches' behaviours in a sample of French athletes. The latter aim is based on Jowett and Arthur's [65] proposition that was informed by the LMX theory and associated research in organizational settings. In this study, it was hypothesized that athletes who perceive a good quality relationship with their coaches characterized by closeness (trust, respect, appreciation, liking), commitment (commit to a close relationship over time), and complementarity (co-operate, respond, approach) are more likely to perceive their coaches behaviours more positively. The CART-Q and CBS-S were employed to measure coaching relationships and behaviour's respectively; both these scales were subjected to psychometric analyses to ensure the validity and reliability of their items as they have never been used in the French Language. The significance of this study lies in its practical applications as it has the potential to contribute to a better understanding around the interplay of these two important psychosocial constructs.

MATERIALS AND METHODS

Participants

Three hundred and ninety-nine French athletes, 277 male and 122 female (31%), from 15 to 34 years of age (M_{age}=21.69; SD=7.46) participated in this study. The athletes competed in collegial (32%), regional (50%), national (14%), and international (4%) events at the time of the study. On average, the participants trained eight hours per week (SD=6.33). The athletes competed in their sport for an average of eight years (SD=7.86). They trained with their current coach for an average of three years (SD=2.33). The coaches were 56 female and 343 male (86%). The participants represented individual sports: gymnastics (7%), badminton (1%), trampolining (1%), boxing (0.5%), fencing (1%), swimming (1.5%), track and field (1.5%), cycling (2%), aerobics (2%), tennis (1%), Greco-Roman wrestling (1.5%); and team sports: handball (18%), volleyball (2%), basketball (15%), rugby union (20%) and soccer (25%).

Measures

The Coach Behavior Scale for Sport: The latest version of the CBS-S comprises 47 items and includes 7 dimensions of perceived coach behaviours: (1) Physical Training and Planning (PTP, 7 items; concerning a coach's involvement in an athlete's physical training and planning for both training and competition; e.g. provides me with physical conditioning program in which I am confident), (2) Technical Skills (TS, 8 items' concerning coaches' feedback, demonstrations and cues; e.g. provides me with advice while I am performing a skill), (3) Mental Preparation (MP, 5 items; focusing on how the coach helps the athlete to perform under pressure, stay focused and be confident; e.g., provides advice on how to perform under pressure), (4) Goal Setting (GS, 6 items; assessing the coach's involvement in the identification, development and monitoring of the athlete's goals; e.g. helps me identify strategies to achieve my goals), (5) Competition Strategies (CS, 7 items; focusing on the coach's interaction with the athlete in competition; e.g., helps me focus on the process of performing well), (6) Personal Rapport (PR, 6 items; assessing the coach's approachability, availability and understanding; e.g., shows understanding for me as a person), (7) Negative Personal Rapport (NPR, 8 items; examining the coach's use of negative techniques such as fear and yelling; e.g. disregards my opinion). The response scale ranged from strongly disagree (1) to strongly agree (7). In this study, athletes were asked to think of their coaches' behaviours and respond to each one item in terms of their coaches typically display each of the behaviours listed. Sound psychometric properties of validity and reliability have been found in the original development and validation of the scale [43] and in more recent psychometric studies. The reliability of the items contained within the 7 sub-scales ranged from 0.72 to 0.91 (Table 1). Further psychometric details concerning the validity of CBS-S with this French sample supplied later on.

The Coach-Athlete Relationship Questionnaire. The Coach-Athlete Relationship Questionnaire (CART-Q) is a self-report instrument which measures athletes' self-perceptions of the quality of the coach-athlete relationship in terms of closeness, commitment and complementarity. The 11-item scale was used to measure athletes' self/direct-perceptions of closeness (4 items; e.g. I respect my coach), commitment (4 items; e.g. I appreciate my coach's sacrifices in order to improve performance) and complementarity (4 items; e.g. When I am coached by my coach, I am ready to do my best). The response scale ranged from strongly disagree (1) to strongly agree (7). In this study, athletes were asked to think of their principal coaches (the coach they spend more time training for) and respond to each one item in terms of how they generally felt, thought and behaved. Sound psychometric properties including

factorial and criterion validity as well as reliability have been found in a number of studies [50]. The reliability of the items contained within the 3 sub-scales ranged from 0.85 to 0.94 (Table 1). Further psychometric details concerning the validity of CART-Q with this French sample supplied later on.

French translation

The items of CBS-S and CART-Q were translated using a back-translation procedure [52]. A bilingual sport scientist translated the scales into French and another bilingual translated back into English. The translated scales were administrated to an initial pool of participants (30 athletes; 18 men and 12 females, M=21.6 years) in an effort to identify any items that were unclear. Based on the ratings and comments provided by the participants, a small number of items were closely examined and subtly reworded to improve further accuracy and clarity (i.e., helps me focus on the process of performing well versus helps me focus on the process of competing well; the semantics and accuracy of words loyalty, dedication, and commitment, as well as pressure over stress and anxiety were debated). During the entire process of translating, the emphasis was on ensuring that the final scale translation did not divert from the meaning of the original scales. Subsequently, emphasis was placed on the conceptual rather than literal translation of the items.

Procedure

A research assistant contacted coaches to explain the study and to obtain permission to recruit athletes from their teams or squads. Athletes were informed of the goals and procedures of the study; following their informed consent, questionnaires were administered, completed and then collected in sealed envelopes to ensure their confidentiality and anonymity. Data were collected during the mid-season; this allowed "new" athletes to get to know their coaches for at least 6 months.

Data analyses

Descriptive statistics including Means (Ms), standard deviations (SDs), Cronbach's alphas (αs) scores, and bivariate correlations (rs) were calculated for main variables in the study. Following these analyses, measurement (relates the constructs to their measures) and structural (relates the constructs to each other) models were tested. It has been argued that "proper specification of the measurement model is necessary before meaning can be assigned to the analysis of the structural model" [53] and "Convergence in measurement should be considered a criterion to apply before performing causal analysis" [54]. Structural equation modelling was employed as the main statistical technique to analyse the data by using EQS 6.1 [55].

Following procedures applied in previous validation [56,57], Confirmatory Factor Analysis (CFA) was utilized to test two competing yet conceptually plausible models for the French version of the CART-Q. Model 1 (M1) hypothesized a 3 first-order factors model, that contained the three main relational properties of Closeness, Commitment and Complementarity (3Cs). Model 2 (M2) hypothesized a higher-order factor model, namely, the coach-athlete relationship, whereby the 3Cs were subsumed. A CFA was also utilized to assess the factorial validity of the French version of the CBS-S. Since this is a questionnaire that has not been used in research in the French language assessing French sport performers' of coach behaviours, it was thought important to examine its psychometric properties. Thus, a 7 first-order factor model (M3) that reflected athletes' perceptions of the seven coach behaviours that describes high-performance coaching was examined.

Convergent and discriminant validity of the hypothesized models were also determined. Convergent validity aimed to show that the assessment is relevant to what it should theoretically be related to by examining the degree to which certain items are similar as indicators of a hypothesized construct. Discriminant validity was conducted to examine whether the operationalization of each of the 3Cs is sufficiently distinct in the association and prediction of coach behaviours. The hypothesis here was to identify the relational constructs (3Cs) that are likely to associate and predict athletes' perceptions of coach behaviours. The ratio of the sample size to free parameters was above the recommended 10:1 ratio for the French CART-Q but just below for the French CBS-S [55].

A number of fit indices criteria were employed to assess the fit of the three models examined. Based on Bentler's [55] recommendations both the Non-Normed Fit index (NNFI) and the Comparative Fit Index (CFI) were required to reach values of over 0.90 to indicate acceptable fit. If values however reach above 0.95 and nearer to 1.00, then models are said to indicate close and exact model fit respectively. Standardized Root Mean Square Residual (SRMR) was also utilized; smaller values are considered to be better. Root Mean Square Error of Approximation (RMSEA) was another fit index used and values from 0.10 to 0.08 indicate mediocre fit, whilst values that range from 0.08 to

0.06, near to 0.01 indicate acceptable fit and values from 0.06 to 0.00 indicate close and exact fit [58]. Moreover, when the χ^2 is divided by its degrees of freedom (χ^2/df) to generate values below 2.0, an acceptable model fit is found [59].

RESULTS

Descriptive statistics

Table 1 presents means (Ms), standard deviations (SDs), Cronbach's alpha (α's) and bivariate correlations (r's) of all the main variables of the study. There was evidence of multivariate non-normality in the data distribution, as the normalized Mardia's coefficient was relatively high and therefore robust Maximum Likelihood estimation was employed in all subsequent analyses.

Evaluation of Measurement Models (CFA): Factorial Validity. The top part of Table 2 shows the results for the models hypothesized (M1, M2 and M3). The fit indices of the two competing models (M1 and M2) of the French CART-Q were satisfactory with M1 and M2 recording excellent and identical fit indices (CFA=0.996, NNFI=0.995, SRMR=0.023). Factor loadings were high for both M1 and M2 were similar, ranging from 0.60 to 0.81 (M factor loading=0.71) and statistically significant (P<0.001) (M1). The hypothesized model of the French CBS-S (M3) recorded acceptable model fit indices (CFA=0.910, NNFI=0.904, SRMR=0.062). Factor loadings were high, ranging from 0.43 to 0.80 (M factor loading=0.73) and statistically significant (P<0.001).

Convergent and discriminant validity. Convergent validity for all three models (M1, M2, M3) was assessed through the observation of item loadings. All factor loadings were relatively high ranging from 0.69 to 0.81 and were statistically significant (p<0.05). Moreover, support for the instruments' convergent validity was gained from the variance estimate squared multiple correlation coefficient (R2), highlighting the average proportion of variance in the items accounted for by their underlying factors in relation to the amount of variance due to measurement error. R2 is satisfactory when it records values of 0.50 or above [60]. All of the items recorded satisfactory R2; only one item for complementarity recorded a value that was less than 0.50. While the item "Je suis prêt à donner le meilleur de moi-même avec cetentraîneur" ("I am ready to do my best with this coach") recorded an R2=0.48 suggesting a very slight misfit (0.02), it was retained for the sake of scale completeness.

Moreover, discriminant validity was tested through examining the correlation coefficients of the 3Cs of the French CART-Q. Relatively strong associations were found between the 3Cs consistent with previous research. Specifically, $r_{closeness}$-$r_{commitment}$=0.83, $r_{closeness}$-$r_{complementarity}$=0.97 and $r_{commitment}$-$r_{complementarity}$=0.84 for the M1. For the M2, the loadings of closeness, commitment and complementarity to the higher-order factor namely coach-athlete relationship (CART) were high too: closeness to CART 0.98, commitment to CART 0.85 and complementarity to CART 0.99. Correspondingly, the positive coaching behaviours were moderately and positively associated with one another (r ranging from 0.31 to 0.68) whereas the negative coaching was weakly and negatively associated with the technical skill, competition strategy and personal rapport (r ranging from -0.12 to -0.29).

Evaluation of Structural Models (CFA): Structural equation modeling with maximum likelihood analysis was conducted to test the hypothesis that the 3Cs predict athletes' perceptions of coach behaviours. Seven models were tested whereby the 3Cs acted as the independent (exogenous) variables and each of the seven coach behaviours acted as the dependent (endogenous) variable. The second part of Table 2 presents the results of these analyses. As can be seen, satisfactory goodness of fit indices were recorded across the seven models tested suggesting that the data fit the hypothesized models well. Table 3 highlights path coefficient estimates. This set of findings indicated that Closeness and Commitment were capable to predict most of the coach behaviours whereas Complementarity was only capable to predict Positive Personal Rapport. Negative Personal Rapport was only predicted by Closeness.

Table 1: Descriptive statistics for the main variables of the study

	1	2	3	4	5	6	7	8	9	10
Closeness	1									
Complementarity	0.82**	1								
Commitment	0.70**	0.69**	1							

Physical and Planning	0.52**	0.44**	0.53**	1						
Technical Skill	0.57**	0.48**	0.51**	0.43**	1					
Mental Preparation	0.42**	0.39**	0.47**	0.39**	0.48**	1				
Goal Setting	0.47**	0.39**	0.51**	0.53**	0.56**	0.68**	1			
Competition Strategy	0.62**	0.57**	0.60**	0.45**	0.63**	0.60**	0.56**	1		
Personal Rapport (+ve)	0.59**	0.61**	0.56**	0.31**	0.47**	0.37**	0.38**	0.56**	1	
Personal Rapport (-ve)	-0.2	-0.5	-0.11	0.03	-0.25	-0.07	0	-0.2	-0.29	1
Mean	5.58	5.64	4.82	4.29	4.47	3.65	3.43	4.44	4.58	2.55
SD	1.05	0.98	1.21	1.3	1.29	1.68	1.44	1.2	1.32	0.84
α	0.85	0.93	0.94	0.91	0.88	0.88	0.72	0.86	0.83	0.82

Table 2: Results from testing measurement and structural models

	df	**Chi-square**	**NNFI**	**CFI**	**RMSEA (90% CI)**	**SRMR**
Measurement Models						
M1. CFA-CARTQ (1st order)	41	46.07	0.995	0.996	0.020 (0.000-0.045)	0.023
M2. CFA-CARTQ (2nd order)	41	46.06	0.995	0.996	0.020 (0.000-0.045)	0.023
M3. CFA-CBS (1st order)	1013	2006	0.904	0.91	0.050 (0.046-0.053)	0.062
Structural Models						
(CART-Q: 3Cs à CBS-S: 7 perceived coach behaviour's)						
Physical and Planning	129	269.5	0.935	0.946	0.060 (0.050-0.069)	0.055
Technical Skill	171	330.6	0.935	0.945	0.064 (0.055-0.073)	0.041
Mental Preparation	98	135	0.985	0.988	0.035 (0.019-0.049)	0.062
Goal Setting	113	137.6	0.99	0.991	0.027 (0.000-0.041)	0.029
Competition Strategy	129	147.7	0.991	0.993	0.022 (0.000-0.037)	0.034
Personal Rapport (+ve)	113	250.4	0.936	0.947	0.063 (0.052-0.073)	0.037
Personal Rapport (-ve)	146	286.7	0.914	0.926	0.056 (0.046-0.066)	0.057

Table 3: Path coefficient estimates of structural models tested

Dependent Variable	**Independent Variable**	**Standardised Beta**	**R2**
Physical and Planning	Closeness	0.39**	0.33
	Complementarity	-0.11	
	Commitment	0.40**	
Technical Skill	Closeness	0.53**	0.36
	Complementarity	-0.07	
	Commitment	0.27**	
Mental Preparation	Closeness	0.18*	0.2
	Complementarity	0.03	
	Commitment	0.41**	

Goal Setting	Closeness	0.31**	0.32
	Complementarity	-0.11	
	Commitment	0.46**	
Competition Strategy	Closeness	0.41**	0.38
	Complementarity	0.09	
	Commitment	0.45**	
Personal Rapport (+ve)	Closeness	0.24**	0.32
	Complementarity	0.41**	
	Commitment	0.31**	
Personal Rapport (-ve)	Closeness	-0.33**	0.11
	Complementarity	0.02	
	Commitment	0.04	
*p<0.05 at 2-tailed, **p<0.01 at 2-tailed			

DISCUSSION AND CONCLUSION

The main aims of this study was to examine whether athletes' perceptions of coach-athlete relationship quality and coach leadership are statistically associated and whether coach-athlete relationship quality predict athletes' perceptions of coaches' behaviours as proposed by Jowett and Arthur [65] based on the Leader-Member Exchange [49] theoretical model. First, it was deemed necessary to validate the instruments utilized in this study to assess coach-athlete relationship quality (CART-Q) and coach behaviours (CBS-S) because they had never been employed in French language before. Confirmatory factor analyses of the French versions of the CBS-S and the CART-Q revealed their multidimensional nature comprising of seven and three correlated factors respectively. These findings are in line with their respective conceptualisations. Like previous validations have shown for CBS-S and for CART-Q, the psychometric properties of validity and reliability of the items were sound and the multidimensional nature of both instruments was found to be statistically tenable for the French versions.

Unlike previous studies where coach-athlete relationships and coach leadership behaviours have been examined in parallel, this present study examined these constructs in ways that allow them to associate. The findings suggest that the coach-athlete relationship quality and coach leadership are associated. The moderate to strong correlations found suggest that certain coach leadership behaviours may include relational dimensions and vice versa [61]. Furthermore, the analyses conducted to examine whether the quality of coach-athlete relationships is a predictor of coaching behaviours showed that closeness, commitment and complementarity, properties that define the quality of the coach-athlete relationship, are significant predictors of athletes' perceptions of a range of coaching behaviours. Overall, these findings support the proposition forwarded by Jowett and Arthur [65] and are in line with previous research revealing that the interpersonal relationship formed between athletes and coaches represent a central aspect of growth in sport settings from a performance and well-being viewpoint [62,63].

A closer look at the path coefficients highlighted that closeness and commitment were much better and stronger predictors of a number of coach behaviours while complementarity only predicted personal rapport (positive). Specifically, positive personal rapport was predicted by complementarity alongside commitment (and less so by closeness). One reason for this set of findings is that athletes' investment to the relationship through continued and sustained co-operative actions, collaboration and teamwork, in the eyes of the athlete, may compel, oblige or motivate their coaches to treat each athlete with understanding, empathy, concern, openness, and discretion (positive rapport). Correspondingly, heightened closeness manifested in athletes' trust, respect, appreciation, and liking for their coaches may, in the eyes of the athletes, compel, oblige or motivate their coaches to reciprocate such positive relational sentiments and in turn allow them to behave more positively by reducing such negative behaviours as yelling, intimidation, favouritism, control, and disregard (negative rapport).

It would appear that athletes' commitment is a stronger predictor than closeness for such coaching behaviours as mental preparation and goal setting whereas athletes' closeness is a stronger predictor than commitment for the coaching behaviour of technical skill. The association between mental preparation, goals setting, and commitment

may highlight the temporal importance of these variables. As for any preparation, coaches would need to invest over time a lot of effort and energy in preparing mentally their athletes to achieve certain performance goals and the commitment of athletes would be paramount for the success of this endeavour. Thus, this finding speaks to the importance of athletes' commitment for getting coaches to think of their long-term development as perceived by the athletes. Thus, if athletes' are committed to the coach and display their loyalty through their actions, coaches are more likely to work with such committed athletes to make them mentally tough, positive and focused as well as actively help them to achieve both short-and long-term goals. In a similar vein, if athletes show respect to their coach, including trust and appreciation, then coaches are more likely to want to engage with these athletes at the present moment and in the future.

Technical training requires a great deal of cognitive effort from both relationship members, and coaches are responsible for providing feedback, correcting errors, ensuring understanding, reinforcing, demonstrating, describing, and explaining in training and competitions. Thus, athletes who are less respectful and trustful of their coaches may experience coaches that are less willing to spend time and effort with them practicing and perfecting technical skills. Coaching behaviours that relate to physical training and planning were predicted by both athletes' closeness and commitment. It would appear that a sense of bonding with the coach from an athletes' perspective at both affective and cognitive levels may promote coaching behaviours that aim to provide athletes with a sound and challenging physical conditioning program as well as the necessary facilities and equipment to create an effective and successful coaching environment.

Collectively, these results would seem to speak to the long-lasting maxim known as the Golden Rule or Ethic of Reciprocity that states "One should treat others as one would like others to treat oneself". In other words, athletes who "treat" their coaches with trust, respect, appreciate, commitment and co-operation and generally connect with their coaches are more likely to receive from their coaches (or coaches deliver to them) the best possible coaching practices and leadership behaviours they can offer. It may also be that the connections athletes develop with their coaches empower the athletes themselves to more readily contribute to the coaching and training environment-alongside their coaches. Interdependence Theory [64] explains that interpersonal relationships are associated with rewards and costs. Subsequently, athletes' good quality relationships with their coaches would appear to produce for them positive and satisfying rewards in other words good quality relationships may promote effective coaching. This conjecture is in line with a conceptualization of coaching recently presented where the quality of the coach-athlete relationship was thought to define the (in) effectiveness of coaching [65].

In summary, the findings of this study are in agreement with several previous findings showing that the relationship developed between the athlete and his/her coach is of prime importance for the athlete and one reason for this is the perceived central role coaches play in athletes' sport experience and success. A major issue underlying these findings is coaches' and athletes' capacity to develop good quality relationships that can accommodate, energise, motivate, propel and empower the other to act and interact in a rewarding manner. Bonding and connecting, understanding and empathizing with each other within the coach-athlete dyad and essentially pressing the "right buttons" are issues discussed in coaching-specific books [66]. Although there are numerous personal and situational factors that can influence how coaches treat their athletes and how athletes perceive their coaches, this study shed light on the interplay of coaching relationships and behaviours. There is a great scope for more research in this area including the direction and causality of the association of the constructs examined here through sophisticated research including dyadic, longitudinal and experimental designs [67].

It would appear paramount that both athletes and coaches could benefit from making themselves aware of the impact their relationships and behaviours can make on their success and satisfaction. A good quality relationship provides the context for continuous effective "give and take" that produces rewards (as opposed to such costs as punishment, negativity, dissatisfaction, conflict) and can thus only benefit the dyad and the team or squad within which its members are embedded. Thus, coach education programs and athlete education programs alike, would do well to focus on raising awareness around the quality of coach-athlete relationships and assisting coaches and athletes to build more fulfilling and effective working partnerships. This view has been echoed by other researchers over the recent years. Such an emphasis could help improve the environment within which coaches and athletes function and consequently would favour sport success and healthy wellbeing. Coaches should go beyond merely teaching and instructing skills, techniques and tactics [68] and start embracing the relationship as a vehicle that has the capacity to fulfil performance goals. Coach-athlete relationships that are purposeful are most influential.

There are a number of limitations and future research directions that one may wish to consider. For example the findings are limited due to their cross-sectional nature. The lack of longitudinal data does not allow charting the variation in athletes' perceptions of coaching relationships and behaviours over time. Establishing cause and effect

via longitudinal and experimental studies is important as it can unravel the reciprocal processes involved in coaches and athletes' relating and interacting over the course of a season or seasons. In addition, this study only considered athletes' perceptions of coaching relationships and behaviour's. Thus, consideration of both athletes and coaches' perception of coaching relationships and behaviour's and focusing on the coach-athlete dyad may provide a more complete picture of potential interactions and processes (including actor and partner effects). While the association between coaching relationships and behaviour's was established, the mechanisms by which this association exists remain unknown. Future research could examine potential mechanisms through such mediator variables as team cohesion and collective efficacy (group variables), as well as motivation and passion (individual variables). Moreover, the strength of the association established between coaching relationships and behaviours is likely to be influenced by numerous factors. Thus, it would be important to examine these factors through potential moderator variables such as personality characteristics (e.g. attachment styles, big five), individual difference characteristics (e.g. age, gender, ethnicity, experience, coaching efficacy, emotions and coping, communication, empathy), and situational characteristics (e.g. sport type and level) in future research. Interpersonal relationships and behaviours are fundamental entities for effective coaching and so building on the established links through testing more complex models where moderators, mediators and outcomes are included could contribute further to the ever evolving edifice of knowledge pertaining to coaching practices and effectiveness.

The findings of this study suggest that athletes (and coaches) should, in a conscious and deliberate manner, consider the working relationship they develop with one another. A genuine working relationship, where mutual trust, respect, appreciation, commitment and co-operation are its central features, provides a sound platform from which coaches and athletes act, interact, work and co-operate effectively to improve all aspects of performance. The interpersonal connection between the coach and each athlete in the team or squad is a key in the development of athletic talent and in making progress over the ups and downs that accompany performance success over time. Quality coach-athlete relationships lie at the heart of effective and successful coaching, thus, both coaches and athletes need the skills to develop and maintain relationships that work.

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