Original Article

Trust spectrum within sports team: Empirical evidence from professional basketball teams

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Abstract:

Trust is fundament of group relationships determined cooperation, team work and effectiveness, thus should be considered as interesting research field in the context of team sports. However, the empirical evidence on trust within sports team is not popular topic in scientific literature. The purpose of this paper is to identify the level of different types of trust, trust dimensions and the psychological safety within the successful sports teams, as well as intercorrelations between these constructs. Several scales of trust and psychological safety scale have been examined in twenty six professional basketball teams from 18 European countries. Spearman's correlation coefficients were used to determine the relationship between constructs. Research results revealed higher level of vertical trust then horizontal trust, high coherence of all used scales to measure trust in coach, and strong association of psychological safety with both: overall team trust and overall coach trust. Also, the psychological safety is strong associated with most of trust types, besides the declared trust in teammates. Despite the moderate correlation between overall trust in team and overall trust in coach, the study demonstrated the lack of significant evidence for association between trust in coach (measured by willingness to be vulnerable) and trust in teammates (measured with multidimensional scale as well as with single item reflecting declared trust in teammates). The lack of association between psychological safety and declared trust in teammates along with a strong relationship with declared trust in coach confirms the crucial role of team leader in creating positive team climate. The preliminary character of study and the need for further in-depth research on trust within sports team was highlighted. Moreover, the recommendation for the trust measurement within sports team have been provided.

Key Words: *trust within sports team, trust measurement, trust in coach, psychological safety*

Introduction

A successful sports teams are often an example of excellent team work, cooperation, roles division, solidarity and trust. The specific of team work in team sports such as football or basketball requires close cooperation and high level of trust not only between players, but also between player and coach. However, the empirical evidence on trust within sports team is not popular topic in scientific literature. Systematic literature searching shows very few research papers on trust within sports team. A search for the conjunction of phrases "trust" and "sport(s) team" provides only 22 indexed papers in Scopus database and 8 items in Web of Sciences Core Collection database; total 26 after eliminating repetitions. Likewise only few recent papers discusses issue of psychological safety in sport (e.g. Blynova et al., 2020; Maidokina et al., 2019; Smittick et al., 2019). This means the issue of trust within sports team, as a research field, is not exhaustive.

Thus, the present study attempt to contribute to the extant literature by delivering the preliminary results of empirical research on trust relationships within sports teams. The purpose of the paper is to identify the level of different types of trust, trust dimensions and the psychological safety within the successful sports teams, as well as intercorrelations between these constructs. In particular, research question is, what is the difference between team members' declared trust and trust measured with multidimensional scales developed and validated by other scholars. With respect to trust referent, two types of relationships within sport team have been examined: horizontal trust (trust in teammates) and vertical trust (trust in coach).

Since Mayer, Davis and Schoorman (1995) introduced their integrative model of trust, trust is multidimensional construct understood as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer et al., 1995, p. 712). According them trust is determined by trustworthiness which consists of three dimensions: ability, benevolence, and integrity. Ability is that group of skills, competencies, and characteristics that allow a party to have influence within domain of interest. Benevolence is the extent to which a trustee is believed to cares about the trustor. Integrity is defined as the trustor's perception that the trustee adheres to a set of principles that the trustor finds acceptable. Ability and

integrity capture rational reasons to trust rooted in past success and consistency between words, actions, and values. Unlike, benevolence reflects a more emotional reason to trust rooted in past instances of caring and concern (Colquitt et al. 2011, p. 1000). Other scholars enhance that trust is an expectation (Rousseau et al., 1998; Zaheer et al., 1998) and add dimensions on which confidence can be assessed, like knowledge-based trust which is rooted in past performance and promise keeping (McAllister et al., 2006). In this study trust within team was measured according to both abovementioned approaches to compare results and outline the direction of further research in sport. Considering the variety of trust within a sports team, where interpersonal contacts are frequent and close, psychological safety is important complement of trust spectrum analysis. Similarly to trust, psychological safety refers to willingness to be vulnerable to others' actions; however, describes climate in which people are comfortable in expressing themselves. Team psychological safety is defined as a shared belief that the team is safe for interpersonal risk taking (Edmondson 1999, p. 354).

Material & methods

Participants and Procedure

The questionnaire survey was conducted between 2018 and 2019 among 80 participants of the programme called "TIME-OUT. Empowerment of basketball players through a sustainable dual career, and a good governance training supporting program" co-funded by the Erasmus+ Programme of the European Union. The project was directed to elite athletes who were at the end of their professional basketball career or just recently retired. They were asked to complete an online questionnaire regarding the team with which they achieved the best results in their career. In consequence, the sample of the examined subjects was made by 26 representatives of top European basketball teams from 18 following countries: France, Spain, Germany, Poland, Turkey, Albania, Romania, Wales, Czech Republic, Hungary, Ireland, Netherlands, Russia, Belgium, Greece, United Kingdom, Austria, Italy.

Instrument and measures

In the questionnaire several scales were used to compare the level of horizontal and vertical trust according to different measures, psychological safety, and trust climate.

Team Trust was measured using the twenty-item Revised Team Trust Scale developed by Adams and Sartori (2006). The scale consists of four subscales: Team Benevolence, Team Integrity, Team Predictability, Team Competence. Each of these includes five items and is also analyzed as separate construct. The items was converted into past tense because respondents were asked about the team with which she or he has achieved the best results. Sample item: "I believed that my teammates had my best interests in mind". The reliability coefficients are 0.90 Cronbach's alphas for twenty-item team trust scale, and 0.89, 0.91, 0.70, 0.88 for subscales, respectively.

Coach Trust was evaluated using the twenty-item Revised Leader Trust Scale developed by Adams and Sartori (2006) adapted by replacing the word 'leader' into 'coach'. As before, the items was converted into past tense. Sample item: "I had confidence in the motivations of my coach". This scale is also divided into four parts, five items each, and is also analyzed as separate construct: coach benevolence, coach integrity, coach predictability, coach competence. Cronbach's alphas were 0.90 for twenty-item coach trust scale, and 0.84, 0.74, 0.78, 0.95 for subscales, respectively.

Trust in Coach, reflecting a general willingness to be vulnerable to a coach, was measured with adapted version of the five-item trust scale developed by Mayer and Gavin (2005). They added one item to the four-item trust scale provided by Mayer and Davis (1999) and the statistical reliability of scale increased. After conducting similar validation the Cronbach's alphas were 0.61 for the five-item and only 0.5 for the four-item trust scale. Analogously, the items was utilized by converting into past tense and put the word "coach" as a trustee. Sample item: "I was willing to let my coach have complete control over my future in this team".

In addition, questionnaire included three single items to evaluate respondent's Declared trust. These items express direct opinion on the level of trust in teammates, trust in coach and trust climate in team. These three items were "I trusted in my teammates", "I trusted my coach", "There was trust climate in team".

Psychological Safety was measured using the seven-item scale from Edmondson (1999) converted into past tense; Cronbach's alpha was 0.69. Sample item: "If you make a mistake on this team, it is often held against you" (reversed).

Data collection and statistical analysis

The SurveyMonkey online platform was used to data collection. All scales items were rated using a 5-point scale ranging from 1 ("Completely Disagree") to 5 ("Completely Agree") with a neutral midpoint. Statistical processing of the empirical data was performed by means of IBM SPSS Statistics v. 26.0.0.1. The level of constructs was assessed as the average score of a series of Likert items on each construct scale, which allowed an overall construct score to be calculated; higher scores indicating a greater level of construct. The reliability of each scale was tested by calculating Cronbach's alphas coefficients. The small number of participants in the survey should be considered as limitations to extend the findings and conclusions to a wider population. However, methodological limitations related to the sample size allowed to apply Spearman's rank correlation coefficient (rho).

Results

The results of empirical data analyses are presented in two tables. Table 1 provides the means, standard deviations, and reliability of examined constructs. The analysis of the means in the sample indicate that the highest level of the examined variables shows the Declared trust in teammates (4.38), next is Team Competence (4.12) and Team Predictability (4.08). The lowest one is Trust in Coach (3.23) measured with five-item scale. At the same time, an average level of Declared trust in teammates (4.38) is greater than Declared trust in coach (3.77). Similarly, average Team Trust (3.93) is greater than Coach Trust (3.75) but only slightly. However both indicate the same tendency: vertical trust was assessed higher than horizontal trust.

Table 1. Descriptive statistics and construct reliability for study sample

	Variables	Mean	Standard deviation	Coefficient Alpha
1.	Team Trust	3,93	.43	.90
2.	Team Benevolence	3,69	.71	.89
3.	Team Integrity	3,83	.59	.91
4.	Team Predictability	4,08	.43	.70
5.	Team Competence	4,12	.58	.88
6.	Coach Trust	3,75	.45	.90
7.	Coach Benevolence	3,65	.67	.84
8.	Coach Integrity	3,79	.46	.74
9.	Coach Predictability	3,71	.52	.78
10.	Coach Competence	3,85	.75	.95
11.	Trust in Coach	3,23	.48	.61
12.	Declared trust in teammates	4,38	.64	
13.	Declared trust in coach	3,77	.86	
14.	Declared trust climate in team	3,96	.87	
15.	Psychological Safety	3,88	.47	.69

Most of Cronbach's alpha coefficients are near .90 what indicate good internal consistency of the items in the scales. Two of scales, Trust in Coach and Psychological Safety have less internal consistency, Cronbach's alphas .61 and .69, respectively, so reliability of scales is acceptable (Aron et al., p. 619).

Table 2 provides Spearman's rank correlation coefficients among the study variables.

Table 2. Variables intercorrelation matrix for study sample (rho)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Team Trust														
2. Team Benevolence	.79**													
3. Team Integrity	.83**	.65**												
4. Team Predictability	.65**	.28	.43*											
5. Team Competence	.77**	.37	.51**	.74**										
6. Coach Trust	.58**	.25	.52**	.45*	.53**									
7. Coach Benevolence	.43*	.44*	.34	.21	.32	.75**								
8. Coach Integrity	.59**	.35	.42*	.55**	.52**	.82**	.65**							
9. Coach Predictability	.01	-.28	-.02	.20	.09	.53**	.26	.30						
10. Coach Competence	.59**	.16	.70**	.43*	.55**	.78**	.36	.53**	.37					
11. Trust in Coach	.34	.13	.38	.24	.24	.74**	.61**	.58**	.27	.55**				
12. Declared trust in teammates	.64**	.56**	.39*	.53**	.53**	.16	.01	.21	.04	.27	-.12			
13. Declared trust in coach	.65**	.39	.64**	.40*	.51**	.78**	.50**	.63**	.34	.77**	.52**	.25		
14. Declared trust climate	.62**	.49*	.44*	.32	.58**	.55**	.52**	.44*	.22	.50**	.12	.36	.62**	
15. Psychological Safety	.71**	.47*	.68**	.45*	.63**	.78**	.65**	.61**	.24	.68**	.57**	.27	.71**	.59**

**correlation significant at level of $p < 0.01$;

*correlation significant at level of $p < 0.05$.

The Spearman's rho coefficients displayed in Table 2 show that not all correlations are statistically significant. However, among these relationships which are statistically significant, all have positive direction. The construct Team Trust has strong association at the level of significance $p < .01$ with all four team trust dimensions, as Team Benevolence (.79), Team Integrity (.83), Team Predictability (.65), and Team Competence (.77). Whereas a link between Team Trust and Coach Trust is weaker (.58) and between Team Trust and Trust in Coach is not statistically significant. The association between Coach Trust and the four dimensions are significantly correlated and range from .53 for the Coach Predictability to .82 for Coach Integrity ($p < .01$).

Interesting information provides correlation coefficients for Trust in Coach measured as willingness to be vulnerable. This construct has statistically significant relationship with overall Coach Trust (.74), Declared trust in coach (.52) and three dimensions of Coach Trust, which are: Coach Benevolence (.61), Coach Integrity (.58), Coach Competence (.55). Although, Trust in Coach is also moderate correlated with Psychological Safety (.57).

Moreover, the analysis of single items' correlations indicates that the ranges of the Spearman's rho coefficients for Declared trust in teammates and for Declared trust climate in team are lower than for Declared trust in coach. The Declared trust in teammates is significantly correlated at the level of $p < .01$ only with overall Team Trust (.64) and the three dimensions: Team Benevolence (.56), Team Predictability (.53), Team Competence (.53) but also, at the level of $p < .05$, with Team Integrity (.36). Unexpectedly, the declared trust in teammates is not significantly correlated with other types of declared trust, either the Declared trust in coach or the Trust climate in team. Nevertheless, regarding the Declared trust in coach the highest ranges of correlation coefficients are with overall Coach Trust and Coach Competence (.78 and .77, $p < .01$). However, the three strongest associations of the single item Declared trust climate in team has with Team Trust (.62), Declared trust in coach (.62), and Psychological Safety (.59) at the level of significance $p < .01$.

Moreover, Psychological Safety has strong association with overall Team Trust (.71), Coach Trust (.78) and Declared trust in coach (.71). While, the correlations between Psychological Safety and Coach Predictability as well as between Psychological Safety and Declared trust in teammates are not statistically significant.

Discussion

In this research I found differences between the levels of different types of trust within sports teams. Despite the small sample size the nonparametric statistics was used and interesting relationships have been demonstrated. Unlike to Colquitt et al. (2007, p. 920) in my research the relationship between trust and its dimensions do vary significantly across measures with multi-items scale or direct measures that explicitly use the word trust. Similarly to recent study conducted in Chinese basketball teams, current research deliver empirical support for the positive relationship between coaching competency and trust in the coach (Kao et al., 2017, p. 325).

There is no evidence that Trust in Coach measured by willingness to be vulnerable, components of trust definitions (Mayer et al., 1995; Rousseau et al., 1998) is related with Trust in Teammates. This applies both to Declared trust in teammates and twenty-item Team Trust scale. Moreover, the Declared trust in teammates is not correlated with Declared trust in coach. These results confirm the distinctness of horizontal and vertical trust within sports teams. The explanation could be the fact that in sports team the leadership of a leader-coach is often limited because coach is focused on tasks, and the results, excluding human relations (Gulak-Lipka, 2017, p. 48). In such situations, one of the players is the real team leader, while in present research I assumed the coach as a leader. However, building relationships is very important aspect of coaching and empathy, building trust, striving to serve their athletes and exhibiting humility are demanded coaches behaviors. Gillham, Gillham and Hansen (2015) demonstrated that athletes playing for high-scoring coaches reported significantly more prosocial teammate behaviors than did athletes playing for low-scoring coaches.

Despite a lack of extensive empirical research on trust within sports teams, I can refer to other research contexts. Considering relationship between the vertical trust and the horizontal trust in social context Rothstein (2002) delivered results indicating that people treat these two forms of trust differently. Similarly to my results, their survey data showed that the level of people's vertical trust is larger than the people's horizontal trust. Moreover, Eek and Rothstein (2005) suggested vertical trust affects horizontal trust, however in conclusion, the results from the three experiments indicated that increased vertical trust has positive effects on horizontal trust, decreased vertical trust has smaller negative effects on horizontal trust, and horizontal trust has no effects on vertical trust.

Adams and Sartori (2006) developed and validated Team Trust and Leader Trust scales for measuring trust within military teams in Canada. Their analyses have provided good evidence of both scales internal consistency and construct validity. My research tested the application of these scales in basketball teams and results confirmed the adequacy, thus can be recommended to other team sports as well.

The strong correlation between Psychological Safety and Team Trust confirmed previous expectation. However, the lack of association between Psychological Safety and Declared trust in teammates along with a strong relationship with Declared trust in coach suggests that coach plays more important role in shaping comfortable climate than team members. On the other hand, many research in organizational context reviled the strong correlations between leadership behaviors and positive, innovative, and safe climate (Józefowicz, 2013, p.

169-170; Lewicka, 2012, 58-61) or interpersonal relationships demonstrated in particular through: counting on each other, showing interest in each other, liking each other, and showing acceptance and respect each other (Lis et al. 2014, p. 38). Although there is need for more detailed and in-depth investigation. It is worth to note that possible interpretation could be that measuring trust with single item is not reliable enough, thus the multidimensional scales should be recommended.

Conclusions

Basketball teams have been analyzed so far mostly in terms of physical training (Akhmetkarim et al. 2019; Leonard & Florin, 2018; Petrov & Bonev, 2018). This research delivered preliminary empirical evidence for variety of trust relationships within basketball team. Moreover, the strength of intercorrelations between trust in teammates, trust in coach, and their dimensions have been verified. As well as, associations between all mentioned constructs with psychological safety were examined.

At this stage of research on trust within sports team, a few preliminary conclusions can be articulated. First, the level of horizontal and vertical trust can be different in successful sport teams. Mean levels of variables demonstrating vertical trust were significantly higher than horizontal trust in the research sample. Thus, trust in teammates and trust in coach should be considered as separate relationships. Second, the psychological safety is strongly associated with both overall trust in team members and overall coach trust measured by twenty-item scale as well as declared trust in coach. However, the lack of association between psychological safety and declared trust in teammates along with a strong relationship with declared trust in coach confirms the crucial role of team leader in creating positive team climate. Results of this study can be used in coaches' education to pay more attention for trust building skills development.

This research also demonstrates that utilized Team Trust Scale and Coach Trust Scale are adequate measures of these constructs within sports teams. Although the reliability of single items that explicitly use the word trust as a trust measure has been questioned. However, it is only a starting point for further research on trust within sports team.

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