

The impact of shared leadership on group functioning and performance

Edited by

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Published in

Frontiers in Psychology



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ISSN 1664-8714
ISBN 978-2-8325-2383-4
DOI 10.3389/978-2-8325-2383-4

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The impact of shared leadership on group functioning and performance

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Citation

Cotterill, S. T., Fransen, K., Loughhead, T. M., eds. (2023). *The impact of shared leadership on group functioning and performance*. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-8325-2383-4

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SPECIALTY SECTION
This article was submitted to
Performance Science,
a section of the journal
Frontiers in Psychology

RECEIVED 15 December 2022
ACCEPTED 20 February 2023
PUBLISHED 07 March 2023

CITATION
Cotterill ST (2023) Editorial: The impact of
shared leadership on group functioning and
performance. *Front. Psychol.* 14:1125076.
doi: 10.3389/fpsyg.2023.1125076

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Editorial: The impact of shared leadership on group functioning and performance

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KEYWORDS

shared leadership, leadership development, athlete leadership, team effectiveness, group effectiveness

Editorial on the Research Topic

The impact of shared leadership on group functioning and performance

Leadership is a fundamental aspect of team functioning across a broad range of performance domains including sport, physical activity, exercise, and health. Indeed, there is increasing recognition that high-quality leadership at all levels within organizations is crucial to the growth and performance of teams. Over the past 25 years, the majority of research has examined leadership from the perspective of the top-down approach that relies on a leader-centric approach. However, this only represents one aspect of leadership within performance domains. Equally important, although far less examined, is the concept of shared leadership within teams, specifically termed “athlete leadership” or “peer leadership.” Leaders within teams have been suggested to have significant impact upon a range of team-related factors including satisfaction, cohesion, team dynamics, performance, health, and well-being. There is limited clarity, however, regarding the best mechanisms through which to develop the leadership capacity and potential within a team.

This Research Topic focuses on exploring shared leadership within a range of different contexts. Specifically seeking to better understand current knowledge, approaches to leadership development, and future avenues for research in the domain of shared leadership. The articles that compose this Research Topic explore a range of perspectives and approaches to better understand shared leadership, the impact that shared leadership can have within a group or team context, and also how to best develop the leaders of the future.

In the first study in the Research Topic [Wu and Cormican](#) focus upon exploring both whether shared leadership is positively related to team effectiveness and also when shared leadership is more likely to be effective. The study specifically focuses on achieving this through the use of a social network analysis approach working with a number of Chinese design teams. One of the unique features of this study is that it is among the first to investigate the temporal factors that impact upon the effectiveness of shared leadership.

In the second study [Edelmann et al.](#) explore the underpinning mechanisms of the relationships between formal leaders and their team members, specifically focused upon employees from a range of different sized organizations in Belgium. The study offers an interesting insight into the use of empowering leadership styles by formal leaders and the impact these leadership styles have upon work-related factors such as work satisfaction. In addition, the article considers the appropriateness of previously identified leadership styles in sport to a non-sporting/organizational context.

In the next study [Butalia et al.](#) consider how predictive captain selection is of leadership quality and leader acceptance. Specifically, the authors explore the views of coaches and athletes from both Flemish football and volleyball teams. The study offers interesting insights into the range of leadership characteristics that might be required in order to positively impact upon leadership quality and leader acceptance in sports teams.

In the fourth study [De Backer et al.](#) offer an interesting perspective on whether the behavior of the coach impacts upon, or can be used as a predictor for, the quality of athlete leadership experienced. Building upon organizational justice theory and a social identity approach the study specifically focuses on Belgian volleyball and basketball players and whether the perceived justice of the coach predicts the quality of athlete leadership experienced by the players.

The next study in the Research Topic undertaken by [Boisvert et al.](#) evaluates the impact of a leadership development programme with youth ice hockey players. The development programme was designed to assess the impact of a series of leadership workshops as measured by a range of quantitative and qualitative measures. The study offers interesting conclusions in regard to the importance of leadership education and/or development programme in maintaining levels of desired athlete leadership behaviors.

In the sixth study [Toivonen et al.](#) report on the feasibility of a responsibility-based leadership training programme. In this study the authors consider the impact of a leadership training programme that promotes positive youth development, personal and social responsibility, and shared leadership on novice physical activity instructors. The study offers an evaluation of an innovative approach seeking to develop the leadership abilities of novice rather than experienced physical activity instructors in Finland.

For the next study [Walker and Gould](#) present an evaluation of the National Federation of State High School Association's (NHFS) online captain leader development course. In this study [Walker and Gould](#) specifically explore the perceptions of student athletes regarding the training course's effectiveness in improving leadership knowledge and ability. The authors offer some interesting insights into the responses and future research directions.

In the penultimate study of the Research Topic [López-Gajardo et al.](#) analyzed the relationship between athletes' perceptions of

athlete leadership quality, team identification, inside sacrifice and performance with sports team players across a range of different sports including soccer, beach soccer, basketball and volleyball. The study explores player perceptions utilizing a cross-sectional design survey, offering important and interesting conclusions on relationships between perceived quality of athlete leaders, inside sacrifice, and perceived performance, and between inside sacrifice and perceived performance.

In the final article of the Research Topic [Cotterill et al.](#) review the current state of knowledge and understanding relating to leadership and leader development with athlete leader populations. Reviewing contemporary examples and current understanding of approaches to athlete leadership development. Also highlighting future areas for research and applied practice development. Finally, the authors outline that while significant advances in understanding have been made there is still a long way to go, with further clarity required regarding the knowledge, skills and expertise required to undertake the athlete leadership roles in sport, and crucially to better understand how the development of current and future athlete leaders can be maximized.

Author contributions

This Research Topic summary was written by SC building upon the work submitted as part of the Research Topic.

Conflict of interest

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The Power of Empowerment: Predictors and Benefits of Shared Leadership in Organizations

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OPEN ACCESS

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Specialty section:

This article was submitted to
Performance Science,
a section of the journal
Frontiers in Psychology

Received: 13 July 2020

Accepted: 30 October 2020

Published: 19 November 2020

Citation:

Edelmann CM, Boen F and
Fransen K (2020) The Power of
Empowerment: Predictors and
Benefits of Shared Leadership
in Organizations.
Front. Psychol. 11:582894.
doi: 10.3389/fpsyg.2020.582894

Leadership plays an essential part in creating competitive advantage and well-being among employees. One way in which formal leaders can deal with the variety of responsibilities that comes with their role is to share their responsibilities with team members (i.e., shared leadership). Although there is abundant literature on how high-quality peer leadership benefits team effectiveness (TE) and well-being, there is only limited evidence about the underpinning mechanisms of these relationships and how the formal leader can support this process. To address this lacuna, we conducted an online survey study with 146 employees from various organizations. The results suggest that an empowering leadership style of the formal leader is associated with higher perceived peer leadership quality (PLQ) on four different leadership roles (i.e., task, motivational, social, and external leader). In addition, formal leaders who empower their team members are also perceived as better leaders themselves. Moreover, the improved PLQ was in turn positively related to TE and work satisfaction, while being negatively related to burnout. In line with the social identity approach, we found that team identification mediated these relationships. Thus, high-quality peer leaders succeeded in creating a shared sense of “us” in the team, and this team identification in turn generated all the positive outcomes. To conclude, by sharing their lead and empowering the peer leaders in their team, formal leaders are key drivers of the team’s effectiveness, while also enhancing team members’ health and well-being.

Keywords: shared leadership, empowering leadership, Social Identity Approach, peer leadership quality, team effectiveness, well-being

INTRODUCTION

For many decades, organizational structures were vertically structured with the formal leader being hierarchically placed above the followers. This conceptualization inferred that leadership is a downward process in which a single individual in a team or organization – the formal leader – influences his or her followers (Pearce and Conger, 2003; Bass and Bass, 2008). However, since the beginning of the new millennium, organizations are faced with fast-changing environments and increasing workload with complex tasks (Day et al., 2004). These changes place unrealistic expectations upon formal leaders, as it is unlikely that a single person can effectively perform all leadership responsibilities (Yukl, 2010). As a result, organizations have increasingly started to question this conventional single-leader paradigm.

This debate gave rise to a shared leadership approach, which implies that rather than burdening one individual with all the responsibilities, it is more realistic and effective to rely on the strengths of the team members to share these leadership tasks. The concept of shared leadership has been defined as “an emergent team property that results from the distribution of leadership influence across multiple team members” (Carson et al., 2007, p. 1218). This approach entails that leaders cannot only be formally appointed in their role, with leadership responsibilities being officially and explicitly assigned to them (e.g., managers and directors). Instead, leaders can also emerge as informal leaders due to their natural interactions with their colleagues (Pearce and Conger, 2003).

During the last decade, the interest in shared leadership has substantially increased and the topic receives considerable recognition in performance psychology. Indeed, research in organizational teams revealed a positive impact of shared leadership above and beyond that of vertical leadership structures on a variety of outcomes, including goal commitment, team confidence, and tangible performance indicators such as productivity (e.g., Hoch, 2007; Parker et al., 2015). In particular, the literature focusing on modern shared leadership structures in organizations, such as self-directed and agile teams, points towards the positive impact of shared responsibilities because they foster the sharing of values and norms and generate a stronger sense of team competence (Solansky, 2008; McIntyre and Foti, 2013). Moreover, shared leadership has also been found to buffer against team conflict (e.g., Bergman et al., 2012).

Role Differentiation

The efficiency of a structure of shared leadership has been argued to hinge upon a transparent definition and allocation of roles (Bray and Brawley, 2002). Bales and Slater (1955), founders of the role differentiation theory, proposed a dual leadership structure including two leadership roles focusing on either task activities (instrumental leader) or socio-emotional activities (expressive leader). A team structure encompassing both an instrumental and an expressive leader was found to minimize time, effort, and psychological tensions between team members (Pearce and Conger, 2003). Throughout time, researchers also suggested considering other leadership roles, such as goal setter, planner, and group symbol as well as coach and promotor of team learning (Krech et al., 1962; Wageman, 2001; Yukl et al., 2002).

Besides these already established suggestions on different leadership roles, a large number of other studies have provided evidence that identifying different roles within an organizational team benefits the team's performance (Lee et al., 2015). However, it should be noted that most of the studies on role differentiation have focused exclusively on the roles of formal leaders (e.g., Quinn, 1988; Kozlowski and Bell, 2013). Despite numerous calls of scholars in the field emphasizing the need to also identify leadership roles for peer leaders within organizational teams (e.g., Lee et al., 2015), such a set of leadership roles for employees *within* a team is still lacking.

Earlier research findings from the team sports context might provide inspiration to fill this knowledge gap. In this regard, research on peer leadership revealed that athletes in sports

teams could occupy more leadership roles than the traditional roles of task and social leadership, outlined by Bales and Slater (1955). First, Loughhead et al. (2006) added the role of the external leader, who represents the team towards outer parties, such as club management, media, and sponsors, while also securing desired resources and support as well as buffering team members from outside distractions. Finally, more recent research in the sport context further added the role of motivational leader, who was able to motivate team members to give their very best (Fransen et al., 2014). This resulted in a peer leadership categorization of four leadership roles, including the task, motivational, social, and external leader (for definitions of each of these leadership roles, see **Table 1**). Noteworthy is that sports teams in which leadership across these four leadership roles was occupied by different team members appeared to perform better than teams relying on one heroic team captain (Fransen et al., 2014). This is in line with the finding that, even though players and coaches expect their team captain to take up these four leadership roles, their captains can only rarely live up to these high expectations (Fransen et al., 2019).

Inspired by the already manifested value of shared leadership in modern organizations, as well as the initial evidence of four critical peer leadership roles in sports teams, this study aims to provide similar insight into peer leadership in organizations. As previous research emphasized that “the principles of elite performance in sport are easily transferable to business contexts” (Jones, 2002, p. 279; Wagstaff, 2017), we will rely on the four-fold categorization of peer leadership in sport settings. The underpinning reason for the similarities between both contexts is that sport and business teams face similar principles of leadership; while both types of teams are usually hierarchically structured with a single formal leader, research in both contexts demonstrated the advantages of leadership being shared among team members. More specifically, to provide a sound basis for further research on the topic, we aim to tackle four research questions in this study.

Aim 1: How Does Peer Leadership Quality Benefit the Team and Its Members?

While there is broad evidence based on the positive impact of shared leadership on team-level outcomes like TE and confidence (e.g., Pearce and Sims, 2002; Wang et al., 2014; Wu et al., 2020), two lacunae remain. First, most studies measured shared leadership as the degree to which team members occupy leadership responsibilities. In other words, these studies rated people as leaders based on the quantity of leadership behaviors they showed. To obtain this quantification, researchers used methods such as coding videotapes according to predefined leadership behaviors (e.g., Künzle et al., 2010; Bergman et al., 2012) or simulation techniques such as policy-capturing based on hypothetical scenarios (e.g., Drescher and Garbers, 2016). However, this quantitative distinction does not provide us with any information on the quality of their leadership. As Zhu et al. (2018) argued, the current measures of shared leadership only capture its configuration, while the actual content of specific leadership roles, and the performance (i.e., leadership quality) hereof, has been overlooked so far. It should be noted that

TABLE 1 | Means, standard deviations, and correlations between all included (sub)scales and their respective reliability.

S. No.		<i>M</i>	<i>SD</i>	α	1	9	10	11	12	13	14	15	16
1.	Empowering leadership (EL)	5.96	2.25	0.98									
2.	EL – subscale self-reward	4.11	2.52	0.93	0.72***	0.34***	0.37***	0.37***	0.41***	0.44***	0.46***	−0.37***	0.38***
3.	EL – subscale teamwork	6.41	2.36	0.93	0.86***	0.54***	0.49***	0.52***	0.53***	0.66***	0.59***	−0.42***	0.54***
4.	EL – subscale participative goal setting	5.75	2.69	0.96	0.87***	0.44***	0.38***	0.53***	0.45***	0.58***	0.57***	−0.42***	0.37***
5.	EL – subscale independent action	6.63	2.46	0.94	0.89***	0.36***	0.36***	0.33***	0.44***	0.54***	0.53***	−0.30***	0.41***
6.	EL – subscale opportunity thinking	6.02	2.60	0.92	0.93***	0.40***	0.41***	0.49***	0.46***	0.55***	0.50***	−0.37***	0.41***
7.	EL – subscale self-development	6.29	2.64	0.98	0.95***	0.45***	0.45***	0.50***	0.54***	0.61***	0.60***	−0.42***	0.42***
8.	Peer leadership quality (PLQ)	6.72	1.63	0.82	0.63***	0.81***	0.81***	0.80***	0.83***	0.63***	0.58***	−0.31***	0.52***
9.	PLQ – task leadership	6.71	2.07	na	0.48***								
10.	PLQ – motivational leadership	6.90	1.93	na	0.47***	54***							
11.	PLQ – social leadership	6.81	1.88	na	0.52***	0.52***	50***						
12.	PLQ – external leadership	6.60	2.03	na	0.55***	0.52***	0.57***	0.54***					
13.	Team identification	5.08	1.25	0.90	0.65***	0.58***	0.43***	0.51***	0.54***				
14.	Work satisfaction	5.08	1.06	0.87	0.63***	0.54***	0.41***	0.36***	0.56***	0.69***			
15.	Burnout	2.77	1.10	0.90	−0.44***	−0.28**	−0.27**	−0.31***	−0.19*	−0.42**	−0.46***		
16.	Team effectiveness (TE)	6.73	1.75	0.94	0.48***	0.56***	0.41***	0.37***	0.37***	0.69***	0.49**	−0.24**	
17.	TE – subscale output	6.82	1.81	0.91	0.43***	0.56***	0.35***	0.38***	0.34***	0.64***	0.45***	−0.24**	0.92***
18.	TE – subscale quality	6.85	1.92	0.88	0.40***	0.50***	0.36***	0.31***	0.27**	0.61***	0.42***	−0.19*	0.93***
19.	TE – subscale change	6.46	1.98	0.90	0.43***	0.54***	0.41***	0.34***	0.33***	0.65***	0.42***	−0.26**	0.90***
20.	TE – subscale organization and planning	6.69	1.93	0.89	0.44***	0.50***	0.37***	0.32***	0.36***	0.63***	0.47***	−0.23**	0.93***
21.	TE – subscale interpersonal communication	6.01	2.08	0.95	0.43***	0.46***	0.36***	0.34***	0.35***	0.57***	0.39***	−0.21*	0.85***
22.	TE – subscale value	6.81	1.98	0.97	0.41***	0.47***	0.38***	0.30***	0.32***	0.63***	0.40***	−0.17*	0.86***
23.	TE – subscale overall	7.11	1.91	0.96	0.49***	0.52***	0.41***	0.37***	0.37***	0.68***	0.53***	−0.24**	0.95***
24.	Formal leadership quality	5.93	2.08	0.91	0.76***	0.57***	0.50***	0.56***	0.55***	0.63***	0.56***	−0.38***	0.52***

na = Value not available as the scale was restricted to only one item. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

previous experimental evidence obtained from the sport context showed that peer leaders can also have a detrimental impact on TE (e.g., Fransen et al., 2015a, 2018). In other words, in order to predict the expected benefits of peer leadership, it is essential to take the *quality* of peer leaders into account, rather than the presence or the amount of leadership behaviors.

A second lacuna in the present research on peer leadership is that, while the effects on TE have been extensively studied, the benefits for health and well-being remain unknown. The few studies exploring these outcomes only tackled the health advantages for formal leaders (Lovelace et al., 2007). While research in sport contexts has demonstrated that peer leadership quality (PLQ) also entails benefits for team members' health and well-being (Fransen et al., 2020a), this relationship has not been established in organizational contexts. Several scholars have acknowledged a potential impact of shared leadership on health outcomes and proposed to further investigate the health and well-being benefits (e.g., Zhu et al., 2018; Sweeney et al., 2019). However, while some studies investigate the relation between shared leadership and health outcomes such as job satisfaction, reduced levels of conflict and job stress (e.g., Shane Wood and Fields, 2007; Wang et al., 2014), the relationships with health at a physical or psychological level have not yet been tested. This is unfortunate as promoting satisfied and healthy employees would be in an organization's best economic interest (Litchfield et al., 2016).

To address these research lacunae, the present study will investigate the *leadership quality* of peer leaders, more specifically the leadership quality of the best task, motivational, social, and external leader in the team. Furthermore, we will investigate the relationship between PLQ on the one hand and of individual perceptions of both TE and indicators of well-being on the other hand. We expect that the relations found in sports teams will hold for business teams as well.

H1: Peer leadership quality on each of the four leadership roles is significantly positively correlated with team effectiveness (H1a) and work satisfaction (H1b), while being significantly negatively correlated with burnout (H1c).

Aim 2: Is Team Identification the Missing Link?

While most of the research on shared leadership has primarily focused on the investigation of its direct effects, some scholars have also shed light on the mechanisms underpinning this relationship (e.g., Hoch, 2007). Previous research in this regard suggested the potential mediating role of employees' identification with their team (e.g., Zhu et al., 2017). This suggestion is in line with the social identity approach (SIA, Haslam, 2004), an integrative theoretical framework on (inter)group processes that has been extensively applied to organizations. SIA argues that the behavior of team members is shaped by thinking and behaving in terms of their shared social identity (i.e., as "us, team members") rather than in terms of their personal identity (i.e., as "you" and "me"). With respect to leadership, the SIA to leadership suggests that leaders are only effective to the extent that they succeed in managing – that is creating, representing,

advancing, and embedding – a shared social identity in their teams (i.e., they provide identity leadership; Haslam et al., 2011).

A large body of organizational research has evidenced the resulting benefits of these social identities, including employee performance, team satisfaction, and TE (e.g., Tanghe et al., 2010; Steffens et al., 2014; Reis and Puente-Palacios, 2019). Furthermore, a meta-analysis has shown that when employees identify strongly with their team or organization, this also benefited their health and well-being (Steffens et al., 2017). Several field studies in organizations further demonstrated the impact of perceived identity leadership by the formal leader on lower subsequent burnout among employees (Steffens et al., 2014, 2018). The underlying reasoning is that team identification allows employees to feel supported by their colleagues, thereby contributing to their ability to cope with stress (Haslam et al., 2009). In fact, a systematic review with studies conducted in more diverse applied contexts (e.g., in a community, health/clinical, educational, or organizational setting) revealed that team identification-building interventions benefit a variety of health outcomes, ranging from reduced stress, depression, and anxiety to enhanced well-being as well as cognitive and physical health (Steffens et al., 2020). Similar results have been recently found in the sport setting, where formal leaders as well as peer leaders demonstrating identity leadership, were found to create a psychologically safe environment through which individuals' burnout is buffered, thereby enhancing their health (Fransen et al., 2020c).

It should be noted, though, that when previous studies incorporated leadership as a predictor in their analysis, this leadership was related to the leadership of the formal leadership (e.g., the manager). To our knowledge, no organizational studies have yet sought to understand the role of team identification in explaining the relationship between informal PLQ and both the TE and member health and well-being. The present study aims to address this gap in the literature. To formulate our hypothesis, we rely again on previous sports research that demonstrated that the importance of identity leadership does not only hold for the coach as a formal leader, but also for peer leaders within the team (e.g., Steffens et al., 2014). More specifically, research has shown that team identification mediated the relationship between high-quality athlete leadership and TE (Fransen et al., 2015a, 2020a). Furthermore, a study with professional football teams revealed that the quality of peer leaders influenced athletes' health and burnout, but only to the extent that peer leaders were able to increase teammates' identification with their team (Fransen et al., 2020a). We expect that these relations observed in sport contexts will also hold for organizational contexts.

H2: Team identification mediates the relationship between peer leadership quality and team effectiveness (H2a), work satisfaction (H2b), and burnout (H2c).

Aim 3: The Role of the Formal Leader in Promoting Shared Leadership

Despite the benefits that shared leadership structures can create, little is known about the antecedents that can promote the quality

of these peer leaders. Even though research is still in its infancy, the formal leader is thought to play an essential role herein. Extant research suggests that a specific leading style of the formal leader, in particular empowering leadership (EL), facilitates the emergence of shared leadership within a work team (Margolis and Ziegert, 2016; Van Knippenberg, 2017). EL is defined as the extent to which leaders enhance autonomy, control, self-management, and confidence in their team (Chen et al., 2011). In other words, we expect that the more a formal leader engages in behaviors that psychologically empower employees, the more employees will be stimulated to engage in qualitative leadership.

H3: Empowering leadership behavior by the formal leader is positively related to higher peer leadership quality within the team.

Figure 1 represents the overall model that captures Hypotheses 1, 2, and 3.

Aim 4: The Barriers Withholding Formal Leaders From Shared Leadership

Despite the benefits that team members can obtain from shared leadership, formal leaders might consider the process of sharing leadership to be a threat to their formal status. According to Zhu et al. (2018), formal leaders can experience “psychological territory infringement” (p. 39). In other words, when team members occupy leadership roles, formal leaders might fear that the development of their own leadership capabilities can be inhibited. Other potential thresholds mentioned in literature are the fear of losing control, being perceived as lazy, or the idea that time-pressuring situations require vertical leadership structures (Ntoumanis and Mallett, 2014). It is important to examine whether these perceived thresholds actually exist or whether they are only fiction. However, as far as we know, no research in organizations has yet investigated the relationship between the quality of peer leadership on different roles and the perceived leadership quality of the formal leader. Preliminary evidence in sports teams suggests that players in teams with high- compared to low-quality peer leadership also perceived their coach as a better leader (Fransen et al., 2020d). This finding held for each of the four leadership roles

(e.g., the more task leadership quality on the team, the more players perceived their coach to be a good task leader). These findings suggest that when coaches stimulate athletes to engage in leadership responsibilities and thus become better peer leaders, these coaches will also be perceived as better leaders themselves. According to this study, coaches’ fear of losing authority when sharing their leadership cannot be considered justified. We expect that the same conclusion holds for organizational leaders.

H4: The leadership quality of the task, motivational, social, and external peer leader is positively related to the perceived quality of the formal leader’s leadership on each of the four roles.

METHODS

Procedure

The present study was carried out in Belgium and had a cross-sectional, quantitative design. Data were collected by means of an online survey. Participants were required to be at least 18 years old, to be employed in Belgium, and to have a direct supervisor. Therefore, only people working in organizations with hierarchical levels were targeted during data collection, whereas self-employed people without a leader were excluded.

First, human resource managers of organizations, as well as personal contacts (e.g., family, friends, and professional network), were randomly approached and contacted via mail with a written request to participate in a study about leadership and well-being at work. Anonymity and confidentiality were guaranteed and ethical approval for the implementation of this study was obtained from the Social and Societal Ethics Committee at KU Leuven (G-2016 09 630). Participation was voluntary and not reimbursed. However, as a motivational incentive, participation in a lottery was offered with a one-in-five chance of winning a €20 voucher from bol.com, if participants completed the survey and provided their email address. Upon agreement with the human resource manager, the survey was sent to participants’ email address. All items included in this survey were presented in the corresponding language of the participants (i.e., Dutch or French). Both translations of the questionnaires were conducted by native

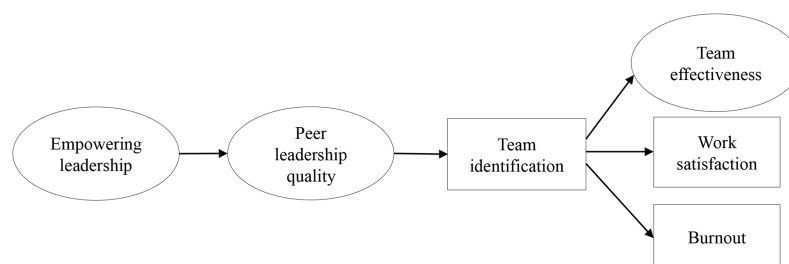


FIGURE 1 | Structural model representing the expected pathways of empowering leadership, peer leadership quality, and team identification as described in H1-4. Empowering leadership, peer leadership quality, and team effectiveness are depicted as latent variables inferred from their subscales, as discussed in the Methods section.

speakers and double-checked by the researchers for grammatical correctness and accuracy of content before distributing the survey.

Participants

A heterogeneous sample of 146 adult employees working in medium-sized to large organizations located in Flanders and Wallonia participated in this study. More specifically, the organizations mostly belonged to the industries of civil aviation, clothing manufacturing, retail, and education. Participants' age was retrieved through five age categories that ranged from 18 to 55+ years, with 16.4% of participants being between 18 and 25 years old, 39% of the participants between 25 and 35 years old, 14.4% between 35 and 45 years old, 19.9% between 45 and 55 years old, and 10.3% of the participants being older than 55 years.

In terms of gender, the sample consisted of 54.1% female and 45.9% male employees. Moreover, 76.7% of participants worked full-time, in contrast with the remaining 19.2% of participants working part-time, and 4.1% having another working format such as shiftwork or a mini job. Participants responded that there were on average 14 members in their team ($SD = 30.8$). The general work experience ranged between less than 1 year and more than 20 years with an average of 7 years ($SD = 1.3$). Finally, participants were employed in their present organization for an average of 5 years ($SD = 1.4$).

Measures

All measures were self-reports. The reliability of all scales and their respective subscales used to test H1, 2, 3, and 4 are reported in **Table 1**.

Empowering Leadership

The 22-item scale by Pearce and Sims (2002) was used with six subscales examining the degree to which the formal leader encourages self-reward, teamwork, participative goal setting, independent action, opportunity thinking, and self-development. These items were rated on an 11-point Likert scale, ranging between 0 (*disagree completely*) and 10 (*agree completely*), with an example item being: "My team leader advises me to coordinate my efforts with other individuals who are part of the team."

Peer Leadership Quality

This variable encompasses the four leadership roles by Fransen et al. (2014), applied to the organizational context (see **Table 2**). Perceived leadership quality on each of these roles was assessed by presenting the role definition, followed by the instruction "Think of a team member that corresponds best with this role and rate the quality to which he/she fulfills this role." Participants rated this measure on a 10-point Likert scale ranging from 0 (*very bad*) to 10 (*very good*). Additionally, we determined potential overlap between leadership roles by asking "Is this person the same as the one you indicated earlier as task/motivational/social leader?" Based on this information, we identified whether the four leadership roles

were occupied by one single leader or two, three, or four different leaders.

Formal Leadership Quality

Immediately after rating the perceived leadership quality of a team member on a specific role, participants were asked to "Think of your formal leader and rate his/her quality on this role." Again, this was asked for all four leadership roles with ratings ranging from 0 (*very bad*) to 10 (*very good*), which allowed for comparison between formal and peer leaders.

Team Identification

Participants' identification with their team was measured with five items used by van Dick et al. (2006). This measure was rated on a 7-point Likert-scale ranging from 1 (*disagree completely*) to 7 (*agree completely*), with an example item being "I consider myself as part of my team."

Team Effectiveness

Individuals' perceived effectiveness of the team was examined with an overall scale of effectiveness by Pearce and Sims (2002) using 26 items (e.g., "The team is highly effective at implementing solutions"). Participants rated this measure on an 11-point Likert scale ranging between 0 (*disagree completely*) and 10 (*agree completely*). Here, seven subscales distinguished between output, quality, change, organizing and planning, interpersonal, value, and overall effectiveness.

Work Satisfaction

A total of 11 items from the Job Diagnostic Survey (van Dick et al., 2001) were used that tap into both the global work satisfaction and the satisfaction with the context. Participants rated their work satisfaction on a 7-point Likert-scale ranging from 1 (*not applicable*) to 7 (*fully applicable*). An example item is "I am generally satisfied with the kind of work I do in this job."

Burnout

The extent to which the participants experienced burnout was measured using the 9-item subscale "Emotional exhaustion" of the Maslach Burnout Inventory (Maslach and Jackson, 1981) with ratings on a 7-point Likert-scale ranging from 1 (*never*) to 7 (*every day*). A sample item is "I feel emotionally drained from my job."

Data Analysis

Descriptive statistics (i.e., scale means and standard deviations) were computed as well as intercorrelations to test H1, H3, and H4. The proposed mediation in H2 was tested via Structural Equation Modeling (SEM) in R, using the maximum likelihood estimation method with robust standard errors (MLR). The degree of "fit" of the entire model was based on the following indices: the normed chi-square statistic (χ^2/df), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error (RMSEA). While a non-significant chi-square

TABLE 2 | Definitions of the four leadership roles based on the work of Fransen et al. (2014), that were presented to the participants.

Leadership role	Definition
Task leader	A task leader is in charge at work; this person helps the team to focus on goals and helps in tactical decision-making. Furthermore, the task leader gives colleagues tactical advice during work processes and adjusts them if necessary.
Motivational leader	The motivational leader is the biggest motivator at work; this person can encourage colleagues to go to any extreme; this leader also puts fresh heart into colleagues who are discouraged. In short, this leader steers all the emotions at work in the right direction in order to perform optimally as a team.
Social leader	The social leader has a leading role besides work; this person promotes good relations within the team and cares for a good team atmosphere, e.g., during breaks, in the cafeteria, or during social team activities. Furthermore, this leader helps to deal with conflicts between colleagues outside of work. This person is a good listener and is trusted by the colleagues.
External leader	The external leader is the link between our team and the people outside; this leader is the representative of our team toward the management. If communication is needed with external organizations or media, this person will take the lead. This leader will also communicate the guidelines of the management to the team.

(χ^2) implies a good fit of the data to the hypothesized model, the significance of this statistic increases with sample size. Therefore, we used the normed χ^2/df , which indicates a good fit when its value is below 3:1 (Kline, 2005). According to Lance et al. (2006), the values of CFI and TLI ideally must be larger than 0.90 to accept a good fit, while RMSEA should be 0.08 or lower to indicate an acceptable fit.

As the impact of good leadership within the team might differ depending on whether employees are full-time vs. part-time employed, as well as upon the size of the team, we conducted regression analyses in SPSS to explore the moderating effect of type of employment and team size. Insights about these potential moderating effects can provide useful information about the applicability of shared leadership in diverse work settings.

RESULTS

Descriptive Statistics

Table 1 reports the means, standard deviations, and correlation coefficients of the study variables. All correlations are significant in the predicted directions ($p < 0.05$). In the following section, the results will be reviewed as a function of the successive hypotheses.

However, before conducting all analyses for hypothesis testing, we aimed to gain insight into the extent to which leadership is currently shared within participants' teams. More specifically, this step can offer insight into whether the four leadership roles identified by Fransen et al. (2014) are generally distributed among different team members or rather occupied by one single team member. To identify the number of peer leaders that occupied the roles of task, motivational, social, and external leader, we asked participants to indicate whether the best leader on one leadership role equaled the best leader indicated on the other leadership roles. Taken together, the results revealed that only 17.0% of the participants indicated that the four leadership roles were occupied by one single leader; 18.9% stated that these roles were taken on by two different team members; 40.9% reported that the roles were fulfilled by three different team members and 23.5% of the participants said that the four leadership roles were occupied

by four different team members. In other words, an overwhelming majority of most employees (i.e., 83%) indicated that the leadership in their team was shared by different team members. Similar to sport contexts, where 70.5% of the players perceived teammates other than the team captain as more capable to fulfill these roles (Fransen et al., 2014), sharing leadership at work seems to be already acknowledged and adapted in our study sample.

Aim 1: How Does Peer Leadership Quality Benefit the Team and Its Members?

Our first aim was to explore the benefits of PLQ for TE and team members' work satisfaction and burnout, as perceived by each individual. In line with H1a, the correlations in **Table 3** illustrates moderate positive relationships between perceived PLQ on each of the four leadership roles and the different aspects of TE ($p < 0.01$). In other words, the higher the perceived quality of task, motivational, social, and external peer leadership, the higher all seven dimensions of perceived TE. Aside from the significant contribution of each role, task leadership had the strongest relationship with TE ($r = 0.56$, $p < 0.001$).

Next, in line with H1b, the perceived leadership quality on all four leadership roles related positively to team members' satisfaction with work ($p < 0.001$). Finally, in line with H1c, the results revealed significant negative correlations between PLQ and burnout ($p < 0.05$). More specifically, the better the

TABLE 3 | Correlations between PLQ of each leadership role and formal leadership quality.

	Peer leadership quality			
	Task leadership	Motivational leadership	Social leadership	External leadership
Perceived leadership quality of formal leader...				
as task leader	0.60***	0.41***	0.44***	0.37***
as motivational leader	0.43***	0.47***	0.47***	0.39***
as social leader	0.42***	0.44***	0.57***	0.49***
as external leader	0.51***	0.45***	0.45***	0.65***

*** $p < 0.001$.

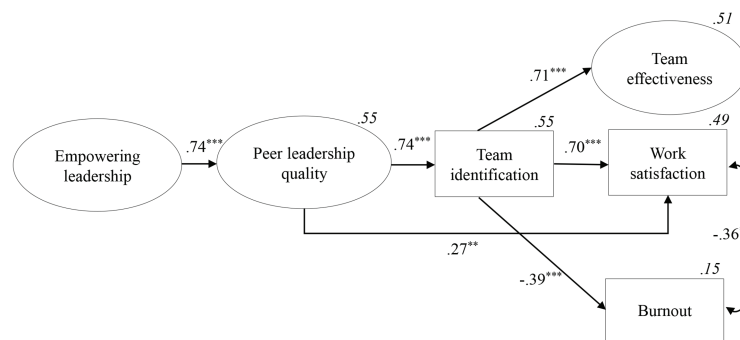


FIGURE 2 | Structural model, representing the influence of empowering on peer leadership quality, with the latter in turn influencing (a) team effectiveness via full mediation of team identification, (b) burnout via the same full mediation of team identification, and (c) work satisfaction directly and indirectly via a partial mediation of team identification. Two covariations were included in the model: one between two subscales of team effectiveness (i.e., interpersonal and value effectiveness) and one between work satisfaction and burnout. Standardized regression coefficients are shown along each path as well as the proportions of explained variance (in italics). $^*p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

leaders within the team, the less burnout is experienced by team members, a finding that held for each of the four leadership roles. Here, compared to all other roles, social leadership was most strongly related to burnout ($r = -0.31$, $p < 0.001$). Taken together, these findings suggest an overall positive relationship between the leadership quality within the team on all four leadership roles and TE as well as team members' work satisfaction and burnout.

Aim 2: Is Team Identification the Missing Link?

Secondly, we aimed to shed more light on the underpinning mechanisms – and, in particular the role of team identification – explaining these relationships. **Table 1** reveals positive correlations between the four leadership roles and team identification ($p < 0.001$). As for mediation, the resulting model using SEM is depicted in **Figure 2** and the results indicated a good model fit with $\chi^2 = 293.32$; $\chi^2/df = 1.76$; $df = 166$; $p = 0.000$; $TLI = 0.93$; $CFI = 0.94$; $RMSEA = 0.08$; and $SRMR = 0.08$. Based on a suggested modification index for a better model fit, we included two covariations: one between two subscales of TE (i.e., interpersonal and value effectiveness) and one between work satisfaction and burnout. Both covariations were significant ($\beta = 0.62$, $p < 0.001$ and $\beta = -0.36$, $p < 0.001$, respectively), which can be attributed to variance being explained by variables other than the ones included in the present model.¹

First, the model revealed a significant (and strong) positive relationship between PLQ and team identification ($\beta = 0.74$, $p < 0.001$). Second, the model revealed significant direct relationships between team identification and all work-related

outcomes, including TE ($\beta = 0.71$, $p < 0.001$), work satisfaction ($\beta = 0.70$, $p < 0.001$), and burnout ($\beta = -0.39$, $p < 0.001$).

The next step involved the examination of the indirect effects of PLQ to all three outcomes for the paths going through team identification. First, the results suggest a significant indirect effect from PLQ to TE ($IE = 0.53$, $p < 0.001$). This result implies a full mediation of team identification between PLQ and TE, providing support for H2a.

Second, the results suggest a significant indirect effect from PLQ to work satisfaction ($IE = 0.52$, $p < 0.001$). In contrast to the results described above, the direct path between PLQ and work satisfaction remained significant, also when team identification was added as a mediator ($\beta = 0.37$, $p < 0.01$). This result indicates that the relationship between PLQ and work satisfaction is only partially mediated by team identification. Therefore, H2b can only partially be confirmed.

Third, we found a significant indirect effect from PLQ to burnout ($IE = -0.29$, $p = 0.001$). This finding suggests a full mediation of team identification between PLQ and burnout, thereby confirming H2c. All standardized path coefficients and proportions of explained variance related to H2 are displayed in **Figure 2**.

Furthermore, regression analyses in SPSS did not reveal a moderating role of employment (part-time vs. full-time), reflected by a non-significant moderating effect of employment for TE ($F = 26.87$, $R^2 = 0.29$, $\beta = 0.12$, $p = 0.34$), work satisfaction ($F = 35.14$, $R^2 = 0.34$, $\beta = -0.05$, $p = 0.72$), and burnout ($F = 8.76$, $R^2 = 0.12$, $\beta = 0.20$, $p = 0.16$).

Also, team size did not have a moderating role on the impact of PLQ for TE, work satisfaction, and burnout ($F = 22.46$, $R^2 = 0.25$, $\beta = -0.09$, $p = 0.24$; $F = 37.54$, $R^2 = 0.35$, $\beta = 0.04$, $p = 0.62$; $F = 5.55$, $R^2 = 0.07$, $\beta = -0.05$, $p = 0.59$, respectively). We should note, though, that there was a large variety in team sizes (ranging between 2 and 280 people on one team). To ensure that our analysis for the moderating role of team size was not influenced by outliers, we also performed the analysis after eliminating 10 unusually large outliers (i.e., team sizes larger than 21).

¹Given the complexity of the model, the model fit was tested again with less parameters. More specifically, instead of testing the model with all parameters (i.e., all subscales) we included only the composite scores of empowering leadership and team effectiveness. The model fit remained acceptable with $\chi^2 = 69.65$; $\chi^2/df = 2.68$; $df = 26$; $p = 0.003$; $TLI = 0.92$; $CFI = 0.94$; $RMSEA = 0.08$; and $SRMR = 0.07$.

As a consequence, the results for TE and work satisfaction became significant ($F = 17.30$, $R^2 = 0.21$, $\beta = -0.46$, $p < 0.01$; $F = 20.54$, $R^2 = 0.24$, $\beta = -0.49$, $p < 0.01$), meaning that the effectiveness of PLQ was even more prominent in smaller teams. For burnout, our results remained the same and team size did not act as a moderator ($F = 1.01$, $R^2 = 0.02$, $\beta = 0.12$, $p = 0.16$), which implies a consistent strength of the relationship between PLQ on burnout regardless of the size of the team.

Aim 3: The Role of the Formal Leader in Promoting Shared Leadership

With respect to H3, SEM revealed a positive relationship between EL and perceived PLQ. This finding suggests that the more the formal leader is seen as engaging in EL behaviors, the better the team members perceive the quality of leadership within the team ($\beta = 0.74$, $p < 0.001$). Furthermore, the moderately strong positive correlations depicted in **Table 1** make clear that EL of the formal leader is related to improved PLQ on each of the four roles ($r = 0.48$, $r = 0.47$, $r = 0.52$, $r = 0.55$ for task, motivational, social, and external leadership, respectively; $p < 0.001$). In other words, the more the formal leader engages in EL, the higher the team members will rate the quality of task, motivational, social, and external peer leadership within the team, which confirms H3.

Aim 4: The Barriers Withholding Formal Leaders From Shared Leadership

Finally, in line with H4, the correlations in **Table 3** indicated significant positive and moderately strong correlations for the relation between perceived leadership quality and the formal leader's perceived leadership quality. Notably, this finding applied to all four leadership roles ($r = 0.37$ – 0.65 , $p < 0.001$). In other words, the higher the perceived quality of, for example, the social peer leader within the team, the more the team members perceived their formal leader as a better social leader.

DISCUSSION

The present study aimed to provide a deeper insight into the nature of shared leadership in organizations by investigating the leadership of team members, thereby counterbalancing the abundance of research on leadership by the formal leader (Kozlowski and Bell, 2013). More specifically, we wanted to address four different research questions to advance research in this area.

Firstly, we aimed to provide novel insights into the benefits of shared leadership. Our findings revealed significant positive relationships between the quality of peer leadership and both perceived performance (i.e., TE) and well-being indicators (i.e., work satisfaction and burnout). While these findings corroborate previous research highlighting the importance of shared leadership structures in organizations for TE (e.g., Hoch, 2007; Zhu et al., 2018), they add to the literature that the quality of the leaders within the team is also important for team

members' health and well-being. It is noteworthy that these findings held for each of the four leadership roles (i.e., task, motivational, social, and external leadership), thereby highlighting the importance of each of these roles. These results thus suggest that previous findings in sport contexts may also apply to organizations in regard to each of those outcomes (Fransen et al., 2014, 2017, 2020a).

Additionally, we tested for moderating effects of contextual variables. Until now, despite the important practical implications, most research on factors promoting or inhibiting shared leadership has neglected organizational-level or structure-based factors (Zhu et al., 2018). Our findings revealed that employment (i.e., working part-time vs. full-time) did not appear to moderate the relationship between high-quality peer leadership and all critical work outcomes. This suggests that the above findings can be generalized across diverse work settings. The link between having good peer leaders within the team and TE and well-being thus remains stable regardless of the time employees spend at work.

Next, also team size did not act as a moderator for the relationship between high-quality peer leadership and burnout. Again, this finding suggests that shared leadership consistently tempers perceived burnout regardless of the number of people constituting a team. However, this does not hold for TE and work satisfaction, where the effect of team size did appear to be stronger in smaller teams. This finding is in line with the theorizing of Zhu et al. (2018) that larger teams can mitigate the effect of shared leadership due to an increased risk of free-loading, social riding, and coordination failures. However, in a meta-analysis by Nicolaides et al. (2014) who tested the moderating role of team size in the shared leadership – performance relationship – the researchers did not find a moderating effect of team size. Resolving these contradictory findings will be particularly important as organizational teams can vary widely in size. In sum, these findings suggest a generalizable impact of shared leadership interventions on specific outcomes.

Our second aim was to shed a deeper light on the mechanisms underpinning these relationships. Our findings showed support for the SIA to leadership at various levels (Haslam et al., 2011). First, high-quality peer leadership on each of the four roles was related to higher team identification among team members. Second, the more the team members identified with their team, the higher their reported TE. Third, the more the team members identified with their team, the higher their reported work satisfaction and the lower their burnout.

The latter finding is in line with previous research on the relationship between team identification and team members' well-being (e.g., Steffens et al., 2017). Moreover, it supports recent work on the “social cure,” highlighting the health benefits of this shared feeling of “we” and “us” (Jetten et al., 2012; Haslam et al., 2019). Yet, while most of this evidence is built on the evidence of identity leadership demonstrated by formal leaders (i.e., identity leadership; Haslam et al., 2011), the present study adds that also leaders within the team are key to cultivate a shared identity and by doing so, boost the team's effectiveness as well as co-workers' health

and well-being. We should note, though, that the relationship between PLQ and work satisfaction appeared to be only partially mediated by team identification. PLQ thus also benefits work satisfaction in a direct way. One explanation might be that, for instance, the social leader directly influences work satisfaction by ensuring a close bond among members, providing support as a trusted person and creating a pleasant atmosphere, rather than by capitalizing on team identification. Indeed, research shows that aspects linked to what constitutes a “social leader” in this study, such as perceived collegial support, can create a favorable work atmosphere causing team members to develop positive job attitudes (e.g., Gaan, 2008; Almeida et al., 2020). For instance, a study among business managers by Bahniuk et al. (1990) revealed that job satisfaction was predicted by support from colleagues.

Our third aim was to explore the role of the formal leader in promoting shared leadership. Our findings revealed that formal leaders stimulated PLQ by engaging in EL, which in turn seems to be an asset for reaching critical work outcomes. According to a study by Kim and Beehr (2017), a possible mechanism underlying this relationship is the enhanced psychological states in team members, such as self-efficacy and psychological ownership. By encouraging an initiative among employees, such as letting them make decisions, a sense of responsibility toward their job is established, which in turn is reflected in positive workplace behavior such as peer leadership.

Fourth and finally, we took a closer look at possible barriers withholding formal leaders from implementing shared leadership. As in sport settings (Fransen et al., 2020d), we found that the higher the perceived leadership quality within the team, the more the formal leader is considered to be a good leader. Thus, empowering employees to take up leadership roles within their team has the potential to strengthen their formal leadership status instead of reducing it.

Practical Implications of the Findings

The present study offers a more detailed understanding of the practical value of shared leadership in work teams. As a starting point, we recommend formal leaders to reconsider their management style and to empower their employees. EL, such as promoting participative goal setting or self-development, can stimulate employees to take on and fulfill peer leadership roles well. Organizations can help formal leaders in empowering their team members by providing them with specific training. First, team members need to become motivated to take up responsibility. To do this, the formal leader can formally appoint leaders within the team and give each member a participatory role which capitalizes on their own expertise. Also, demonstrating good listening skills, asking for input, and delegating authority to their employees are skills leaders can be taught in order to engage in EL (Lee et al., 2018).

Next, the findings clearly stress the positive relationship between high-quality peer leadership and both TE and well-being in teams across a wide array of organizations. These favorable outcomes further support the practical relevance of

role differentiation and team identification in organizational contexts (cf. Carson, 2006).

Given the positive relationship with each of the four leadership roles, attention toward more diverse roles within teamwork is helpful, rather than simply concentrating on general or task-related leadership. With this principal guideline in mind, it is critical that team leaders identify the essential leadership roles in their organization and formally appoint the right leaders for these roles. One method by which the appropriate peer leaders can be identified is shared leadership mapping that has been proven effective in organizational teams (Fransen et al., 2015b, 2020b). In this analysis, team members rate each other's quality on different peer leader roles, which results in clear insights about the key figures within the team. Following this, formal leaders can then invest time in the further development of those peer leaders, for example by improving their identity leadership (Haslam et al., 2011). With help of the 5R^s program by Fransen et al. (2020b), team members learn how to cultivate a shared social identity to grow and flourish as a team, rather than as individuals. Preliminary evidence on the impact of the 5R^s program in organizational teams points towards the program's potential to improve team functioning as well as strengthening the team identity and providing individuals the opportunity to grow and flourish (Fransen et al., 2020b).

Limitations of the Present Study

Apart from the strong points of this study, such as the inclusion of employees from a diverse set of organizations, a critical look also reveals some shortcomings. First, notwithstanding the significant and promising relationships, no causal effects can be claimed due to the cross-sectional nature of this study. Further, these relationships need to be interpreted with caution given the relatively small sample size in relation to the number of parameters in this model ($N = 146$).

Second, the theoretical framework of this study builds upon the four leadership roles derived from sports teams (Fransen et al., 2014). The findings of our study suggest that in organizations the quality of peer leaders on each of these roles is positively related to both TE and well-being, thereby providing initial confirmation on the leader categorization in sport. Nevertheless, it is likely that this four-role typology is not exhaustive. Future research is needed to identify alternate organization-specific roles for peer leaders that might even have a stronger effect on TE and well-being of employees.

Third, the study findings relied on participants' individual perceptions about their team rather than team-level perceptions. In other words, while we are sure that the majority of the collected data stems from employees working in different teams (as they indicated different organizations), some of the participants might have worked in the same team. Therefore, the current sample did not allow us to identify clusters within our sample and to analyze our data at the team or organizational level. A fruitful avenue for future research would thus be to analyze the generalizability of our findings while controlling for team- or organizational-level effects.

Future Research

Despite the increased awareness of shared leadership and its value, some uncharted areas still await future research. First, besides team size and type of employment, future research might investigate additional moderators that influence the effectiveness of shared leadership. For example, Bligh et al. (2006) argued that teams dealing with complex tasks might benefit more from shared leadership than teams dealing with simple tasks since the active inclusion of multiple members might enhance a variety of work processes.

Second, in this study participants were asked to only think of the best team member when rating PLQ. However, although other team members might not be perceived as the best leader in a specific leadership role, they can still be influential. Initial evidence from the sport context already showed that sports teams reap greater benefits of a shared leadership structure, in which more than one player fulfills a leadership role (e.g., having two task leaders instead of one; Leo et al., 2019). By mapping the entire leadership structure in the team (e.g., using social network analysis), future research can investigate whether having more leaders on each role entails higher benefits for TE and team member well-being.

Conclusion

To conclude, this study suggests that shared leadership constitutes a promising approach to leadership for various reasons. The theoretical framework of four leadership roles derived from sports research by Fransen et al. (2014) also seems to be applicable in organizations. In fact, high-quality peer leadership in organizational teams on each of these roles appears to relate positively to work satisfaction and TE and negatively to burnout. Drawing on the SIA, these relationships were found to be mediated by team identification. Moreover, by empowering their team members to take the lead in different roles, formal leaders can stimulate high-quality peer leadership on these roles, and by doing so, are also perceived as better leaders themselves. Based on these study findings, then, it can be concluded that the perceived barriers withholding formal leaders do not necessarily hold ground and the fear of losing their own leadership status should not stop them from implementing shared leadership within their teams, even on

the contrary. At the end of the day, a strong shared team identity seems to play a crucial role in successfully implementing shared leadership. This “sense of us” will be particularly important, if not necessary, to reap the benefits of teamwork within the organizations of today and tomorrow.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The current study was reviewed and approved by the Social and Societal Ethics Committee at KU Leuven (G-016 09 630). The participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors contributed to the article and approved the submitted version. The first author CME was responsible for the data collection and writing of the first draft of this manuscript. Throughout this process, the co-authors KF and FB set up the design of the study and consistently provided feedback on the content, layout, and writing style.

FUNDING

This project was supported by the Internal Funds KU Leuven (C3 - project) with the number 3M190308.

ACKNOWLEDGEMENTS

We would like to thank Jeroen Stouten for his help in designing the study and Stef Van Puyenbroeck for his assistance in the statistical analyses.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Shared Leadership and Team Effectiveness: An Investigation of Whether and When in Engineering Design Teams

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OPEN ACCESS

Edited by:

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University of Windsor, Canada

Reviewed by:

Floris Tijmen Van Vugt,
Université de Montréal, Canada
Osman Titrek,
Sakarya University, Turkey

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Specialty section:

This article was submitted to
Performance Science,
a section of the journal
Frontiers in Psychology

Received: 03 June 2020

Accepted: 24 December 2020

Published: 18 January 2021

Citation:

Wu Q and Cormican K (2021)
Shared Leadership and Team
Effectiveness: An Investigation
of Whether and When in Engineering
Design Teams.
Front. Psychol. 11:569198.
doi: 10.3389/fpsyg.2020.569198

Shared leadership is lauded to be a performance-enhancing approach with applications in many management domains. It is conceptualized as a dynamic team process as it evolves over time. However, it is surprising to find that there are no studies that have examined its temporally relevant boundary conditions for the effectiveness of the team. Contributing to an advanced understanding of the mechanism of shared leadership in engineering design teams, this research aims to investigate *whether* shared leadership is positively related to team effectiveness and *when* shared leadership is more likely to be effective. Using a field sample of 119 individuals in 26 engineering design teams from China and the technique of social network analysis, we found that, consistent with cognate studies, shared leadership is positively related to team effectiveness when measured in terms of team task performance and team viability. Moreover, by integrating the project life cycle as a moderator, this study is among the first to investigate the temporal factors, for the effectiveness of shared leadership. The result shows that the stage of the project life cycle moderates the positive shared leadership-team effectiveness relationship, such that this association is stronger at the early phase than at the later phase of the project. Overall, these findings offer insightful thoughts to scholars in the field of shared leadership and bring practical suggestions for project managers in business who seek to implement best practice in organizations toward high team effectiveness.

Keywords: shared leadership, team effectiveness, project life cycle, social network analysis, engineering design teams

INTRODUCTION

In recent years, leadership researchers have emphasized a team-level phenomenon, where leadership is carried out by the team as a whole, rather than exclusively by those at the top or by those in formal leadership positions (Carson et al., 2007; Pearce et al., 2014). As such, the notion of shared leadership has gained more traction in the extant literature. By definition, shared leadership is described as “a dynamic, interactive influence process among individuals in groups

for which the objective is to lead one another to the achievement of group or organizational goals or both” (Pearce and Conger, 2003, p. 1). As Acar (2010) noted, shared leadership represents a fundamental shift away from the notion of a single, appointed leader, to the idea that team members mutually influence each other and collectively share leadership roles, responsibilities and functions. Recent empirical work has provided evidence for the important role of shared leadership in groups (Nielsen and Daniels, 2012; Nicolaidis et al., 2014; Sousa and Van Dierendonck, 2016; Sun et al., 2016). More interestingly, some studies have even found that shared leadership is more influential than convectional vertical leadership for team effectiveness (Pearce and Sims, 2002; Ensley et al., 2006). However, our understanding of *whether* shared leadership is positively related to team effectiveness and *when* shared leadership is more likely to be effective is still limited in at least three fundamental ways.

First, in recent years, researchers and practitioners have advocated the benefits of shared leadership as a way to promote team effectiveness. For example, Ramthun and Matkin (2012) stated that shared leadership is often advantageous, since members are more likely to follow the person having the best knowledge and skills than depending solely on the vertical influence process of traditional leadership. Indeed, many other empirical studies have also demonstrated that teams with shared leadership yield higher team effectiveness (Pearce and Sims, 2002; Wang et al., 2014; Serban and Roberts, 2016). However, we must caution that this is not always the case. Fausing et al. (2013) and Mehra et al. (2006) failed to find support for this significant and positive relationship, and Boies et al. (2011) even found that shared leadership exerts a negative influence on team effectiveness. Such inconsistent findings point to the need for more empirical evidence. Therefore, in order to enrich our understanding of the value of shared leadership, the first purpose of our study is to explicitly examine the shared leadership – team effectiveness relationship. In this study, we define team effectiveness as the extent to which teams meet the expectations of organizations (Essens et al., 2009). This viewpoint encourages us to think about team effectiveness from a multidimensional perspective. Consequently, we follow Aube and Rousseau (2005), Balkundi and Harrison (2006), and Mathieu et al. (2008), who consider team effectiveness from two distinct aspects: team task performance and team viability. Team task performance refers to how well the group meets (or even exceeds) work expectations while team viability is the potential of teams to retain its members and to function effectively over time (Balkundi and Harrison, 2006).

Second, in order to gain a more fine-grained understanding of the impacts of shared leadership, unanswered questions must be addressed. More specifically, there is a clear need to investigate the temporally relevant moderators for its effectiveness. Researchers have emphasized that shared leadership is a dynamic, emergent, time-varying construct (Avolio et al., 2009) that is affected by the environment of a team (Carson et al., 2007; Wu et al., 2020) and task characteristics (Serban and Roberts, 2016; Hans and Gupta, 2018). Therefore, continuous changes in the inputs, processes and outputs of different phases of the project life cycle could influence the emergence of shared

leadership in teams (Wu and Cormican, 2016) as well as its relationship with team effectiveness. However, the potential moderating impact of the project life cycle for the effectiveness of shared leadership is not well theoretically developed nor rigorously empirically tested. This important unaddressed gap needs further attention so as to provide insights into the boundary conditions regarding when shared leadership is more or less influential to team effectiveness. Consequently, the second research goal is to focus on the dynamic nature of shared leadership and investigate the moderating effect of the project life cycle in the relationship between shared leadership and team effectiveness.

Third, although there is growing interest in the shared leadership domain, studies concentrating on project teams are still limited and under-developed (Scott-Young et al., 2019). Shared leadership theory has been widely spread and applied across a range of team types, e.g., top management teams (Singh et al., 2019), entrepreneurial teams (Zhou, 2016), consulting teams (Carson et al., 2007), and change management teams (Pearce and Sims, 2002). However, there is a dearth of investigations relating to project teams. While the current workplace is becoming increasingly project-centric (Scott-Young et al., 2019), there remain very few studies focusing on shared leadership theory in the project management context. In order to extend the external validity of the shared leadership construct in project settings, this study examines the effectiveness of shared leadership in project-based engineering design teams. Moreover, as project teams uniquely have definitive start and end times based on the duration of the tasks (Farh et al., 2010), it is well suited to help explain when shared leadership is more likely to be effective in teams.

Taken together, this research seeks to enrich our understanding of the mechanisms of shared leadership and investigates *whether* and *when* shared leadership is positively related to team effectiveness in engineering design teams. To do this, we used the social network approach to measure the construct of shared leadership by calculating network density and creating binary matrices as well as sociograms. Team effectiveness was measured using nine items consisting of two separate, theoretically derived subscales: *team task performance* and *team viability*. Moreover, an internal consistency analysis and confirmatory factor analysis was performed to assess the reliability and validity of our measurement model. We then conducted a two-way moderated hierarchical regression analysis (Carson et al., 2007; Erkutlu, 2012; Fausing et al., 2013) in this study so as to test hypotheses proposed. By doing so, our study makes several significant contributions: (1) it extends a line of research and explicitly examines the relationship between shared leadership and team effectiveness; (2) it builds on the dynamic nature of shared leadership and is among the first to investigate an important temporal moderator, the project life cycle, for the effectiveness of shared leadership; (3) it adds to the academic debate by extending the external validity of shared leadership theory in engineering design teams; (4) it brings insightful thoughts to the field of project management by providing practical suggestions for project managers in business who seek to implement best practice in their organizations.

THEORY AND HYPOTHESES

Shared Leadership Theory

Leadership scholars have realized the importance of shared leadership and worked to understand how to conceptualize it, measure it, and to assess what impacts it brings to teams. **Table 1** presents details of relevant prior empirical studies. As illustrated, conceptually, shared leadership is a team-centric phenomenon (Ensley et al., 2006; Serban and Roberts, 2016) whereby team members engage in “leadership roles and responsibilities on behalf of the team” (Robert and You, 2018, p. 503), and “accepts their colleagues’ leadership” (Aubé et al., 2017, p. 199). Furthermore, shared leadership is not a static process; it is defined as an emergent, dynamic phenomenon that unfolds over time (Avolio et al., 2009; Drescher et al., 2014; Wang et al., 2014).

According to Carson et al. (2007), shared leadership is considered in terms of a continuum ranging from low to high, which implies that shared leadership is not a rigid either-or category, but occurs in every group at various levels (Liu et al., 2014).

While progress has been made relating to the definitions of shared leadership, many empirical studies have centered on what impacts shared leadership brings. As shown in **Table 1**, the positive relationship between shared leadership and team performance has received much attention (Sivasubramaniam et al., 2002; Ensley et al., 2006; Mehra et al., 2006; Carson et al., 2007; Drescher et al., 2014). Additionally, shared leadership is also demonstrated to be positively related to team functioning (Bergman et al., 2012), team proactive behavior (Erkutlu, 2012), team and individual learning (Liu et al., 2014), team member’ diversity and emotional conflict (Acar, 2010), team

TABLE 1 | Definitions, measures, and impacts of shared leadership.

Studies	Definitions	Measures	Contexts	Countries of sample	Dependent variables
Pearce and Sims (2002)	A group process in which leadership is distributed among, and stems from, team members (p. 172).	Aggregation	Change management teams	United States	Team effectiveness (self-reported and manager ratings)
Sivasubramaniam et al. (2002)	Collective influence of members in a team on each other (p. 68).	Aggregation	Undergraduate student teams	United States	Team performance (self-reported)
Ensley et al. (2006)	A team process where leadership is carried out by the team as a whole, rather than solely by a single designated individual (p. 220).	Aggregation	Top management teams	America	Team performance (objective indicators)
Mehra et al. (2006)	Shared, distributed phenomenon in which there can be several (formally appointed and/or emergent) leaders (p. 233).	Social network analysis	Financial service sales teams	United States	Team performance (self-reported and objective indicators)
Carson et al. (2007)	An emergent team property that results from the distribution of leadership influence across multiple team members (p. 1218).	Social network analysis	Consulting teams (MBA students)	United States	Team performance (external ratings)
Acar (2010)	The sharing of leadership roles, responsibilities, and functions among all group members (p. 1740).	Aggregation	Students teams	United States	Diversity and emotional conflict (self-reported)
Bergman et al. (2012)	The number of members on the team who performed positive leadership behaviors; and the amount of leadership behavior exhibited by the team (p. 26).	Social network analysis	Decision making teams (undergraduate students)	United States	Team Functioning (self-reported)
Erkutlu (2012)	Serial emergence of temporary leaders, depending on the tasks facing the team and the knowledge, skills and abilities of the team members (p. 104).	Aggregation	Commercial bank teams	Turkey	Team proactive behavior (self-reported)
Drescher et al. (2014)	An emergent property of a group where leadership functions are distributed among group members (p. 772).	Aggregation	Strategy game teams	Worldwide	Team performance (objective indicators)
Liu et al. (2014)	Involves non-hierarchical relationships and describes a relational phenomenon that is characterized with a dynamic, interactive influence process among individuals in the team (p. 284).	Social network analysis	Work teams	China	Team and individual learning
Lee et al. (2015)	A voluntarily, informally emergent structure beyond vertical leadership (p. 47).	Social network analysis	E-learning teams (undergraduate students)	South Korea	Team creativity (self-reported)
Serban and Roberts (2016)	A team-based collective phenomenon (p. 182); The actions and decisions of a team are not the result of a single leader acting toward the team, but of the team itself (p. 181).	Social network analysis	Student teams	England	Task and team satisfaction, team performance (self-reported)
Chiu et al. (2016)	Emended in interaction among team members (p. 1707).	Social network analysis	Work teams	China	Team performance (manager ratings)
Aubé et al. (2017)	Each team member engages in leadership functions and accepts their colleagues’ leadership (p. 199).	Social network analysis	Project teams (students)	Canada	Teamwork behaviors (self-reported)
Robert and You (2018)	The degree to which the typical team member engages in leadership roles and responsibilities on behalf of the team (p. 503)	Social network analysis	Virtual teams (students)	United States	Team members’ trust, autonomy, satisfaction (self-reported)

members' trust, autonomy and satisfaction (Robert and You, 2018). These findings are encouraging and suggest the need for more sophisticated designs on the notion of shared leadership. Accordingly, this study extends a line of research to further examine its relationship with team effectiveness and goes beyond simple relationships to investigate when shared leadership plays a stronger or weaker role in the effectiveness of teams. The relevant research hypotheses are proposed below.

Shared Leadership and Team Effectiveness

Based on the work of Aube and Rousseau (2005), Balkundi and Harrison (2006), and Mathieu et al. (2008), team effectiveness is considered in terms of two distinct aspects: team task performance (how well the group meets (or even exceeds) work expectations) and team viability (the potential of teams to retain its members and to function effectively over time). This assessment conforms to the classic work of Barrick et al. (1998), who suggested that a comprehensive assessment of team effectiveness should capture both current team effectiveness (i.e., present task performance) and future team effectiveness (i.e., capability to continue working together). Therefore, this research adopts a broad perspective to team effectiveness and explores the relationship between shared leadership and team effectiveness.

First of all, this study expects that shared leadership is positively associated with team task performance. As suggested by Day et al. (2004), shared leadership advances the social capital of the team *via* the utilization of team resources such as the knowledge and capability of group members, which subsequently fosters team task performance. Katz and Kahn (1978) also proposed that when group members offer leadership to others and to the mission or purpose of their group, they bring more personal and organizational resources to the task, share more information, and they experience greater commitment. Further, when group members are influenced by their fellows, team functioning is improved as high levels of respect and trust are evidenced among group members. Collectively, teams exhibiting these characteristics, can also exhibit greater levels of performance (Day et al., 2004). This premise aligns with many empirical studies (see **Table 1**). For instance, Carson et al. (2007), in a study of 59 consulting teams, found that shared leadership is positively associated with team performance as rated by clients. Ensley et al. (2006), in a study of 66 top management teams, demonstrated that shared leadership is a more significant predictor than vertical leadership of new venture performance when considered in terms of revenue and employee growth. Furthermore, Drescher et al. (2014), in a longitudinal examination of 142 teams who engaged in a strategic simulation game, also demonstrated support for the positive influence of shared leadership on team task performance. Taken these together, this study proposes:

Hypothesis 1a: Shared leadership is positively related to team task performance in engineering design teams.

Shared leadership, as an important intangible resource available to teams (Carson et al., 2007), fosters not only team task

performance, but also team viability. As Wood and Fields (2007) suggested, shared leadership exerts a series of positive impacts on team members' job perceptions: it brings low levels of role overload, role conflict, role ambiguity and job stress, as well as high levels of job satisfaction. Similarly, Bergman et al. (2012) also demonstrated that teams with shared leadership experience less conflict, greater consensus, and higher intragroup trust and cohesion. This may foster team viability as members in shared leadership teams experience increased interdependence, more collaboration, and they sense greater levels of satisfaction. Additionally, when there is effective coordination and collaboration among team members fulfilling leadership responsibilities, it is easier for them to identify the potential causes of conflicts and propose potential solutions. It thus reduces the amount of conflict and promotes team consensus and trust (Balkundi and Harrison, 2006). As a consequence, team viability, which retains members and maintains good team functioning over time, could be enhanced. This research therefore posits:

Hypothesis 1b: Shared leadership is positively related to team viability in engineering design teams.

Taken these two hypotheses (hypothesis 1a and 1b) together, this study expects that shared leadership will foster team effectiveness by enhancing team task performance and team viability. As Wang et al. (2014) suggested, shared leadership nurtures a collective identity among members of the team and strengthens the level of engagement with and commitment to the group, which in turn enhances team effectiveness. Moreover, Mathieu et al. (2015) mentioned that shared leadership fosters social inclusion and enhances team cohesion, which can, subsequently, facilitate team effectiveness. In light of this, this research suggests:

Hypothesis 1c: Shared leadership is positively related to team effectiveness in engineering design teams.

The Moderating Role of the Project Life Cycle

Notwithstanding the fact that research on the relationship between shared leadership and team effectiveness brings valuable insights into the understanding of shared leadership in teams, there is an important omission in prior studies regarding its temporal moderating roles on such a relationship (Carson et al., 2007; D'Innocenzo et al., 2014; Wang et al., 2014). In an attempt to open the black box, this study seeks to examine a potential moderator of shared leadership, namely the project life cycle, and expects that the positive association between shared leadership and team effectiveness will be stronger at the early phase than the later phase of the project. This is because the focal concern of the early stage is toward planning and strategy generation (Chang et al., 2003; Farh et al., 2010), where project team members are more willing to engage in mutual leadership as they become proactively involved in constructive communication and decision-making (Wu and Cormican, 2016). It thus allows individuals to bring more resources to the task, share more information, and to experience higher levels of commitment

(Bergman et al., 2012). Collectively, these consequences would result in greater team effectiveness (Day et al., 2004; D'Innocenzo et al., 2014). Furthermore, as time and resources are less constrained at the early stage (Farh et al., 2010), members are able to take initiative to develop their own leadership abilities as well as to facilitate the leadership skills of others, which subsequently fosters the effectiveness of project teams (Ensley et al., 2006; Serban and Roberts, 2016). However, when the project advances into the later stage, resources are dedicated to execute project plans (Farh et al., 2010). This leads to a change in the leadership distribution from many team members to a few individuals, who assume the responsibility of integrating resources, controlling the development of the project to meet deadlines and keeping costs within budget (Wu and Cormican, 2016). Teams may no longer afford to spend too much time cultivating a positive team environment to promote shared leadership (Carson et al., 2007). As such, any potential of shared leadership for enhancing team effectiveness would be more difficult to realize in the later stage of the project life cycle. Therefore, this research expects that:

Hypothesis 2: The stage of the project life cycle moderates the positive association between shared leadership and team effectiveness, such that this relationship will be stronger at the early phase than at the later phase of the project in engineering design teams.

METHODOLOGY

Research Setting and Sample

A survey-based design was conducted in this study. The sample comprised 26 project-based engineering design teams working in the construction industry in China. As suggested by Carson et al. (2007), shared leadership is effective for teams composed of knowledge-based employees, because people having high levels of expertise and skills seek autonomy in how they apply their specialties, and thus desire more opportunities to shape

and participate in the leadership functions for their groups. Engineering design teams comprising knowledge workers have the potential to leverage the expertise of a diverse group of members by pooling their talent and knowledge. This kind of team is likely to nourish the emergence or development of shared leadership. This perspective thus adds to the academic debate on the relationship between shared leadership and team effectiveness and extends the external validity of shared leadership theory into engineering design teams. Moreover, we chose a Chinese sample due to the fact that the conceptualization and operationalization of shared leadership is predominantly developed in the Western countries (see **Table 1**) and it remains uncertain whether its theoretical models hold up in Chinese cultural settings. Furthermore, scholars, like Whetten (2009), have called for more attention to be paid to explaining cultural context effects. Therefore, to plug this gap, this study seeks to extend the validity of the shared leadership construct to a Chinese context, whereby its organizational culture differs from Western countries. Specifically, according to Hofstede et al. (2005), the power distance and collectivism in China are rated stronger than in Western cultures. Initially, a pilot test was conducted with 16 employees from three engineering design teams. Based on feedback provided, minor modifications to the survey items were made. Next, 146 members from 34 engineering design teams were invited to participate in this study. Of the 146 participants who received the questionnaire, 127 returned it, yielding an 87% response rate. Teams with less than three members were eliminated from the sample. It resulted in a sample of 119 employees working in 26 project teams. The average team size of the sample is 5.26. The specific participant demographics are outlined in the **Table 2**.

Measures

Shared Leadership

This research study adopted a social network approach to assess the nature of shared leadership. The social network technique

TABLE 2 | Sample characteristics.

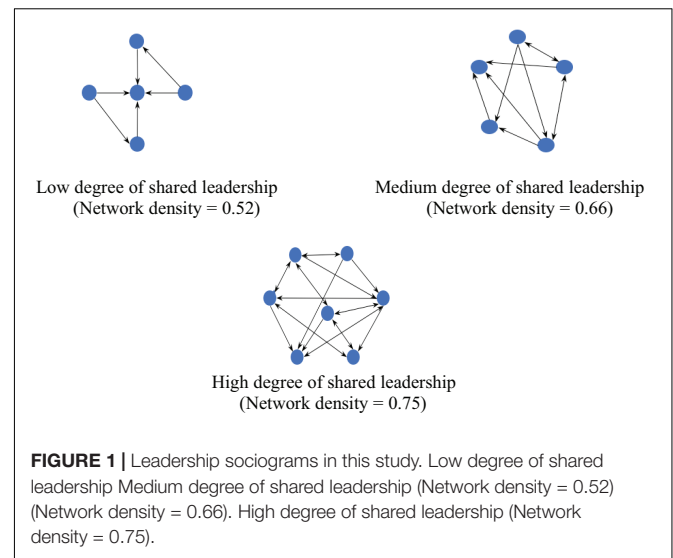
Characteristics	Frequency	Percentage	Characteristics	Frequency	Percentage
Age (years old)			Highest education		
< = 20	0	0	High school degree or equivalent	2	2%
21–30	57	48%	College degree	76	64%
31–40	47	39%	Master's degree	30	25%
41–50	9	8%	Doctoral degree	8	7%
More than 50	6	5%	Others	3	3%
Gender			Role		
Male	69	58%	Project manager	28	24%
Female	50	42%	Designer/planner	37	31%
			Engineer	26	22%
Working experience (years)			Operators	15	13%
< = 2	15	13%	Admin/supervision	7	6%
3–5	51	43%	Others	6	5%
6–10	38	32%			
> = 11	15	13%			
Total	119	100%		119	100%

is an intrinsically relational method that advocates a natural theoretical and analytical method to modeling the patterns of the relationships among interconnected individuals (D’Innocenzo et al., 2014). This study used the most common index of social network analysis, network density, to explicitly measure the extent to which team members are perceived to be involved in the sharing of leadership (Wang et al., 2014). This popular measurement was employed in many empirical studies of shared leadership (Carson et al., 2007; Lee et al., 2015; Chiu et al., 2016; Serban and Roberts, 2016). Following Carson et al. (2007), this study assessed the level of shared leadership by requiring every team member to rate each of his/her peers on the following question: “To what degree does your team rely on a particular individual for leadership?” A five-point Likert scale was used to measure the level of perceived leadership, where 1, represents “not at all,” and 5, “to a very great extent.” Network density was then calculated by summing all of the responses from group members divided by the total number of possible relations among group members (Carson et al., 2007; Mathieu et al., 2015). The values of density ranged from 0 to 1, where higher values indicate higher degrees of shared leadership within a team. Furthermore, as shared leadership is a team-level phenomenon, agreement among the respondents’ ratings of group members was also measured thus proving appropriate interrater reliability [mean r_{wg} = 0.75, ICC(1) = 0.44, ICC(2) = 0.77].

To visually represent the density of shared leadership, this study developed leadership sociograms for each sample team similar to Carson et al. (2007) and Pastor and Mayo (2002). To do this, binary matrices were created, which were then used to quantify the degree of leadership influence for each team and to represent the presence or absence of leadership relations between pairs of team members. More specifically, the raw leadership ratings collected from each participant were aggregated and included in $g \times g$ squared matrices. These data were then dichotomized, where values of 4 (to a great extent) or 5 (to a very great extent) are considered as 1, and values of 3 and less are given a value of 0. The second step was to create leadership sociograms based on these binary matrices. **Figure 1** shows the leadership sociograms in our study. Specifically, it illustrates three examples with low, middle and high levels of density of shared leadership networks. Among all of our sample data (26 engineering design teams), 0.52 is the lowest score, 0.66 is the medium score, and 0.75 is the highest score of network density. The nodes symbolize team members and the arrows represent leadership relations. One arrow points from team member (A) to member (B), indicating that B is perceived as a source of leadership by A. In this vein, two-headed arrows imply that two members perceive each other as a source of leadership.

Team Effectiveness

Team effectiveness was measured by team participants (including team leaders and members) *via* nine items consisting of two separate, theoretically derived subscales: *team task performance* and *team viability* using a five point Likert scale ranging from 1 “strongly disagree” to 5 “strongly agree.” Team task performance was assessed using five items derived from Sousa and Van Dierendonck (2016) and Suprpto et al. (2018). It measures the



degree to which the project meets its goals, quality, schedule, budget, and overall level of customer satisfaction. Team viability was measured using four items derived from Aube and Rousseau (2005). These include the extent of a team’s capacity to solve problems, the ability to integrate new members, the ability to adapt to changes, as well as the ability to continue to work together in the future. In order to test for the discriminant validity, a confirmatory factor analysis (CFA) was performed. This yielded a good fit to the data ($\chi^2_{27} = 33.90$, CFI = 0.99, GCI = 0.94, AGFI = 0.09, RMSEA = 0.05). These CFA results demonstrate the support for the hypothesized structure to measure team effectiveness. This study further examined the correlation between these two subscales to check the convergent validity of this measurement model. The finding provides evidence that these two subscales are highly correlated with each other ($r = 0.92$, $p < 0.001$). Given the strong support of the hypothesized measurement model, this study aggregated these two subscales to the group level and then averaged the scores to generate a single variable to represent team effectiveness (Cronbach $\alpha = 0.95$). To justify whether this aggregation is appropriate, this research used the interrater agreement statistic, r_{wg} (James et al., 1993). The mean r_{wg} value of 0.82 was much larger than the conventional cut-off value of 0.70 (James et al., 1993), which implies that on average, there is a high degree of agreement among different raters with a group. Furthermore, the intraclass correlation coefficient, ICC (1) and the reliability of the group-level mean, ICC (2) were also calculated to test between-group variance and within-group agreement (Bliese, 2000). The results showed that the ICC (1) value of 0.73 suggested that team membership accounted for significant variance and the ICC (2) value of 0.92 demonstrated that the group-level means were reliable.

Project Life Cycle

Led by the research of Farh et al. (2010), the phase of the project life cycle was measured from the percentage of the project work completed at the time of the survey, as reported by

project managers. In the sample of our study, the mean project completion rate across 26 teams was 56%. This research checked journal guidelines and similar papers (see Farh et al., 2010) and used a mean split, where teams with a percentage of project completion equal to and below 56% were classified as being at an *early phase* and teams above 56% were classified as being at a *later phase*. Accordingly, there are 14 project teams in the early phase subgroup with the percentage of project completion ranging from 5% to 56%, and 12 in the later phase subgroup with 57–100% project completion. **Figure 2** graphically illustrates the distribution of network density of shared leadership in the early phase vs. later phase.

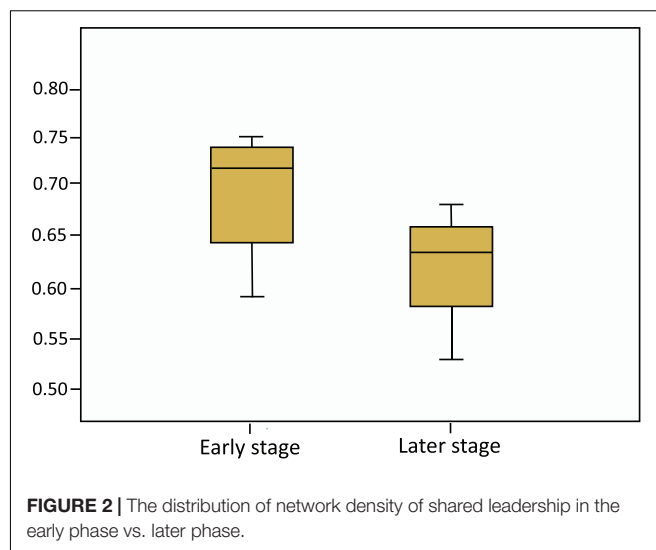
Control Variables

Several control variables were included in the study. First is team size, as it has been proposed to be negatively related to the emergence of shared leadership (Cox et al., 2003) and negatively to customer ratings and team self-ratings of team effectiveness (Pearce and Sims, 2002). The second control variable is team tenure (the length of time an individual has worked on a specific team). It was included as it reflects the experience of group members working together which may influence team effectiveness (Marrone et al., 2007) and shared leadership because team longevity affects mutual familiarity, trust and interaction among team members (Cox et al., 2003). Third is team members' educational levels, since the team member's diversity has been demonstrated to moderate the relationship between shared leadership and team outcomes (Hoch, 2014). Therefore, team members' educational levels were controlled, together with team size, team tenure for the analysis of this present research.

Results

Table 3 presents the means, standard deviations and zero-order correlations of all the constructs. As illustrated, shared leadership is positively and significantly correlated to team task performance ($r = 0.52$, $p < 0.01$), team viability ($r = 0.43$, $p < 0.05$) as well as team effectiveness ($r = 0.50$, $p < 0.05$), which provides preliminary evidence to support hypothesis 1a, 1b, and 1c. **Figure 3**, a three-panel correlation plot, visually depicts the relationship between shared leadership and team task performance, team viability as well as team effectiveness.

To further test the relationship between shared leadership and team effectiveness, as well as the moderating role of the project



life cycle in such relationships, this research employed a two-way moderated hierarchical regression analysis (Carson et al., 2007; Erkutlu, 2012; Fausing et al., 2013). Led by the procedure delineated in Cohen et al. (2014), in the regression model, the control variables, team size, team tenure and educational diversity were entered in the first step for this research; shared leadership as an independent variable was entered in the second step; the interaction terms (predictor variable, shared leadership and moderator variable, project life cycle) was entered in the third step. In order to avoid multicollinearity problems, the standardized scores were utilized in the regression analysis (Aiken et al., 1991). **Table 4** depicts the results of the moderated regression analyses.

As can be seen in step 1 in **Table 4**, the control variables were not significantly associated with team effectiveness. In step 2, we find that there is a significant positive relationship between shared leadership and team effectiveness ($\beta = 0.53$, $p < 0.05$), supporting hypothesis 1c (shared leadership is positively related to team effectiveness in engineering design teams). Moreover, the result of step 3 shows that the interaction between shared leadership and the project life cycle is significantly related to team effectiveness ($\beta = -0.47$, $p < 0.05$). We then graphically plotted the relationship between shared leadership and team effectiveness

TABLE 3 | Descriptive statistics and correlations.

Variables	Mean	SD	1	2	3	4	5	6	7	8
1. Shared leadership	0.66	0.35	–							
2. Team task performance	3.69	0.74	0.53**	–						
3. Team viability	3.71	0.67	0.43*	0.92***	–					
4. Team effectiveness	3.70	0.69	0.50*	0.96***	0.97***	–				
5. Project life cycle	55.8	0.28	–0.46*	–0.38	–0.35	–0.37	–			
6. Team size	4.46	1.48	0.12	–0.09	0.11	–0.01	–0.17	–		
7. Team tenure	2.48	0.53	0.00	0.12	0.08	0.10	–0.02	0.03	–	
8. Educational diversity	2.19	0.20	–0.25	0.02	–0.05	–0.02	0.14	–0.02	0.07	–

* $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.



FIGURE 3 | The three-panel correlation plot.

as moderated by the project life cycle (**Figure 4**) as recommended by Aiken et al. (1991). We see that a positive relationship is stronger in the early stage, when compared to the later phase of the project life cycle. Therefore, hypothesis 2 (the stage of project life cycle moderates the positive association between shared leadership and team effectiveness, such that this relationship will be stronger at the early phase than at the later phase of the project in engineering design teams) was fully supported in this study.

TABLE 4 | Results of regression analysis for team effectiveness.

Variables	Team effectiveness		
	Model 1	Model 2	Model 3
Step 1			
Team size	−0.01	−0.07	−0.11
Team tenure	0.10	0.09	0.10
Educational diversity	−0.03	0.10	−0.14
Step 2			
Shared leadership ^a		0.53*	0.26
Step 3			
Shared leadership × project life cycle			−0.47*
R ²	0.10	0.27	0.41
Adjusted R ²	−0.13	0.13	0.26
F	0.08	1.95	2.76*

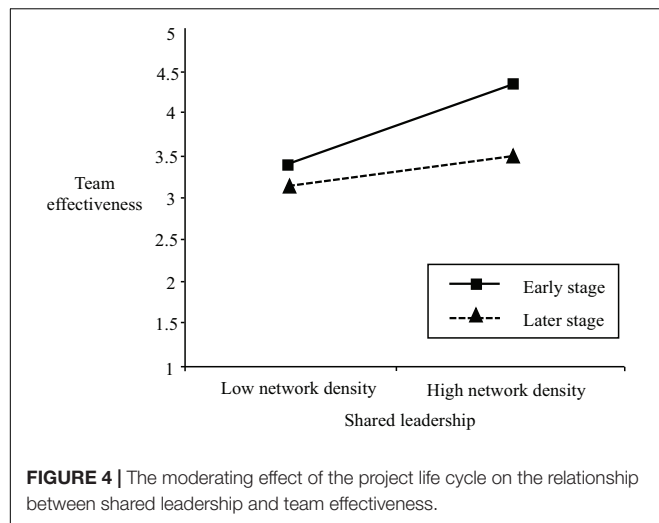
^a*p* < 0.05.

DISCUSSION

By integrating concepts from shared leadership, team effectiveness and project management literature, the current research sheds light on our understanding of *whether* and *when* shared leadership is positively related to team effectiveness. More specifically, this research advances prior work by demonstrating that there is a positive relationship between shared leadership and team effectiveness in Chinese engineering design teams. Furthermore, we also demonstrated that the stage of the project life cycle moderates the relationship between shared leadership and team effectiveness; where the positive association is stronger at the early phase than at the later phase of project life cycle. These findings provide significant theoretical contributions as well as practical implications.

Theoretical Contribution

First of all, by joining a handful of researchers in the field of shared leadership (Liu et al., 2014; Chiu et al., 2016; Serban and Roberts, 2016), this study further confirms that shared leadership plays a significant role in building effective team outcomes. Specifically, this research linked shared leadership with team task performance [defined in terms of how well the group meets (or even exceeds) expectations regarding its assigned tasks]. Shared leadership has been consistently shown to be critical for improving team performance in practice and in the extant



literature (Ensley et al., 2006; Carson et al., 2007; D'Innocenzo et al., 2014; Hoch, 2014; Wang et al., 2014; Chiu et al., 2016; Fransen et al., 2018). Although these studies have advocated the benefits of shared leadership on team performance, there is still some disagreement and controversy surrounding it (Mehra et al., 2006; Boies et al., 2011; Hmieleski et al., 2012). This current study therefore extends this line of research by demonstrating that the positive association between shared leadership and team task performance holds up in engineering design teams, thus supporting cogent work in the field of shared leadership. Moreover, the results of the current study also suggest that shared leadership is positively associated with team viability (considered in terms of the potential of teams to retain its members and to keep good team functioning over time). This finding is consistent with previous studies that suggested that shared leadership fosters team functioning and team member satisfaction. For example, Bergman et al. (2012) suggested that teams with shared leadership experience less conflict, greater consensus, and higher intragroup trust and cohesion than teams without shared leadership. Wood and Fields (2007) proposed that shared leadership exerts positive impacts on the job satisfaction of team members as shared leadership inherently advocates greater empowerment and autonomy. Therefore, as demonstrated in the current study, members of teams who share leadership, experience increased interdependence, higher levels of collaboration, and a greater sense of satisfaction. Furthermore, the ability to retain team members and to maintain positive team functioning over time is enhanced.

Another important theoretical contribution is that this study provides interesting insights into an important boundary condition of shared leadership effects. Specifically, this study investigated and demonstrated that phases of the project life cycle moderate the shared leadership-team effectiveness relationship; such relationship is stronger at the early phase than the later phase. The result of this investigation is consistent with the theory on the dynamic nature of shared leadership. As Avolio et al. (2009) noted, shared leadership is not a static, but a transferable and quite a fluid process, wherein roles and relations

among individuals merge, co-evolve, and change throughout the entire life cycle of the project. Moreover, this result also supports the proposition proposed by Ford and Sullivan (2004) who asserted that creative ideas and strategies generated at the early stage of the team cycle are more likely to be valued and integrated into effective outcomes. Our findings extend this theory by identifying shared leadership as a potential source to encourage novel ideas. Specifically, at the early stage of the project life cycle where the focus is on planning and strategy generation, team members proactively participate in constructive communication and decision-making process. It thus provides a positive environment to nourish shared leadership. Such high-levels of leadership shared by individuals helps to generate more novel ideas, which could sequentially be valued and incorporated into effective results. Therefore, by integrating the project life cycle as a moderator, this study demonstrated how the temporal factor influence the shared leadership-team effectiveness association.

Practical Implications

This research brings several significant practical implications to project management practitioners. Most notably, our findings confirm the positive relationship between shared leadership and team effectiveness in engineering design teams. It indicates that shared leadership can be a useful way to improve project team outcomes. This suggests that project managers seeking to foster high-levels of effectiveness should be supportive of sharing leadership within their groups and take steps to encourage group members to share leadership roles and responsibilities and provide them with adequate opportunities to interact with each other. Moreover, this study demonstrated that the association between shared leadership and team effectiveness is stronger at the early phase of the project life cycle. This emphasizes the need for managers to support shared leadership forms particularly at the early phase of the project in order to leverage benefits and maximize team effectiveness. Moreover, this research provides a benchmark with social network technique to help managers to assess their leadership development programs, in order to determine the extent to which they are reinforcing the notion of leadership as a collective process.

LIMITATION AND FUTURE RESEARCH

As is the case for any research, there are some limitations related to this current study which are worthy of being acknowledged. First of all, since the measurements for the variables used in the study were taken from the same source, there could be common source bias influencing the relationship between shared leadership and team effectiveness. However, this research assessed team effectiveness by measuring the entire team's behavior and outcomes, while shared leadership measured the behavior of individual members and was analyzed by a social network method. As such, the common source bias was mitigated to some extent because of this measurement distinction. In addition, the sample of this experimental study consisted of 26 teams for both the early and later phase of the project life

cycle. Replications of current research and future studies are encouraged to increase the sample size so as to achieve greater statistical power.

Second, while the definition of team effectiveness (measured in terms of team task performance and team viability) is multidimensional in nature, it does not take every possible aspect into consideration, e.g., happiness of the team members. In other words, the predictors used in this research are not an exhaustive list. There can be other consequences of shared leadership that have not been accounted for. This study thus encourages more studies to examine additional predictors of shared leadership, especially predictors from a multilevel perspective. For example, more consequences at the firm and organizational level should be examined, e.g., firm competitive advantage, organizational effectiveness and creativity. Furthermore, since our research focused only on engineering design teams, it limits the generalizability of the results. Therefore, future studies can make a valuable contribution by examining the relationship between shared leadership and its outcomes from a wide variety of contexts.

Third, an important premise of this investigation, regarding when shared leadership influences team effectiveness across the project life cycle, is the dynamic nature of shared leadership. Its emergence is likely to be influenced by team environments (i.e., cross-functional communication and coordination, and active participation in the decision-making process); as well as task characteristics (i.e., creative tasks). Unfortunately, the design of the current study did not directly examine these factors that could simulate the occurrence and development of shared leadership. It thus would be a promising research direction for future studies. Moreover, since shared leadership is a dynamic and emergent process, research with a longitudinal design that captures multiple iterations and cyclic feedback loops of shared leadership, to understand how it changes or evolves throughout stages of the project team life cycle, is another fruitful avenue for future studies.

Fourth, this study is among the first to explore the moderating role of the project life cycle in the relationship between shared leadership and team effectiveness. We thus encourage future research to provide a more complete understanding of the boundary conditions of shared leadership effectiveness, particularly for project-related moderators. Examples like project complexity, project uncertainty, and project creativity are worthy of attention in future studies. Moreover, the potential temporal indicators should also be examined considering shared leadership is a dynamic process in nature. This would serve as another promising direction for future research.

Fifth, shared leadership, as a new leadership pattern that has been demonstrated to facilitate team effectiveness in the

engineering design teams. However, we do not advocate that shared leadership is a panacea for all organizational woes. There may be many circumstances where shared leadership is not suitable e.g., non-knowledge teams. Furthermore, Pearce (2004) suggested that shared leadership is a more complex and time-consuming process than traditional vertical leadership. In light of this, research concerning when and for whom shared leadership is inappropriate should be another interesting avenue and thus worthy of further attention.

CONTRIBUTION

The current study was designed to produce novel theoretical and empirical insights regarding *whether* shared leadership is positively related to team effectiveness and *when* shared leadership is more likely to be effective. By demonstrating a positive association between shared leadership and team effectiveness in engineering design teams, this study adds to a growing literature extolling the value of shared leadership. Another important contribution of the present research is that it is among the first to investigate a temporally relevant moderator, the project life cycle, for the effectiveness of shared leadership. The authors hope that the insightful findings gained through this effect will spur future studies aimed at understanding the dynamics of shared leadership in project teams and further explore temporal factors for its effectiveness.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Graduate Research Committee (GRC), National University of Ireland, Galway. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

QW was responsible for conducting analysis and writing the first draft. KC contributed to the structure and content and revised all versions of the manuscript. QW and KC both participated in idea development.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Why the Chosen Ones May Not Always Be the Best Leaders: Criteria for Captain Selection as Predictors of Leadership Quality and Acceptance

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OPEN ACCESS

Edited by:

Miguel Molina-Solana,
University of Granada, Spain

Reviewed by:

Angelita Cruz,
Keimyung University, South Korea
William Scherer,
University of Virginia, United States

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Specialty section:

This article was submitted to
Performance Science,
a section of the journal
Frontiers in Psychology

Received: 13 October 2020

Accepted: 21 December 2020

Published: 18 January 2021

Citation:

Butalia R, Fransen K, Coffee P, Laenens J and Boen F (2021) Why the Chosen Ones May Not Always Be the Best Leaders: Criteria for Captain Selection as Predictors of Leadership Quality and Acceptance. *Front. Psychol.* 11:616966. doi: 10.3389/fpsyg.2020.616966

There seems to be some initial evidence that team captains are selected based on non-leadership factors such as team tenure, technical abilities, being the daughter of the club president, or playing position. This is concerning since players expect their ideal team captain to have superior motivational and social skills. Adding to this literature on captain selection, the present study investigates relationships between the reasons for which team captains are selected and their (a) perceived leadership quality; and (b) perceived acceptance. To accomplish this, we recruited 450 coaches and 198 players from Flemish football and volleyball teams. Participants evaluated 41 reasons on the extent to which they played a role in the selection of their team captain. Additionally, participants rated their team captain's leadership quality and level of acceptance. The results consistently indicated that captains who were selected for having good motivational and social competencies were given higher ratings on perceived leadership quality and acceptance by participants. In conclusion, athletes who are motivated, good at motivating others and have superior social skills tend to be better suited for captaincy than those selected based on non-leadership factors.

Keywords: team captain, athlete leadership, peer leadership, captain selection, leadership quality, leader acceptance

INTRODUCTION

Leaders have existed since the dawn of human civilization and there are numerous symbols of leadership which can be traced back to nearly 2300 BC. One such symbol is the illustration of a leader, follower and leadership in the ancient Egyptian hieroglyphics (Bass et al., 2008). Since then, interest in the concept of leadership has grown considerably among academics, especially because research has shown that leaders influence followers' attitudes, motives and behaviors and by doing so, facilitate the group's success and effectiveness (Hanges et al., 2016). However, what leadership is and how best to practice it continues to be discussed and debated.

Also in sport, researchers have found leadership to be at the heart of optimal team functioning (Cotterill, 2017). Leadership in sport teams manifests itself through both formal and informal roles. Formal leaders, such as coaches and team captains, are those who perform pre-determined leadership responsibilities (Loughead et al., 2006; Gould and Voelker, 2010). Conversely, informal leaders are those who emerge as unofficial leaders, often as a result of natural interactions with

other team members (Bucci et al., 2012; Brgoch et al., 2018). Whilst coaches always occupy formal roles, athlete leaders can occupy both formal (e.g., team captain) and informal leadership roles. An emerging body of evidence points toward the vital role of athlete leaders in determining positive team outcomes, including athlete satisfaction (Eys et al., 2007), health and well-being (Fransen et al., 2019b), team cohesion (Loughead et al., 2016), team resilience (Morgan et al., 2015) and team confidence (Fransen et al., 2014a).

Within the present study we focus exclusively on the team captain—the formal athlete leader—who is often expected to perform several essential roles and responsibilities within the team (Newman et al., 2019). Indeed, the team captain serves as the communication bridge between the coach and the players (Camiré, 2016). Moreover, in some sports (e.g., cricket), in conjunction with the coach, the team captain can even be co-responsible for team selection and coordinating tactical decisions both on and off the field (Smith et al., 2018). In addition, the team captain represents their squad during events and meetings to external entities (e.g., media, sponsors, club management etc.; Mosher, 1979). Adding to this list of responsibilities, Dupuis et al. (2006) highlighted the critical role that the team captain plays in supporting their teammates. Furthermore, numerous studies have emphasized that the team captain is expected to provide direct leadership through leading by example and acting as a role model for team members (Dupuis et al., 2006; Cotterill, 2017; Cotterill et al., 2019).

Despite the evidence that the team captain is an important athlete leader within their team, Fransen et al. (2014b) found that only 1% of participants within their study perceived their team captain to be the ‘best’ leader across all four leadership roles (i.e., task, motivational, social and external; for definitions see Table 1). These four leadership roles are derived from early

work by Bales and Slater (1955). These researchers distinguished between leaders with an instrumental function, whose primary focus was on accomplishing group tasks, and an expressive function, which was mainly concerned with interpersonal relationships. Influenced by this early research in organizational settings, Rees and Segal (1984) investigated the existence of these roles in sport settings indicating that athlete leaders can fulfill an instrumental and/or an expressive leadership role. In addition to renaming these former leadership roles (i.e., instrumental and expressive) to task and social leadership, Loughead et al. (2006) extended the athlete leadership categorization to include a third role, namely, the external leader. Following this, Fransen et al. (2014b) added the fourth leadership role that is, the motivational leader. These researchers also found that the fulfillment of these four roles (i.e., task, motivational, social and external) resulted in higher team confidence, stronger team identification and better team ranking. However, nearly half (43%) of the 4451 participants (3193 players and 1258 coaches) indicated that the team captain was not the best leader in any of the four leadership roles. These findings remained consistent across gender, team level and sport. A possible explanation for this unexpected outcome, which is of particular relevance to the current study, is that team captains are not always selected for the right reasons (Cotterill et al., 2019; Fransen et al., 2019a).

As pioneering researchers who attempted to explicate the reasons for why team captains are selected, Yukelson et al. (1983) observed that captain selection in baseball and football appeared to be based on technical abilities. In line with these findings, Moran and Weiss (2006) found that coaches assigned a higher leadership status to athletes who had superior athletic abilities. Additionally, research by Lee et al. (1983) suggested that team captains were also selected based on their position of play, with football captains more likely to occupy a spatially central playing position compared to their teammates. Furthermore, in many sports (e.g., volleyball, handball, ice hockey etc.), evidence suggests that team captains are likely to be players who occupy positions of high interactional centrality, described as positions that involve a lot of interaction with other players (e.g., midfielder in soccer; Fransen et al., 2016). Contrary to these findings, Tropp and Landers (1979) did not find an association between interactional centrality and team captaincy in collegiate hockey teams. Instead, their findings suggested that team tenure was the discriminating factor between team captains and non-captains, with team captains being those who were the longest serving members of their teams. These findings were recently confirmed and generalized across numerous sports by Fransen et al. (2018) who found that the only characteristic on which team captains outscored the informal athlete leaders was team tenure.

The research on captain selection that we have reviewed above highlights that team captains tend to be athletes who are highly skilled, occupy a central playing position and have a relatively longer team tenure compared to their teammates. However, while these studies provide an indication of the numerous attributes that distinguish team captains from non-captains, they do not directly investigate the reasons for captain selection.

To address this lacuna, Wright and Côté (2003) elaborated on the reasons for captain selection by conducting open-ended

TABLE 1 | The definition of the four leadership roles (Fransen et al., 2014b).

Leadership roles	Definition
Task leader	A task leader is in charge on the field; this person helps his/her team to focus on the team goals and help in tactical decision making. Furthermore, the task leader gives his/her teammates tactical advice during the game and gives them guidance if necessary
Motivational leader	The motivational leader is the biggest motivator on the field; this person encourages teammates to go to any extreme; this leader also put fresh heart into players who are discouraged. In short, this leader steers all the emotions on the field in the right direction in order to maximize team performance.
Social leader	The social leader has a leading role off the field; this person promotes good relations within the team and cares about having a good team atmosphere, for example, in the dressing room, on the bus, or during social activity. Furthermore, this leader helps with conflicts between teammates off the field. He/she is a good listener and is trusted by his/her teammates.
External leader	The external leader is the link between his/her team and the people outside the team; this leader is the representative of the team when dealing with the club management. If communication is needed with media or sponsors, this person will take the lead. This leader will also communicate, the views of the club management to the team, for example, regarding sponsoring, club events, and contracts.

interviews with six male athletes competing in basketball, volleyball and ice-hockey. Their results indicated that team captains are often selected for their strong work ethic. Furthermore, Bucci et al. (2012) reported that ice hockey coaches consider the five following psychosocial attributes when appointing team captains: (a) their fit with the team identity, (b) their generosity and honesty, (c) their capacity to lead by example, (d) the common values they share with their teammates and (e) their relationship with the coach. Similarly, Cotterill et al. (2019) interviewed rugby coaches who emphasized that, in addition to leading by example, possessing the trust of one's teammates is an important attribute for team captain selection. While these studies were more explicit in their interrogation of the reasons underlying captain selection, they were limited in their generalizability given their small sample size.

Overcoming this limitation, Fransen et al. (2019a) used a sample of 226 players and 172 coaches participating in a range of different sports and conducted the most comprehensive study on the reasons underlying captain selection to date. In this study, participants were asked the reasons they perceived to have been used in the selection of their current team captain. These researchers went further by also asking participants to indicate the behaviors, attributes and characteristics of their ideal team captain. The latter investigation helped determine whether the reasons implicated in captain selection match the expectations that players and coaches have of their team captain. The results of this study indicated that non-leadership factors (e.g., being the daughter of the club president, having higher sport specific competence) were perceived to be the primary reasons for captain selection. However, players and coaches indicated that they expect their ideal team captain to have superior motivational skills (e.g., motivating and encouraging team members) and social skills (i.e., having social skills, dealing with conflicts in the team etc.). These findings suggest that there may be a discrepancy between what players and coaches expect of team captains and the criteria based on which these team captains are selected. In turn, this discrepancy might impact team functioning and offers a potential explanation as to why in Fransen et al.'s (2014b) study, team captains were rarely perceived as the 'best leaders' across all four leadership roles.

Taken together, there seems to be some initial evidence that team captains are not being selected for the most relevant reasons. However, researchers in this field have failed to associate the reasons implicated in captain selection with captains' perceived leadership quality (in general and the four leadership roles) and acceptance within the team. These outcome measures are important for three main reasons. First, as argued by Loughhead et al. (2006), simply electing and appointing a team captain does little to ensure that the provided leadership is of high quality, effective and fulfills the needs of the team. By unveiling the reasons for captain selection that are associated with high quality leadership, research may be able to shed light on the good and bad practices of captain selection. Second, leadership quality on the four leadership roles (i.e., task, motivational, social and external), as defined and described by Fransen et al. (2014b), may also be important given that their effective fulfillment is associated with higher team confidence, stronger team identification and better

team ranking. Moreover, recently too, Fransen et al. (2019a) found that both coaches and players expect their team captain to provide good task, motivational, social and external leadership quality. Therefore, it may be that an athlete who is, on average, good at all leadership roles should be appointed as the team captain. Knowing which reasons for captain selection predict leadership quality on each of these roles may thus be essential information for selectors. Finally, acceptance of the team captain within the team is also an important outcome variable given that previous researchers have demonstrated that the acceptance of the leader by followers facilitates leader effectiveness (e.g., Moran and Weiss, 2006; Price and Weiss, 2011). These findings make sense given that leaders who are not accepted by their team members will tend to have a smaller support base and find it arduous to influence their team members as compared to leaders who are accepted (House et al., 2004; Fransen et al., 2020b). Indeed, leader acceptance has also been proposed as an attribute of an ideal team captain (Fransen et al., 2019a).

Therefore, in order to advance this area of research we investigated the relationships between reasons for which team captains are believed to be selected and (1) the perceived leadership quality of team captains (in general and on the four leadership roles as described by Fransen et al., 2014b); and (2) the perceived acceptance of team captains within their team. Due to the novelty of the research questions, no *a priori* hypotheses were formulated.

MATERIALS AND METHODS

Participants

A total of 653 participants (455 coaches and 198 players) were recruited in Belgium for this study (male = 508, female = 145; football = 439, volleyball = 214), of which 227 competed at the national level and 426 at the regional level. Coaches reported an average age of 45.05 years ($SD = 11.49$) and had on average 15.80 years of experience in their sport. Athletes on the other hand reported an average age of 23.58 years ($SD = 4.98$) and had on average 14.75 years of experience competing in their sport. This study employed convenience and snowball sampling methods. More specifically, participants were recruited via personal contacts, social media forums (e.g., Facebook group of volleyball coaches) and gatekeepers (e.g., Royal Belgian Football Association and Voltraweb). Additionally, we also contacted 25 complete teams of which 20 agreed to participate (response rate = 80%). Utilizing gatekeepers and collecting data from complete teams facilitated in having a diverse participant pool, thus partially limiting self-selection bias persistent across studies employing a similar methodology.

Procedure

The study was approved by the ethics committee at the university of the first author (G-2020-1728). Prior to starting our quantitative data collection, we assembled 41 reasons which have been and could be used in the selection of the team captain. In doing so, we first scanned previous literature investigating the selection of the team captain. Second, we consulted with

football and volleyball coaches and questioned them regarding the reasons they used in the selection of their team captain. Third, to this list, drawing on theory of athlete leadership in sport, we added behaviors typical of task, motivational, social and external leaders (Fransen et al., 2014b) (**Table 1**). This was done because a number of these behaviors have been implicated in the selection of the team captain and/or associated with ideal team captains (Fransen et al., 2019a). Finally, we also drew upon the identity leadership approach as identity leadership behaviors have shown

to be characteristic of high-quality athlete leaders and might be used by selectors during captain appointment (Steffens et al., 2014; Fransen et al., 2020a,c). Our goal was not to provide an exhaustive list but rather to capture the main leadership and non-leadership reasons for captain selection.

The final list of reasons for captain selection was used as the basis for the questionnaire used in this study (see **Table 2**). In this questionnaire, participants had to indicate their function in the team (coach or player), answer demographic questions (e.g.,

TABLE 2 | The pattern matrix for the three-component solution.

Items	Component 1	Component 2	Component 3
1. The team captain displays a lot of effort during the game	0.88		
2. The team captain has a positive mentality	0.74		
3. The team captain has a winning mentality	0.74		
4. The team captain displays a lot of effort during training	0.73		
5. The team captain is well liked by the team	0.72		
6. The team captain is concerned about the well-being of his/her teammates	0.69		
7. The team captain encourages his/her teammates	0.68		
8. The team captain expresses confidence to his/her teammates	0.67		
9. The team captain is trusted by the coach	0.67		
10. The team captain is trusted by his/her teammates	0.64		
11. The team captain creates a sense of 'us' within the team	0.62		0.25
12. The team captain is helpful	0.57	0.32	
13. The team captain is the first contact point for his/her teammates	0.56		
14. The team captain makes sure that there is a good team atmosphere off the field	0.56		
15. The team captain creates a calm atmosphere within the team	0.55		0.31
16. The team captain has an excellent insight in the game	0.39		0.36
17. The team captain scores on average strongest on the different leadership qualities	0.36		0.34
18. The team captain has a good connection with the coach	0.35	0.33	
19. The team captain communicates in an efficient way with the referee	0.33		0.26
20. The team captain is well received among the sponsors		0.83	
21. The team captain is popular amongst fans		0.83	
22. The team captain is received well by the board		0.81	
23. The team captain has been a member of the club for a long time		0.76	−0.21
24. The team captain is popular with the media		0.75	
25. The team captain is one of the oldest members within the team		0.72	−0.21
26. The team captain is able to communicate well with the board		0.72	
27. The team captain has special ties with the sponsors (family, good acquaintances)	−0.24	0.71	0.28
28. The team captain has special ties with the board (family, good acquaintances)	−0.22	0.71	0.21
29. The team captain is respected because of his/her history as a player		0.64	
30. The team captain has many years of experience within his/her sport	0.24	0.61	
31. The team captain occupies a central playing position		0.39	
32. The team captain takes the lead in organizing team activities	0.30	0.38	
33. The team captain embodies the vision of the club	0.20	0.36	0.35
34. The team captain has excellent athletic skills	0.26	0.35	
35. The team captain translates the vision of the coach to the players	0.30		0.67
36. The team captain clarifies the decisions of the coach when these are not clear for the players			0.64
37. The team captain is an extension of the coach with respect to providing tactical guidelines on the field			0.64
38. The team captain defends the coach even if the coach is not present with the team (e.g., in the dressing room)			0.52
39. The team captain communicates the goals of the team to the players			0.51
40. The team captain communicates everything that is happening in the team (also what is discussed behind the back of the coach when this is important for the coach)			0.51
41. The team captain has been chosen by the group of players			0.46

gender, sport, age, experience, etc.) and respond to the below mentioned measures. The survey took approximately 10–20 min to complete. All participants participated voluntarily and were assured that their data would be treated confidentially. Written informed consent was obtained from all participants. Those who wished to be kept informed were sent an e-mail once the study was complete.

Measures

Reasons Underpinning Captain Selection

Participants were asked to indicate the extent to which they perceived each of the 41 reasons within the final questionnaire to have played a role in the selection of their team captain. We used an 11-point Likert scale ranging from 0 (*strongly disagree*) to 10 (*strongly agree*).

Leadership Quality of the Team Captain

Participants were asked to rate the leadership quality of their team captain in general and on each of the four leadership roles (i.e., task, motivational, social and external) as defined by Fransen et al. (2014b). The definition of each role was provided within the questionnaire (see **Table 1**). We used an 11-point Likert scale ranging from 0 (*very bad*) to 10 (*very good*).

Acceptance of the Team Captain

Participants were asked to rate the extent to which their team captain was accepted within their team on an 11-point Likert scale ranging from 0 (*not at all*) to 10 (*completely*).

An 11-point Likert scale was used to measure the aforementioned variables with a view to ensure consistency with previous research assessing leadership quality on the four leadership roles (i.e., task, social, motivational and external; Fransen et al., 2019b; Mertens et al., 2020).

Data Analysis

The data was screened for missing values, outliers and normality. Next, given the exploratory nature of our investigation, participants' perceived applicability of each of the 41 reasons for appointing the team captain were examined using a principal component analysis (PCA) with direct oblimin rotation. This rotation was adopted because we expected the components to be interrelated. By conducting a PCA, we were able to reduce the large set of reasons to a more manageable set of predictors as well as avoid multi-collinearity within the subsequent analyses (Henson and Roberts, 2006). We determined the minimum number of principal components that accounted for the most amount of variance in our data by assessing (a) the proportion of variance explained; (b) the eigen values; (c) the scree plot; and (d) the component loadings. Some items were not allotted to any one scale because they did not meet the previously established minimum criteria of having a primary loading of 0.55 and no cross-loadings of 0.20 or above (Ford et al., 1986). Scales were built after combining items that loaded on a latent variable. Reliability of these scales were determined by calculating Cronbach's alphas. Also, descriptive statistics including means and standard deviations for all our study variables were calculated. Moreover, to exclude the possibility

of bias in the subsequent analyses, we computed the variance inflation factors (i.e., VIF) for each predictor variable in the regression analyses described below.

To address the first research question (i.e., the relationships between reasons for captain selection and perceived leadership quality of the team captain), the scales and items based on the PCA were used as predictor variables in multiple regressions within which the criterion variable was perceived leadership quality of the team captain as rated by coaches and players (in general as well as on each of the four leadership roles separately). To address the second research question (i.e., the relationships between reasons for captain selection and perceived acceptance of the captain within their team), the predictor variables remained the same while the criterion variable was perceived acceptance of the team captain within the team, as rated by the coaches and players. Age, gender and team level were included as control variables in all the multiple regressions described above.

RESULTS

Preliminary Analysis

Missing values accounted for less than 0.6% of the data and were therefore omitted from further analyses (Scheffer, 2002; Van der Heijden et al., 2006). Further, none of the participants in our data set were excluded as outliers and visual inspections of histograms did not reveal any obvious deviations from normality.

The eigen values of the first three components were 12.58, 5.77, and 1.91, and explained 30.70%, 14.09%, and 4.67% of the variance, respectively. The fourth and fifth factors had eigen values just over 1 and explained 4.16% and 3.09% of the total variance. Further, the scree plot suggested that between three and five components should be extracted as the slope precipitously leveled off after this point (Bryant and Yarnold, 1995). Thus, the solutions for three, four and five components were examined.

We opted for the most parsimonious three-component solution. Of the 41 reasons that were subjected to the PCA, nine reasons did not load sufficiently on any one component (above 0.55) and had multiple complex loadings (above 0.20). However, these nine reasons were still included as separate items for further analyses because they could still be important reasons for captain selection and in-turn influence leadership quality and acceptance. Moreover, while allotting items to components we made two exceptions (i.e., items 12 and 18) which deviated slightly from our previously established criterion of considering items part of a component only when it had a cross-loading below 0.20. This was done because these two items had a cross-loading of 0.32 and 0.33 which is only marginally above the previously established cross-loading criterion (component loadings are displayed in **Table 2**).

Overall, the Cronbach's alphas were excellent for both the first component, which we labeled 'Motivational and Social Competencies' ($\alpha = 0.93$), and for the second component, which we labeled 'Representative of the Team' ($\alpha = 0.92$). For the third component, which we labeled 'Extension of the Coach,' the Cronbach's alpha was high ($\alpha = 0.82$). Furthermore, to assist the process of understanding the results it is important to provide

an explanation on why labels such as ‘Motivational and Social Competencies,’ ‘Representative of the Team,’ and ‘Extension of the Coach’ were given to these three principal components.

The behaviors that together constituted ‘Motivational and Social Competencies’ (see **Table 2**) theoretically correspond to descriptions of motivational and social leadership roles as described by Fransen et al. (2014b). However, according to this leadership classification the motivational and social leadership roles are separate and distinct. A potential reason as to why motivational and social leadership behaviors may have loaded upon the same component within the present study may be that they both have a common underlying premise that refers to interpersonal relationships. Indeed, Fransen et al. (2015) found a significant overlap between the leadership quality networks for motivational and social leadership roles. This finding held for male and female teams competing on different levels within football, basketball and volleyball.

What merits discussion here is that the ‘Motivational’ aspect of our principal component ‘Motivational and Social Competencies’ is partially but not completely captured within the definition of motivational leadership by Fransen et al. (2014b). Their definition focuses solely on the behavior of encouraging one’s teammates. Instead, in the present research, the highest loading items on the ‘Motivational and Social Competencies’ (see **Table 1**) scale indicates that a motivational leader should not only motivate others but must also be motivated themselves (e.g., display a lot of effort during training and games, have a winning and positive mentality). This is in line with previous research that has linked behaviors such as controlling one’s emotions and remaining positive during the game as key behaviors demonstrated by a motivational leader (Dupuis et al., 2006). Furthermore, Fransen et al. (2018) have also identified three characteristics as typical of motivational leaders: being optimistic, exerting high levels of effort during training and using facial expressions or body language that clearly expresses positive emotions. One could argue that the definition of motivational leadership as described within the four-fold leadership classification should be broadened to include the aforementioned aspects (e.g., being motivated).

The second principal component which we labeled ‘Representative of the Team’ is theoretically linked with the external leadership role as defined by Fransen et al. (2014b) (see **Table 1**). Most behaviors included within this component point toward the integral function of the team captain in representing the team and facilitating communication with external entities (e.g., sponsors, fans and the media; Cotterill, 2017; Brgoch et al., 2018). It should be noted however that items 23, 25, and 30 (see **Table 2**) fall outside the definition of external leadership. Nevertheless, the placement of these items within this component is not completely unexpected given that external leaders tend to be athletes with the longest team tenure or the oldest player on their team, or both (Loughhead et al., 2006; Fransen et al., 2018).

The third principal component labeled ‘Extension of the Coach’ closely aligns with the external leadership role described by Loughhead et al. (2006). More specifically, these researchers indicated that representing the team’s interests in meetings with the coaching staff was a behavioral characteristic of external

leaders. In line with this description, several other researchers have also highlighted the importance of the role that the team captain plays between the coach and the team (e.g., Mosher, 1979; Dupuis et al., 2006; Camiré, 2016; Cotterill and Cheetham, 2017). Furthermore, coaches in Cotterill et al.’s (2019) study highlighted a somewhat unique aspect of this role by indicating that they view captains as an extension of their authority on the field. Together, these behaviors are represented within the third principal component (i.e., ‘Extension of the Coach’; see **Table 1**).

Lastly, **Table 3** reports the means and standard deviations for all study variables. Besides, all VIF scores were smaller than 3.02 which is below the recommended limit of 10. This means that, multicollinearity issues are not likely to be a cause for concern here (Bowerman and O’connell, 1990; Myers and Myers, 1990).

RQ1: The Association Between Reasons for Captain Selection and Perceived Leadership Quality of the Team Captain

Table 4 summarizes the multiple regressions conducted to predict participants’ ratings on general, task, motivational, social and external leadership qualities of the team captain. The primary findings of these regression analyses are presented below.

First, with respect to general leadership quality, the results showed that when captains were selected because they had good motivational and social competencies, excellent insights in the game or scored on average strongest on the different leadership qualities, they were perceived as better leaders by participants. In contrast, when captains were selected because they played in a central playing position or had excellent athletic skills, they were perceived as worse leaders by participants.

Second, with respect to task leadership quality, we observed that captains who were selected because they had good motivational and social competencies, acted as an extension of the coach or had excellent insights in the game, were perceived as better task leaders by participants. Contrastingly, if captains were selected because they had a good connection with the coach, they were perceived as worse task leaders by participants.

Third, with respect to motivational leadership quality, we found that captains who were selected based on their motivational and social competencies were perceived as better motivational leaders.

Fourth, with respect to social leadership quality, the results revealed that captains were perceived as better social leaders when they were selected because they had good motivational and social competencies or took the lead in organizing team activities. In contrast, captains were perceived as worse social leaders when they were selected because they had excellent insights in the game.

Finally, with respect to external leadership quality, captains were perceived as better external leaders by participants when they were selected for having good motivational and social competencies, being the representative of the team and taking the lead in organizing team activities. However, captains were perceived as worse external leaders when they were selected because they had excellent athletic skills.

TABLE 3 | Means, standard deviations, and correlations between all study variables.

	<i>M (SD)</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	8.09 (1.36)																	
2	7.48 (1.70)	0.65**																
3	7.96 (1.66)	0.60**	0.65**															
4	7.77 (1.69)	0.59**	0.42**	0.48**														
5	6.65 (2.35)	0.32**	0.32**	0.22**	0.44**													
6	8.85 (1.20)	0.57**	0.41**	0.45**	0.44**	0.21**												
7	8.03 (1.24)	0.59**	0.51**	0.63**	0.53**	0.27**	0.38**											
8	5.03 (2.34)	0.17**	0.13**	0.09*	0.24**	0.43**	0.08*	0.26**										
9	6.60 (1.77)	0.44**	0.49**	0.44**	0.36**	0.31**	0.17**	0.67**	0.28**									
10	7.06 (2.34)	0.31**	0.21**	0.29**	0.31**	0.20**	0.19**	0.47**	0.42**	0.43**								
11	7.37 (2.03)	0.38**	0.47**	0.35**	0.19**	0.12**	0.22**	0.51**	0.17**	0.48**	0.30**							
12	6.16 (2.30)	0.16**	0.24**	0.23**	0.15**	0.10**	0.08*	0.38**	0.40**	0.32**	0.34**	0.42**	.					
13	7.46 (2.38)	0.23**	0.15**	0.17**	0.35**	0.36**	0.09*	0.40**	0.41**	0.32**	0.23**	0.06	0.14**					
14	7.14 (2.12)	0.33**	0.30**	0.29**	0.27**	0.25**	0.17**	0.47**	0.30**	0.41**	0.26**	0.37**	0.25**	0.22**				
15	6.02 (3.19)	0.05	0.12**	0.030	0.04	0.13**	0.050	0.16**	0.38**	0.18**	0.20**	0.28**	0.28**	0.11**	0.20**			
16	6.45 (2.56)	0.29**	0.26**	0.22**	0.27**	0.28**	0.13**	0.47**	0.46**	0.49**	0.33**	0.33**	0.36**	0.28**	0.36**	0.38**		
17	7.17 (2.17)	0.40**	0.33**	0.37**	0.28**	0.20**	0.23**	0.53**	0.22**	0.49**	0.28**	0.40**	0.29**	0.18**	0.37**	0.12**	0.34**	
18	5.03 (3.45)	0.10**	0.15**	0.10*	0.16**	0.21**	0.04	0.16**	0.24**	0.28**	0.14**	0.10**	0.11**	0.20**	0.21**	0.13**	0.24**	0.15**

* $p < 0.05$; ** $p < 0.01$.

Abbreviations for the numbers are: General leadership quality of the team captain (1); Leadership quality of the team captain as a task leader (2); Leadership quality of the team captain as a motivational leader (3); Leadership quality of the team captain as a social leader (4); Leadership quality of the team captain as an external leader (5); Acceptance of the team captain within the team (6); Motivational and Social Competencies of the team captain (7); The team captain as a Representative of the Team (8); The team captain as an Extension of the Coach (9); The team captain has a good connection with the coach (10); The team captain has an excellent insight in the game (11); The team captain has excellent athletic skills (12); The team captain takes the lead in organizing team activities (13); The team captain communicates in an efficient way with the referee (14); The team captain occupies a central playing position (15); The team captain embodies the vision of the club (16); The team captain scores on average strongest on the different leadership qualities (17); The team captain has been chosen by the group of players (18).

RQ2: The Association Between Reasons for Captain Selection and Acceptance of the Team Captain Within Their Team

Table 4 summarizes the multiple regression conducted to predict the participants' perceived acceptance of the team captain within their team. The results revealed that captains were more accepted within their team when they were selected for having good motivational and social competencies. On the contrary, captains were less accepted within their team when they were selected for being an extension of the coach or having excellent athletic skills. Moreover, we also found that older participants tended to accept their team captain to a lesser extent as compared to younger participants.

DISCUSSION

Researchers before us have provided some answers on why team captains are selected. However, none thus far have investigated the associations between the reasons for captain selection and captains' perceived leadership quality and level of acceptance, as rated by players and coaches. Therefore, the present research filled an important gap by providing empirical data on such associations. In this, our research provides a more nuanced understanding of the reasons that are important for captain selection.

Our first research question focused on the relationships between the reasons for captain selection and captains' perceived

leadership quality. Here the evidence revealed that motivational and social competencies, as a reason for captain selection, emerged as the strongest and most consistent predictor of perceived leadership quality in general as well as on the four leadership roles (i.e., task, motivational, social and external; Fransen et al., 2014b). This finding corroborates previous research where interpersonal competencies have also been indicated as a decisive factor in determining athlete leadership quality (Holmes et al., 2008; Fransen et al., 2018). For example, Riggio et al. (2003) found that leaders selected on the basis of their superior emotional and social communications skills were evaluated more positively on leadership effectiveness. Moreover, drawing on evidence from organizational research, Polychroniou (2009) investigated the relationship between social skills, personal motivation and transformational leadership. The results of their study revealed that, supervisors' social skills and personal motivation are positively associated with their leadership ratings. Caruso et al. (2002) have also argued that the quality of leader-follower relationships is dependent upon a leader's people skills. Thereby, advocating its use whilst leader selection.

In addition to the aforementioned studies, there is a wealth of related research that has highlighted the importance of motivational (Loughead and Hardy, 2005; Paradis and Loughead, 2010) and social (Klonsky, 1991; Mehra et al., 2006; Moran and Weiss, 2006; Price and Weiss, 2011) leadership skills and its influence on leader effectiveness/ratings. Apitzsch (2009) went even further by stating that the absence of a socio-emotional

TABLE 4 | Linear regressions predicting general, task, motivational, social and external leadership quality as well as acceptance of the team captain.

	<i>General</i>	<i>Task</i>	<i>Motivational</i>	<i>Social</i>	<i>External</i>	<i>Acceptance</i>
	<i>Beta</i>					
Participants' age	−0.00	−0.02	0.00	−0.03	−0.03	−0.09*
Participants' gender	0.00	0.00	0.04	−0.02	0.00	0.00
Participants' team level	−0.05	−0.01	0.00	−0.01	−0.08	−0.02
Motivational and Social Competencies of the team captain	0.44**	0.27**	0.61**	0.46**	0.02**	0.42**
The team captain as a Representative of the Team	0.05	−0.01	−0.01	0.06	0.36**	0.01
The team captain as an Extension of the Coach	0.00	0.26**	0.04	0.00	0.17	−0.16*
The team captain has a good connection with the coach	0.03	−0.09*	0.01	0.05	−0.06	0.04
The team captain has an excellent insight in the game	0.10*	0.20**	−0.00	−0.11*	−0.01	0.06
The team captain has excellent athletic skills	−0.14*	0.02	0.02	−0.06	−0.11*	−0.10*
The team captain takes the lead in organizing team activities	−0.00	−0.02	−0.07	0.12*	0.15**	−0.05
The team captain communicates in an efficient way with the referee	0.05	0.03	0.00	0.02	0.05	0.00
The team captain occupies a central playing position	−0.07*	0.00	−0.05	−0.06	−0.04	0.00
The team captain embodies the vision of the club	0.02	−0.05	−0.07	0.01	0.01	−0.01
The team captain scores on average strongest on the different leadership qualities	0.10*	−0.00	0.05	0.03	0.01	0.08
The team captain has been chosen by the group of players	−0.02	0.04	0.01	0.04	0.04	0.01
<i>R</i> ²	0.35	0.34	0.40	0.30	0.28	0.16
<i>F</i>	21.24**	21.13**	27.13**	18.03**	15.78	7.78**

p* < 0.05; *p* < 0.01.

leader (i.e., someone who creates a positive atmosphere on the field) can lead to complete team collapse.

Evidently, the importance of selecting a team captain with good motivational and social competencies has been highlighted within the scientific literature. However, Fransen et al. (2019a) found that, in practice, selectors seldom used it as a reason for captain selection. Instead, participants in their study indicated that the team captain was generally selected based on non-leadership factors. The inconsistency between the attributes that the team captain is expected to embody and the ones based on which they are currently being selected is somewhat concerning. This is because, in the current study, the reasons for captain selection that referred to motivational and social competencies constituted the strongest predictor of task, motivational, social and external leadership quality. This implies that leaders selected on the basis of their superior motivational and social skills are good at performing all four leadership roles, the fulfillment of which has been linked to effective team functioning (Fransen et al., 2017).

A second major finding of the present study with respect to the first research question is that captains were perceived as better leaders in general when they were selected based on their excellent insights in the game. According to the definitions within the four-fold leadership classification, having excellent insights in the game is a behavior that is characteristic of task leaders (Fransen et al., 2014b, 2018). This finding is thus in line with previous research revealing that, effective peer leaders focus on task-related exchanges as well as training and instruction (Murai and Inomata, 2010; Paradis and Loughhead, 2010). Furthermore, a study led by Hardy et al. (2008) indicated that task cohesion is higher in teams led by task-oriented peer leaders and task cohesion has been found to be predictive of team performance (Williams and Widmeyer, 1991). In conjunction

with our findings, these studies highlight the importance of selecting a leader who has knowledge of their sport (i.e., has excellent insights in the game). However, as was the case with motivational and social competencies, having excellent insights in the game was a factor that was rarely considered by selectors while choosing the team captain (Fransen et al., 2019a).

It is worth noting that, having excellent insights in the game should not be confused with having excellent athletic skills. The former pertains to having knowledge of the sport. For example, knowing where to position players on a field or providing considerable input while developing a game plan. On the other hand, players who are better than their teammates at playing the sport would be considered as having excellent athletic skills. However, it is possible that, players recognized as having excellent athletic skills may not be adept at communicating their sport related knowledge to their teammates and may not be the best leaders.

This leads us to the third major finding of the present study, captains who were selected based on their excellent athletic skills and their central playing position were perceived as worse leaders. This finding is incongruous with previous work on this subject (e.g., Lee et al., 1983; Yukelson et al., 1983; Moran and Weiss, 2006; Fransen et al., 2016). A possible explanation for this discrepancy, as mentioned in the introduction, is that previous research did not explicitly investigate athletic ability and central playing position as reasons for captain selection. Nevertheless, our findings provide further support for Fransen et al.'s (2019a) conclusion that team captains should not be selected based on non-leadership factors such as technical ability and central playing positions, as may currently be the case.

The second research question of this study focused on whether the perceived reasons for captain selection were predictive of the

captain's acceptance by their coach as well as their teammates. Our first finding with respect to this research question was that captains were more accepted within their team when they were selected for having good motivational and social competencies. From previous research in education and sport settings we know that psychosocial skills predict acceptance of the individual by their peers (Moran and Weiss, 2006). Additionally, research on leadership has demonstrated that leader behaviors and attributes predict acceptance of the leader by peers (House and Mitchell, 1975; House et al., 2004; Malik et al., 2014). Taking these findings in conjunction with one another it follows that leaders who possess psychosocial skills may also be more likely to be accepted by their team members as was found in the current study.

Second, our results also showed that captains were less accepted within their team when they were selected for being an extension of the coach. To understand this finding, one could view it through the lens of the identity leadership theory. According to this theoretical perspective, leaders are more effective when they are seen to be acting in ways that serve the interests of their in-group, rather than (a) their personal interests or (b) the interests of other outgroups (Steffens et al., 2014). Consequently, if the team captain is perceived to be acting in the interests of the coach rather than the interests of the players, captains may be seen as out-group members and therefore less accepted by their team members.

Third, the study findings revealed that captains were less accepted within their team when they were selected for having excellent athletic skills. Previous research has suggested that sport specific athletic skills are often used as a criteria underpinning captain selection (Yukelson et al., 1983; Fransen et al., 2019a). In contrast, our research finding suggests that, selecting the team captain based on their excellent athletic skills is not a good approach for creating support from the players in the captain's leadership. That is, it is not because a player knows how to play the game well that they are also suited to guide other players on and off the field. The findings of the present study thereby undermine the common misperception in the sporting world that the best players should be elected as team captains. Instead, doing so, may reduce the support of the players in the captain's leadership, and, as a result, the chances of effective leadership may be low.

Finally, we also found that participants who tended to be older accepted the team captain to a lesser extent as compared to participants who were younger. A potential reason for this may be that coaches in our study were considerably older than the players. In light of these findings, it may be that age was a confounding variable with respect to our second research question.

We would like to point out that our study has a number of specific strengths. First, the research questions are novel, and the answers provide a more nuanced understanding of why team captains should be selected. This is important given that researchers have recently acknowledged the lack of clarity regarding criteria that are employed for captain selection and how these relate to captains' leadership quality and acceptance (Cotterill et al., 2019). Second, this study is amongst the first

quantitative studies to employ an extensive list of reasons for captain selection while also using rigorous statistical techniques to collate reasons (i.e., principal component analysis). Third, we were able to recruit relatively large representative samples of both coach and athlete populations in football and volleyball within Flanders.

There are also several limitations of this study. First, the study participants may have rated their perception of captains' actual behaviors as opposed to those that led to their selection in the first place. A possible way of overcoming this limitation in the future is to conduct research at the start of the season when captains are in the process of being selected. The second limitation of this study is that our results may not be generalizable to other sports. Future researchers should therefore consider replicating this study across different sports, such as cricket and rugby, where the role of the team captain may be more enhanced (Cotterill and Cheetham, 2017). A third limitation is related to the specific culture in which our data were collected. That is, our data collection was limited to coaches and players from Belgium. There is now ample evidence that leadership perceptions and effectiveness – in organizations – is dependent upon context-specific cultural values (House et al., 2004, 2013; Chhokar et al., 2007). For example, participative leadership tends to be preferred within the Germanic regional cluster (including countries such as Germany and the Netherlands). By contrast, countries falling within the Confucian regional cluster (e.g., China, South Korea, etc.) tend to prefer self-protective forms of leadership (House et al., 2004). It is very likely then that cross-cultural differences in leadership preferences are also prevalent within sporting contexts which in-turn may influence the reasons for captain selection and its association with leadership quality and acceptance. Therefore, it would be interesting to see whether our findings hold across national borders. A fourth limitation is that we used a single item format to assess leadership quality (both in general as well as on the four leadership roles) and acceptance of the team captain. However, it could be argued that these items were relatively straightforward and therefore sufficient to measure using a single item. Additionally, single item measures offer practical advantages such as shortened survey length and reduced research costs. Statistically too, they reduce the chance of encountering common method variance while also adding to a construct's face validity (Hoeppner et al., 2011).

There are also several avenues for future research. First, researchers could control for additional variables including the number of years the team captain has been involved in the sport, the number of years the team captain has led their sport team, the role (e.g., on-field leader) the team captain is expected to play within their sport team etc. Second, future researchers can explore the relationships between reasons for captain selection, leadership quality, leader acceptance and the impact of those on team effectiveness measures (e.g., cohesion, health and well-being, collective efficacy etc.). These team effectiveness measures should also include objective variables including team ranking, the amount of revenue the team captain brings in for the club or the sport team etc. Finally, another opportunity for future research pertains to developing the leadership competencies of team captains as researchers have argued that identifying

the right leader is only the first step (Fransen et al., 2015). While previous researchers have already provided an insight into potential leadership programs that could support the process of developing leadership competencies (Gould et al., 2013; Cotterill, 2017; Newman et al., 2019; Fransen et al., 2020b), the present research provides an understanding into how these programs can be improved further. More specifically, based on our findings, it would be of interest to explore interventions that exclusively target developing and training motivational and social skills of team captains.

We also see a number of practical implications of our findings. First and foremost, we suggest that selectors should choose team captains based predominantly on their motivational and social skills (i.e., interpersonal skills). Furthermore, based on the results of this study, other pertinent reasons for captain selection that should be taken into consideration depending on the needs of the team are having excellent insights in the game, being a representative of the team and taking the lead in organizing team activities. For example, in a season when a team may require more task-related guidance, selectors might appoint a team captain who has excellent insights in the game (i.e., task leadership qualities) in addition to having good interpersonal skills. In order to make this selection, coaches and club management might consider making use of a tool named Shared Leadership Mapping (Fransen et al., 2020b). This tool relies on a technique known as Social Network Analysis and can help selectors identify key leaders in the team with respect to different leadership roles (e.g., task, motivational, social and external). Moreover, Social Network Analysis is grounded in the perception of players rather than that of selectors. It therefore increases the likelihood that the identified leader will be accepted by team members, thus, maximizing the leader's effectiveness. Second, based on the study findings, we also recommend that selectors do not appoint team captains by virtue of central playing position and superior athletic skill. Finally, we emphasize that in order for team captains to be considered high-quality leaders (in general as well as on the four leadership roles) and to be accepted by their team members, they need to express a wide range of leadership behaviors ranging from task-related guidance to good interpersonal skills. This begs the question, does the expertise required from team captains today exceed the potential of a single individual? Indeed, as we mentioned in the introduction, Fransen et al. (2014b) found that only 1% of team captains were seen as the 'best' leader on all four leadership roles. Therefore, in addition to selecting a team captain with superior leadership skills, coaches and club management should consider selecting a leadership team consisting of multiple leaders performing different roles and responsibilities. Indeed, research on shared leadership has grown in the last decade as its

benefits have become more apparent within the sport psychology literature (Fransen et al., 2017).

CONCLUSION

Considering that the team captain is an important member of a sport team, this position should be awarded with care to those who are motivated, good at motivating others and have good social skills. Moreover, selectors should refrain from selecting a team captain merely based on a player's central playing position and/or superior athletic skill. Also, this study extends previous research insofar as it provides more quantitative evidence regarding criteria that should be employed when a team has specific leadership needs (e.g., task, external etc.). We hope that this study serves as a step in the direction of filling the gap highlighted by Cotterill et al. (2019), who called for the development of specific evidence-based approaches to captain selection.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

This study involving human participants was reviewed and approved by Social and Societal Ethics Committee (SMEC) KU Leuven. The participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

JL, KF, and FB conceived the idea and designed this research project. JL collected the data which was analyzed by RB with the help of FB, KF, and PC. This research manuscript was written by RB under the supervision of FB, KF, and PC. All authors contributed to the article and approved the submitted version.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.616966/full#supplementary-material>

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Evaluation of the NFHS Online Captains Leadership Course: Student Athletes' Views of Effectiveness

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OPEN ACCESS

Edited by:

Todd M. Loughhead,
University of Windsor, Canada

Reviewed by:

Aurelio Olmedilla,
University of Murcia, Spain
Corrado Lupo,
University of Turin, Italy

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Specialty section:

This article was submitted to
Performance Science,
a section of the journal
Frontiers in Psychology

Received: 31 December 2020

Accepted: 23 February 2021

Published: 24 March 2021

Citation:

Walker LF and Gould DR (2021)
Evaluation of the NFHS Online
Captains Leadership Course: Student
Athletes' Views of Effectiveness.
Front. Psychol. 12:648559.
doi: 10.3389/fpsyg.2021.648559

Sport is viewed as an arena for positive life skill development, including leadership development. In 2015, the NFHS launched an online Captain's Leadership Training Course. The main purpose of this study was to examine the effectiveness of the course in improving leadership knowledge and ability. An electronic survey was sent to a sample of athletes ($n = 202$, 129 female), ages 13–19 ($M = 17.01$, $SD = 0.10$) in eight United States states who had completed the NFHS course within the last 3–18 months. Most athletes (92.6%) completed the course based upon their coach's recommendation. The course was viewed to be moderately to very useful ($M = 2.49$, $SD = 1.00$) in helping them in preparing to be a team captain. Participants believed the course to be very to extremely effective in building their knowledge on motivation ($M = 1.96$, $SD = 0.89$), communication ($M = 1.90$, $SD = 0.80$), decision making ($M = 2.03$, $SD = 0.91$), peer modeling ($M = 1.91$, $SD = 0.86$), team cohesion ($M = 1.96$, $SD = 0.88$) and problem solving strategies ($M = 2.00$, $SD = 0.85$). Canonical correlation analyses showed that athletes who felt they were more reflective tended to rate the effectiveness of the course lower than their peers. Additionally, analyses did not show any clear demographic characteristics that distinguished between perceptions of the effectiveness of the course, showing the value found in the course was high with all types of scholastic athletes. Athletes felt the course could be improved most in the area of learning how to manage conflict with their peers and coaches. Future research in scholastic leadership should seek to understand the impact of the course prospectively across a high school sport season.

Keywords: leadership, youth, sport, captain, life skills

INTRODUCTION

Sport has long been viewed as an avenue for facilitating positive youth development *via* the promotion of life skills (Gould and Carson, 2008; Camiré et al., 2011; Watson et al., 2011). Among these potentially transferable skills, which include such things as resilience, goal setting, character development and integrity, is leadership (Gould et al., 2006). The extensive body of research in the arena of leadership within the business, education and the sport context highlight the perceived

importance of this skill in our culture (Voelker et al., 2011; Gould et al., 2012). Discussions of leadership, as a life skill, are also unavoidable within the formal contexts of athletic teams, due to the presence and tradition of captaincy (Gould et al., 2012). In addition, coaches continually refer to quality leadership as one of the most critical elements in effective team performance, team motivation, and team unity, citing leaders as an “extension” of the coaching staff (Bucci et al., 2012; Gould et al., 2013). In fact, coaches appear to value quality leadership to such an extent that they cited poor athlete leadership as one of the top six biggest issues with adolescent athletes (Gould et al., 2012). However, Gould et al. (2006) emphasized that the development of positive life skills does not occur simply through involvement in sport; it must be an intentional focus of the sport program to produce the desired outcomes.

While there is an abundance of leadership research focused on the characteristics and impact of effective coach leadership (Côté and Gilbert, 2009; Vella et al., 2010), there is still much that is unknown about cultivating quality athlete leadership. Youth leadership research often falls into examinations of formal athlete captaincy (e.g., Gould and Voelker, 2010, 2012; Voelker et al., 2011; Gould et al., 2013) or examinations of informal leadership roles and the development of leadership skills outside of the captaincy designation (e.g., Fransen et al., 2014, 2015, 2019). Regardless of the view taken, even a formal captaincy designation does not guarantee intentional leadership development in these youth athletes, with Gould and Voelker (2010, 2012) reflecting that leadership development is highly variable across athletic teams, ages, and skill levels. In addition to the transfer of these skills outside of sport, research reflects quality athlete leadership is connected directly to performance outcomes and indirectly to team cohesion, satisfaction in sport, and collective efficacy which can be mediators of performance outcomes (Carron et al., 2002; Chow and Feltz, 2007; Price and Weiss, 2013; Bruner et al., 2014; Filho et al., 2014; Cotterill and Fransen, 2016).

Due to the potential impact effective athlete leadership can have on team outcomes, it is important to understand how to intentionally develop leadership skills (Cotterill and Fransen, 2016). Several recent studies have tested interventions designed to enhance athlete leadership. Using a case study methodology, Cotterill (2017) implemented a leadership development program for elite cricketers with the intervention targeting captaincy development, leadership skills, and personal growth. Evaluation data was assessed *via* player feedback, staff feedback, and the consultant's own reflections on the program. The findings suggested that the program was impactful and beneficial in fostering leadership in the players. However, due to both the unique culture of cricket (e.g., the autonomy and importance of the athlete leader) and the elite level of competition, Cotterill's (2017) program design may not offer a complete transfer to a youth athlete population.

In another study, Duguay et al. (2016) evaluated a season-long leadership development program using 27 female varsity collegiate athletes. All the athletes took part in a series of four workshops focused on such behaviors as being an appropriate role model, using demographic behaviors, providing positive

feedback, and elements of transformational leadership such as inspirational motivation and individual consideration. Pre-versus post-intervention assessments revealed that significant differences emerged in leadership behaviors, peer motivational climate, and athlete satisfaction due to the intervention. Similarly, Voight (2012) implemented a collegiate leadership development program using one male and one female athletic team. Voight's (2012) intervention focused on improving team communication, *via* teammates deciding on objectives for the team collectively and expressing their needs/feedback to leadership, personal leadership reflection, and weekly meetings educating team leaders on the ways to accomplish responsibilities and solve problems. Voight's (2012) assessment of the program found that athletes felt the time was well spent and that the intervention did influence team performance, cohesion, and personal leadership skills.

Similar to Cotterill's (2017) case study, the findings from Voight's (2012) and Duguay et al.'s (2016) studies may be limited in their transferability to another team culture or level of competition, like the youth athlete, due to the unique demands of the collegiate setting. However, one important commonality between the programs mentioned was the presence of a reflection component in each intervention program (Voight, 2012; Duguay et al., 2016; Cotterill, 2017), highlighting the potential importance of reflecting in action for athlete leaders. While more intervention studies are needed, these initial studies are encouraging in that they provided evidence that athletes can learn to lead *via* formal programming. Additionally, changes in leadership behavior cited were associated with key outcomes such as team cohesion, motivational climate, and communication (Voight, 2012; Duguay et al., 2016; Cotterill, 2017). However, as these interventions were run by researchers, external to the team, more needs to be known about how sport coaches can directly facilitate leadership development on their teams.

Preliminary knowledge of the role of the coach in athlete development came from the work of Wright and Côté (2003). Wright and Côté (2003) highlighted the need for coaches to be kind and supportive, develop physical skills and understanding of the game, provide opportunities to advance in sport, assign specific roles, and include the athletes in important leadership decisions, if they wanted to optimally develop athlete leaders. Indeed, this last point was emphasized in an intervention leadership program that was developed by Blanton et al. (2014). Within this intervention, the importance of empowering the athlete leader to make decisions, and take ownership over the results of those decisions, was key in developing effective leadership behaviors (Blanton et al., 2014). Furthermore, in studying scholastic coaches known for developing leadership in their captains, Gould et al. (2013) identified that using formal leadership courses, allowing leaders to make decisions regarding team goals, and consistently prioritizing communication between coach and leaders as important best practices. However, a follow-up study by Voelker et al. (2019) surveyed scholastic coaches across the United States and showed that while almost 90% of the coaches felt formal leadership development programs could be useful, only 12% cited using such programs to build their athletes' leadership skills.

As such, while the above recommendations are valuable for coaches in intentionally training their leaders, there is still a disconnect between the number of coaches that purport to value leadership development and those that make it a priority of their program (Voelker et al., 2011, 2019; Gould et al., 2013). A major barrier to the implementation of leadership development on the part of coaches is a lack of time (Gould et al., 1999; McCallister et al., 2000; Voight, 2005; Paquette and Sullivan, 2012). For many, high school coaches in particular, coaching is not their full-time job. This factor, along with family life, presents a very real barrier on the amount of time with which coaches have to prepare for all of the responsibilities of their roles (Voight, 2005; Camiré et al., 2011). Not only is time a barrier but coaches may not have the knowledge or coaching efficacy to implement a leadership development program for their athletes (Voelker et al., 2019). In the end, whether the reason for not engaging in leadership development is due to a lack of knowledge or simply not having enough hours in the day to make it a priority, there needs to be a focus on promoting both the importance of leadership development to successful sporting outcomes and resources for developing leadership that are easy to access and use for the coach and athlete.

One leadership development resource that currently exists, which may circumvent the above-mentioned challenges, is the National Federation of State High School Association's (NFHS) Online Captain's Course. This course was developed in partnership with the Michigan High School Athletic Association (MHSAA) and the Institute for the Study of Youth Sport (ISYS) at Michigan State University and launched in March 2015. While the course was not based on one specific leadership theory, as many of these theories are targeted at the adult leader, it was informed by van Linden and Fertman's (1998) notions of how youth learn to lead by first seeing themselves as a leader, developing leadership skills, practicing those skills, and finally reflecting on what was learned. Additionally, the course content was supplemented by youth sport research in the area of athlete leadership and loosely structured after the long-standing MHSAA-ISYS in-person captains' clinics that have become a staple of the Michigan athletic landscape (Gould and Voelker, 2010; Pierce et al., 2018).

While not a prerequisite, the NFHS course was designed for those student athletes who are team captains or those with a formally recognized leadership role (Pierce et al., 2018). However, youth athletes do not need to be a captain, or a scholastic sport athlete, to take the NFHS course and grow as a leader. The goal of the course is to provide the student athlete with an opportunity to reflect on their current or potential role as a leader on the team, while providing tangible knowledge, skills, and strategies to use on the field. The course features first-person accounts of other student-athletes about their experiences as leaders, *via* on-screen hosts and captain interviews (Pierce et al., 2018). It consists of 10 "chapters," is offered free to charge, and takes roughly 4 h for the athlete to complete (Pierce et al., 2018). While the course was designed to be online, in an effort to reach more student athletes in the absence of a coach, the designers felt that the course alone was not enough. Hence, a coach's guide for

supporting and contextualizing the course information to their sport environment is available at no charge (Pierce et al., 2018).

Since its launch in 2015, the online course has been completed roughly 38,000 times online, which appears to show some promise for easy access and utilization of the resource with formal and informal team leaders alike. This resource also shows promise as a low time requirement resource, from which coaches can start developing leadership programs for their athletes. While the online captain's course is research based, it has not yet been evaluated for its effectiveness in helping youth athletes understand their roles as a team leader and the necessary leadership knowledge and strategies that may benefit them on the playing field. As such, two purposes guided this study: (1) to evaluate the course's effectiveness in improving athlete knowledge about becoming a sport leader, and (2) to determine if athlete's responses were influenced by demographic characteristics and their reflective ability.

MATERIALS AND METHODS

Participants and Participant Selection

To address the study purposes an electronic survey design was used, incorporating both closed and open-ended questions. Data were collected with scholastic student athletes who completed the NFHS Online Captain's Course within 18 months of the data collection. Prior to contacting participants, the study was approved by the Institutional Review Board, the NFHS, and the state athletic associations for the eight states used in the study. The eight states chosen, California, Florida, North Carolina, Maryland, Massachusetts, Michigan, Ohio, and Rhode Island represented the states with the most athlete completions of the Captain's Leadership Course. After obtaining the necessary approvals, participants were contacted *via* the e-mail they provided when signing up for the course. Participants were sent three reminders, 1 week apart, to participate in the survey. Participants under the age of 18 had to electronically obtain parental consent and provide assent to participate in the study before they could access the survey. Participants over the age of 18 were asked to provide electronic consent before they could access the survey. Participants could cease participation in the study at any time and were provided a \$10 Amazon gift card for their participation.

After providing consent, participants were provided with a summary page, reminding them of the basic elements of the NFHS Captain's Course content. To view the summary of the topical content from the course, see **Table 1** below. The only necessary inclusion criterion was that athletes had to have completed the NFHS Captain's Course in its entirety. Two hundred forty-nine athletes agreed to participate in the study; however, only 202 completed the survey in its entirety, reflecting an 81.5% completion rate.

Instrumentation

This survey incorporated: (1) demographics variables; (2) evaluations of the course; and (3) Kember et al.'s (2000) Reflection and Critical Reflection subscales. In addition, to the quantitative

TABLE 1 | Summary of NFHS course modules.

Module 1: Introduction to leadership (5 sections)
Module 2: Who am I as a student-athlete? (6 sections)
Module 3: What is my leadership style? (5 sections)
Module 4: What are my roles and responsibilities? (4 sections)
Module 5: Positive peer modeling (6 sections)
Module 6: Communication (4 sections)
Module 7: Motivation (5 sections)
Module 8: Team building and team cohesion (6 sections)
Module 9: Handling tough situations (3 sections)
Module 10: Leadership in review (1 section)

Each section is approximately 10 min in length and takes roughly 4 h to complete.

scales and questions incorporated with the survey, select open-ended questions were asked of the athletes (e.g., please give an example of something you were able to use from the course). All verbiage on the survey was altered to no greater than a 6th grade reading level, to fit the youth audience, with the exception of the items in Kember et al.'s Reflective Subscales.

Demographic Variables

The following demographic variables were obtained from the sample of captains that completed the course: age, last year completed in school (as some of those surveyed completed the survey during summer/after they graduated from high school), gender, the sports in which they participated, time since completion of the course (verified by the completion date provided with the e-mails from NFHS), whether or not their coach knew they took the course, and the extent to which coaches were involved in the course.

Leadership Variables

The leadership variables gathered on the survey were meant to provide context to the previous leadership experiences that occurred before taking the NFHS course that may have influenced each sport leader. The following leadership variables were gathered with the survey: previous experience serving as a sport leader, experience as a leader in other organizations outside of sport both in (e.g., student government) and outside of school (e.g., Boy/Girl Scouts), and experience with other formalized leadership training prior to the course. Rather than treat these items separately, the four items were combined to calculate a "total leadership score" which represented a compilation of prior leadership development. To create this "leadership score" each listed leadership experience/training was given a designation of 1 and all cited experiences were then summed for the individual's score. For example, if "Sarah" had a total leadership score of 3, this came from: being a captain of a club team (1), being a student government rep (1), and being a Girl Scout leader (1). Additionally, athletes were asked to rate the degree to which they viewed themselves as a leader and the age at which they first felt they could be a leader.

Kember et al. (2000) Reflective Subscales

A part of leadership that has often been cited as necessary for effectiveness is the ability to be reflective. As such, Kember

et al.'s (2000) Reflection and Critical Reflection subscales were used to evaluate: (1) the level to which athletes who took the NFHS course felt they were reflective individuals; and (2) if the course itself made them more reflective about their leadership positions. All responses were provided on a Likert-type scale, with 5 being "strongly agree" and 1 being "strongly disagree." As the reflective subscales were not designed to pertain to leadership specifically, the wording of items was adjusted slightly, and internal consistency was checked on the subscales to ensure reliability and validity of the measures for this sample.

Course Evaluation Questions

The development of the NFHS course was part of a larger leadership training initiative between the ISYS, at Michigan State University, and the MHSAA. The individuals that developed this course based its development upon six primary areas of leadership development deemed relevant to high school sports-motivation, communication, decision-making, peer modeling, team cohesion and solving problems (Pierce et al., 2018). Athletes were asked to respond to evaluative questions about the course, which include questions regarding the overall usefulness of the course in preparing them to be a leader, effectiveness of the course in helping them understand what leadership entails, and the course's effectiveness in helping them develop the skills to be a leader both in and out of sport. They were then asked about the six sport-specific areas of leadership above and asked to rate how much the course helped them to improve their knowledge in these areas. All responses were provided on a 5-point Likert scale, with 1 being "extremely good" and 5 being "not at all good."

Open-Ended Questions

Open-ended questions were included to gain a fuller understanding of opinions about the NFHS course. As such, the following questions were asked: (1) what characteristics make an effective leader, (2) how they found out about the course, (3) what motivated them to take the course, (4) an example of something they used from the course, and (5) any feedback they had regarding elements of the course that should be changed or added.

Data Analysis

Due to the large number of variables collected in this survey, data analysis was driven primarily to address the two purposes of the study: (1) to evaluate the course's effectiveness in improving athlete knowledge about becoming a sport leader; and (2) to determine if athlete's responses were influenced by demographic characteristics and their reflective ability. To examine these purposes descriptive statistics were calculated and a canonical correlation was conducted, respectively. Factor analyses were performed, where necessary, to validate and ensure reliability for scales used in the study. Furthermore, thematic content analysis was used to create meaning units and themes in the open-ended response data.

RESULTS

Demographics

Two hundred three total participants completed the electronic survey, 129 females and 74 males. The age of participants ranged from 13–19 years, with the mean age of 17.01 ($SD = 1.0$). The last grade completed followed suit with age, with the mean being between 11th and 12th grade ($M = 11.61$, $SD = 0.68$). This mean age was unsurprising given the typical age at which high school athletes are first given leadership positions on their teams- junior and senior years. A broad range of sports were represented with track and field ($n = 77$), soccer ($n = 50$), cross country ($n = 49$), and basketball ($n = 41$) most represented in the sample. However, it should be noted that several participants were multi-sport athletes and 18 total sports, individual and team-based, were represented in the sample.

In regard to their previous leadership experiences, the vast majority of athletes (89.6%) had served as a captain of a high school sport team before taking the survey, with the mean number of teams captained being 1.33 ($SD = 0.81$). The average number of non-sport high school leadership positions (e.g., student government, NHS) was slightly lower, 1.13, ($SD = 1.42$), with roughly half (49.3%) of participants not serving in any non-sport high school leadership positions. The same trend held for out of school leadership positions (e.g., Boy/Girl Scouts, jobs) with only 43% of athletes citing a leadership position ($M = 0.80$, $SD = 1.12$). Finally, when asked about any formal leadership training (e.g., leadership clinics or summits) they had received prior to the NFHS course, 32% of participants cited engaging in a leadership training course ($M = 0.35$, $SD = 0.56$).

In understanding the athletes' evaluation of the course retrospectively, the amount of time between taking the course and completing the survey was obtained. Eighty-nine athletes in the sample had taken the course in the last 6 months, 49 within 6–12 months, and 65 completed the course more than 12 months ago. Furthermore, athletes were asked about the level of coach involvement they received while completing the course. Most athletes (93.1%) completed the course at the request of their coach. Within this 93%, 50 took the course because it was their coach who recommended it, with 10 of these coaches providing some sort of follow-up on the course content; 136 athletes took the course because their coach required it, with 52 of these coaches providing some sort of the follow-up on the course content. More specific motivations for completing the course can be found in **Table 2**.

Reflective Ability Subscales

Both the Reflection and Critical Reflection subscales of Kember et al.'s Reflection Scale were included in the survey. Internal consistency was evaluated for both subscales *via* Cronbach alpha. Both subscales achieved acceptable reliability for $\alpha = 0.72$ for the Reflection subscale and $\alpha = 0.85$ for the Critical Reflection subscale.

The Reflection subscale asked participants to rate how reflective they were as an individual, with 5 being “definitely agree” and 1 being “definitely disagree” with total scale scores ranging

TABLE 2 | Motives for taking the NFHS leadership course.

To complete a requirement ($N = 105$)

Coach ($N = 60$)

Unspecified requirement ($N = 29$)

School/Athletic Director ($N = 16$)

To learn more about leadership in sport ($N = 74$)

To improve personal leadership skills ($N = 22$)

Wanted to be a captain this or next year ($N = 20$)

To become a better captain ($N = 14$)

Wanted to learn about leadership and thought it would be interesting ($N = 11$)

To better self as much as possible ($N = 7$)

Miscellaneous reasons ($N = 6$)

The desire to become a coach ($N = 1$)

Want to make a change in my team ($N = 1$)

The loss of influential leaders on the team ($N = 1$)

A passion for learning ($N = 1$)

It was a great opportunity ($N = 1$)

Looked good on my college application ($N = 1$)

from a low of 5 to a high of 20. On average, athletes rated themselves as reflective individuals ($M = 17.54$, $SD = 2.17$).

While the Reflection subscale focused on athletes' perceptions of their own reflective ability, the Critical Reflection subscale asked participants to rate how much the course itself made them reflective. Athletes rated the course as making them somewhat reflective, ($M = 14.66$, $SD = 3.97$) as a score of 20 indicate the participant “definitely agreed” with every subscale statement. The modified items and individual item descriptive statistics can be seen in **Table 3**.

Course Effectiveness Findings

Participants were asked to answer a total of 11 evaluation questions regarding different aspects of the course. Athletes rated the overall usefulness of the course between “moderately” and “very” useful ($M = 2.49$, $SD = 1.00$) on a 5-point Likert-type Scale, with 1 being “extremely useful” and 5 being “not at all useful.” The top-rated areas of the course were: motivation, communication, decision making, peer modeling, team cohesion and solving problems. These modules in the NFHS course were primarily centered in assisting athletes in improving their leadership in these highly sport relevant topics. Ratings on these items ranged from “very” to “extremely” useful ($M = 1.90$ – 2.03 , $SD = 0.80$ – 0.91). Full course ratings can be found in **Table 4**.

Canonical Correlation

A canonical correlation analysis was conducted to address the second purpose of this study, determining the relationship between personal and leadership related variables and evaluations of the course. Canonical correlation was chosen due to the analysis' ability to highlight the strength of a relationship between sets of variables. For this analysis, gender, total leadership experience score (see calculation in section “Materials and Methods”), the length of time since completing the course, the athlete's view of their ability to be a leader, and their Reflection subscale score served as predictor variables, and the overall

TABLE 3 | Reflective subscale scores.

	<i>M</i>	<i>SD</i>
Reflection subscale		
I sometimes question the way other do something and try to think of a better way.	4.40	0.66
I like to think over what I have been doing and consider alternative ways of doing it.	4.33	0.79
I often reflect on my actions to see whether I could have improved on what I did.	4.56	0.61
I often re-appraise my experience so I can learn from it and improve for my next performance.	4.36	0.71
Critical reflection subscale		
As a result of this course I have changed the way I look at myself (as a leader).	3.99	1.07
This course has challenged some of my firmly held ideas (about leadership).	3.38	1.27
As a result of this course I have changed my normal way of doing things (and leading).	3.71	1.10
During this course I discovered faults in what I had previously believed to be right (about being a leader and leading).	3.67	1.20

5 = *definitely agree* to 1 = *definitely disagree*.

TABLE 4 | Course evaluation ratings for NFHS captain's leadership course.

	<i>M</i>	<i>SD</i>
Evaluation questions		
How useful did you find the National Federation Captain's Leadership Training course to be in preparing you for leadership roles?	2.49	1.00
How effective was the course in helping you understand what leadership is?	2.21	0.93
How effective was the course in helping you understand important components in effective leadership?	2.07	0.86
Overall, how effective was the course in helping you develop the skills to be a leader in sport?	2.10	0.98
Overall, how effective was the course in helping you develop the skills to be a leader outside of sport?	2.45	1.04
How effective was the course in improving your knowledge as a captain/leader in each of the following areas:		
Motivation	1.96	0.89
Communication	1.90	0.80
Decision making	2.03	0.91
Peer modeling	1.91	0.86
Team cohesion	1.96	0.88
Solving problems	2.00	0.85

usefulness of the course, the effectiveness in increasing knowledge on motivation, communication, decision making, peer modeling, team cohesion, and problem solving, and their score on the Critical Reflection subscale were used as criterion variables.

A significant canonical relationship between the two sets of variables did emerge from the analysis, Wilkes $\lambda = 0.700$, $F(40, 818) = 1.741$, $p < 0.05$. Only one significant canonical function emerged, $R_{c1} = 0.397$, reflecting 15.8% overlapping variance. While a significant relationship was present between

the two sets of variables, the function suggested a weak correlation. The redundancy index reflected that 38% of the variance in evaluations were explained by the predictor variables, which meets Tabachnick and Fidell's (2007) recommendation of at least 10% to be deemed significant and meaningful. So, while the relationship was weak overall between predictor and criterion variables, it was still deemed significant and meaningful.

In examining the relative contribution of each predictor variable to the multivariate relationship (Table 5) per Tabachnick and Fidell's (2007) recommendations of 0.30 cut points for meaningful contributions to the relationship, only the total leadership experience score (loading = -0.35) and self-rated perceptions of reflectivity score (loading = 0.82) meaningfully contributed to the set of evaluative scores regarding the course. Among the criterion variables, all evaluations of the course contributed meaningfully to the relationship, although improving knowledge of decision making (-0.82), motivation (0.70) and critical reflection (0.75) were the variables with the highest canonical weights. As such, this canonical analysis revealed that those student athletes who perceived themselves to be more reflective individuals pre-course rated the course lower overall, but still felt it made them more reflective about leadership. In regard to total leadership score, the higher the leadership score rating (i.e., the more previous experiences an athlete had prior to the course), the higher their evaluation of the course. This result seems to suggest that even those with previous leadership training still found value in a course directed a sport-specific leadership.

Open Ended Qualitative Responses-Specific Uses of the Course and Improvements

In addition to asking athletes for their quantitative ratings of the effectiveness of the course, several open-ended questions were

TABLE 5 | Factor loadings for relationship between demographic characteristics and course evaluations.

Factor	1
Predictor variables	
Gender	−0.15
Total leadership experience score	−0.35
Reflection scale ratings	0.82
Date course taken	−0.003
View of self as leader	−0.10
Criterion variables	
Overall usefulness of course in preparing to be team leader	−0.44
How effective course was in improving knowledge on motivation	−0.70
How effective course was in improving knowledge on communication	−0.44
How effective course was in improving knowledge on decision making	−0.82
How effective course was in improving knowledge on peer role modeling	−0.55
How effective course was in improving knowledge on team cohesion	−0.41
How effective course was in improving knowledge on problem solving	−0.68
Critical reflection subscale	0.75

posed to better understand what led them to and what they were able to use from the course. All responses to open-ended questions were compiled and grouped thematically into like responses. The number of athletes providing similar responses were also noted (See **Tables 6, 7**).

An inspection of **Table 6** reveals that the course modules most often used in real-time leadership situations were communication, motivation and handling tough situations. Regardless of the module, specific topics cited as most often used were: Motivation and encouragement of teammates ($n = 32$); learning how to build the specific types of team cohesion ($n = 28$); how to better communicate/mentor new members of the team

($n = 23$); and, handling problem teammates with confidence and calmness ($n = 23$).

Table 7 reflects participant's responses when asked what could be changed or added to the course to make it more effective in enhancing their sport leadership skills. Athletes had a strong desire to see more realistic scenarios, especially relative to resolving conflict with their peers and coaches ($n = 27$). Furthermore, athletes desired for the course to be more interactive compared to the one-sides format of videos and writing reflections ($n = 7$). This desire for further real-time or dual interaction with more than the computer interface, in conjunction with the desire to learn conflict resolution skills, may indicate some of the limitations with an electronically based course offered to a wide audience.

TABLE 6 | Frequency of athlete examples of course content most able to use.

Communication module (N = 43)

How to better communicate/mentor new members of the team ($N = 23$)

How to be the link between coach and teammates ($N = 11$)

Better listening skills and relationships with teammates ($N = 9$)

Athlete quote: "I never leave practice now without communicating to each of my teammates about how hard they worked and things that need to be improved."

Motivation module (N = 37)

Motivation and encouragement of teammates ($N = 32$)

How to set goals ($N = 5$)

Athlete quote: "I was able to use the real-life stories of captains (from the course) as motivation for myself to model them. They gave me energy to want to be a good captain."

Handling tough situations and decision-making module (N = 34)

Handling problem teammates with confidence and calmness ($N = 23$)

How to make decisions as the leader ($N = 11$)

Athlete quote: "There was an instance on my team where two girls got in a fight outside of practice, and I was able to bring it to the coach's attention and talk to the girls to work out the situation."

Cohesion module (N = 28)

Learning how to build each of the specific types of team cohesion ($N = 28$)

Athlete quote: "I feel that the content of the course helped me with team cohesion. We had some new players this year, and the material helped me in getting my teammates to work together and gel. As a result, our season was much more successful than expected."

Modules regarding leadership definition and roles/responsibilities (N = 13)

How to lead my peers with confidence and be a persuasive leader ($N = 8$)

Different types of leaders and the roles and responsibilities of captains ($N = 5$)

Positive peer modeling module (N = 8)

How to be a positive peer model for young athletes/kids ($N = 8$)

Athlete quote: "Because I had taken the course, I knew that even though I was hurt I needed to go to every practice and every game to show my team that I supported them. If I could come, even though I was hurt, they could do the same."

TABLE 7 | Recommendations for improving the course.

More realistic scenarios and problem-solving strategies, especially with resolving conflict ($N = 17$)

Ways to navigate conflict with the coach ($N = 10$)

More interactive format, rather than just videos and writing ($N = 7$)

More examples of how to build both types of team cohesion ($N = 5$)

More examples/leaders from outside of sport ($N = 3$)

DISCUSSION

This study aimed to examine the utility of a leadership development resource available to scholastic youth athletes—the NFHS Online Captains Course. To better understand the usefulness and effectiveness of this course in building athlete leadership, two purposes guided this study: (1) to evaluate the course's effectiveness in improving athlete knowledge about becoming a sport leader, and (2) to determine if athlete's responses were influenced by demographic characteristics and their reflective ability.

Athlete Perception of the NFHS Course

In addressing the first purpose, study participants rated the course overall as "moderately" to "very useful" in preparing them for their leadership role, with the specific modules of communication, peer modeling, motivation and team cohesion being judged as the content areas that most improved the participant's knowledge. Open-ended response data supplemented the quantitative findings; the same modules were mentioned as athletes elaborated specific strategies that they used in their leadership on the playing field. The overall positive perception of the course is a promising finding in light of the fact that the program is available nationally and has been completed by almost 38,000 high school athletes. It is reassuring to know that the users find the course to be useful in their sport leadership growth.

In examining the second purpose of the study, whether demographic and background factors influenced how effective student athletes found the course, canonical correlation analysis revealed that those student-athletes who perceived themselves as more reflective individuals rated the course lower, but still felt that the course made them reflective about their leadership. This finding is curious but may encompass the idea that an athlete's perception of their own reflectivity may impact their openness to learning new material. Due to the frequency with which reflection is included in athlete leadership development courses (Voight, 2012; Duguay et al., 2016; Cotterill, 2017), and its potential importance in leadership growth, the role of this variable as it interacts with learning about leadership should be further examined. The canonical correlation results also revealed

that the total leadership score, or the more leadership experiences the student athlete had coming into the course, the higher they rated the course in terms of facilitating leadership knowledge. This finding may suggest that the more leadership experience one has entering the course the more they may identify with the topics discussed and be interested in their application to the sport context.

It is also important to recognize what was not found in the canonical analyses. While the analysis was significant, the predictor set was weakly correlated to the course evaluation perceptions. In particular, there were no clear demographic characteristics (gender, time since taking the course, view of leadership ability) that distinguished between perceptions of the effectiveness of the course. This lack of finding is important as it demonstrates the course was found to be highly valuable with all types of scholastic athletes. As such, creators of youth life skill development resources (e.g., NFHS Online Captains Course) may want to focus course content on the most salient youth identity that impacts their leadership (e.g., student-athlete, dual career athlete) to maximize the potential positive impact (Lupo et al., 2017).

While the course was seen as useful overall, the student-athletes taking it also offered a number of suggestions for improving it. Most notable, were the recommendations around resolving conflict, whether that be with teammates or one's coach. This makes sense as the course does not emphasize dealing with conflict to a great degree. Recent research has also highlighted how dealing with conflict is a difficult area for athletes in general (Wachsmuth et al., 2017) and young athletes in particular (Partridge and Knapp, 2016). Dealing with conflict is difficult for adults, much less scholastic youth athletes who have less conflict resolution experience and who may be highly motivated to be accepted by their peers. While additional content on conflict resolution could be added, this may be an area of leadership development best targeted in a coach follow-up to the course.

A more difficult recommendation to implement was to make the course more interactive by having more than just videos and written exercises. Developers might take lessons from the video game industry and include options such "plan your own adventure" type activities or other interactive exercises where one responds to something asked online and gets immediate customized feedback. Of course, this process is constrained by budgetary concerns, although the techniques available for online instruction have greatly expanded in the years the course was developed.

Understanding the Coaches Role in the NFHS Course

The findings regarding the motivation for taking the course were interesting in that almost all (93%) the participants signed up for the course because they were urged to by a coach or athletic director. This emphasizes the importance the coach plays in foster youth leadership development. It also suggests that if one wants to expand the number of youth taking the course calls need to be made to coaches and administrators versus to students directly. Relative to this point, participants were asked

if their coaches followed up, with 33% confirming a follow-up, but they were not asked to specify the type of follow-up provided. As such, this follow-up could have entailed anything from confirming that the athlete completed the course to an active conversation about course content. To maximize course effectiveness the course, developers recommended and included a brief guide for coaches to follow-up with the athlete after taking the course, as it was thought that doing so would allow the participants to contextualize the leadership knowledge conveyed to their particular context and coach approach. In future studies, it would be interesting to see what percentage of coaches use this resource and, if doing so, amplifies the effect of taking the course for the student-athlete leaders.

Strengths and Limitations

This study had several strengths. First, while online education for both athletes and coaches are growing in popularity, seldom have evaluation studies been conducted to assess their effectiveness (Cotterill and Fransen, 2016). This study has done so and provided preliminary evidence for the effectiveness of the course. Second, a national sample of participants were randomly selected to participate with a wide variety of sports represented. This sample highlighted the potential utility of the course across sport, program, and geographical context. Third, due to the relative ease of access to the course and the decreased time demand on the coach, the positive evaluations seem to indicate the NFHS course as a viable option for time-strapped coaches who want to grow their athlete leaders. Additionally, while the course was designed for captains, the content can easily be used to develop informal leaders as well, allowing for all athletes to access this leadership development.

Relative to limitations, only self-reports of the course's effectiveness were obtained and only from the student athlete participants. While the individual athlete's perceptions and reflections on the course will undoubtedly play a role in their leadership behaviors, as is demonstrated in **Table 6**, Loughhead (2017) highlights that at present, the field has yet to determine a "gold standard" for measuring athlete leadership behavior or quality. Additionally, Cotterill and Fransen (2016) highlight that in evaluating athlete leadership effectiveness both the coach and peers should be part of this assessment, compared to self-report alone. Thus, while it was important to understand the perceptions of the course effectiveness on leadership as "proof of concept," further work will be needed in the future to track if and how the course affects leadership behaviors across a high school season. Related to this point, assessing the opinions of coaches and teammates in evaluating leadership behavior is important both pre- and post-course.

A second limitation was the reflective measure used. While we were able to establish that it was reliable, Kember et al.'s (2000) scale has not been used in the sport context. It needs to be validated to determine that it is a good measure of athlete reflection or if another measurement may be more appropriate. Finally, while the survey used in this study had good face validity, it was intended for one time use and extensive validation had not occurred. The amount of time from course completion to survey completion was also a weakness, with over half (56.3%) of the

students evaluating the course 6 + months after completing it. Although we found no correlation between the amount of time from course completion to the overall course effectiveness rating, this time delay in response could introduce recall bias.

Conclusion and Future Research Directions

The results of this study highlighted the potential value of the NFHS Online Captains Course to help scholastic athletes understand the necessary elements of athlete leadership within a sport context. The athletes' overall positive evaluation of the course, as well as the ease with which they cited being able to translate elements of the course to their leadership on the playing field, highlights this course may serve as critical "first exposure" to building leadership skills. For coaches with multiple competing time demands, but the desire to build athlete leaders, the NFHS course may be a meaningful resource to employ with their teams formal and informal leaders.

While the results of this investigation are encouraging, additional research is warranted. Most important is the need to conduct an intervention study where athlete leadership is assessed prior to and after taking the course with a group of course participants compared to non-course participants. It would be useful if future investigators longitudinally assessed athlete leadership development across a sports season, examining how taking the course interacted with the leadership experience to influence leadership behavior. Additionally, as previously stated, getting other stakeholder views (e.g., coaches, teammates) of the course participant's leadership would be useful. Since athlete leadership is a shared practice (Duguay et al., 2019) and might be best viewed through the lens of a social identity approach to leadership (Worley et al., 2020), there might be a need to ensure that researchers examine not just the individual development that may occur from leadership courses, but the critical ways in which these courses can also serve as a starter to shared conversation and continued development in the networks of relationships that exist on a team.

There has been considerable research conducted in recent years focusing on informal peer leadership in sport (e.g., Fransen et al., 2014, 2015). It would be useful if future

investigators assessed the influence of the course not only on student-athletes who are formal team captains, but those who occupy informal leadership roles on teams. For example, one might have entire teams of young athletes take the online course and then assess how the course experience influenced their experiences of leading and being led.

Finally, exploring the role of the coach in cultivating youth leadership is important. Why do some coaches recommend athletes take the course while others do not? What do coaches expect the course to accomplish for the young athletes who take it? And, how often, and in what ways, do coaches follow-up on what is taught in the online course? Further expansion on the decision to use the NFHS Online Leadership Course, and the way this course is specifically utilized with teams, should be explored to better understand how to maximize the impact of this course.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Human Research Protection Program, Michigan State University. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin and the athletes themselves.

AUTHOR CONTRIBUTIONS

LW helped plan the study, conducted the data collection, analyzed the data, and wrote the majority of the manuscript submitted. DG helped plan the study, helped interpret data analysis, and wrote part of the manuscript submitted. Both authors contributed to the article and approved the submitted version.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Is Perceived Athlete Leadership Quality Related to Inside Sacrifice and Perceived Performance in Team Sports? The Mediating Role of Team Identification

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OPEN ACCESS

Edited by:

Todd M. Loughhead,
University of Windsor, Canada

Reviewed by:

Clifford J. Mallett,
The University of
Queensland, Australia
Lori Dithurbide,
Dalhousie University, Canada

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Specialty section:

This article was submitted to
Performance Science,
a section of the journal
Frontiers in Psychology

Received: 31 January 2021

Accepted: 25 May 2021

Published: 21 June 2021

Citation:

López-Gajardo MA, Pulido JJ, Tapia-Serrano MA, Ramírez-Bravo I and Leo FM (2021) Is Perceived Athlete Leadership Quality Related to Inside Sacrifice and Perceived Performance in Team Sports? The Mediating Role of Team Identification. *Front. Psychol.* 12:662250. doi: 10.3389/fpsyg.2021.662250

The study aimed to analyze the relationship between athletes' perceptions of athlete leadership quality, team identification, inside sacrifice, and performance. A total of 299 players of collective sports (soccer, beach soccer, basketball, volleyball; $M_{\text{age}} = 19.05$, $SD = 5.10$) participated through a cross-sectional design survey. Data were analyzed using structural equation modeling. Results highlight the positive relationships between perceived quality of athlete leaders, inside sacrifice, and perceived performance, and between inside sacrifice and perceived performance. Furthermore, inside sacrifice perceived by the athletes was a positive mediator between perceived athlete leadership quality and perceived performance. Also, team identification was a positive mediator in the association between inside sacrifice and perceived performance. These findings extend knowledge about the athlete leadership quality context. These results can also be useful for further research and implications in team sports' performance, as coaches and sports psychologists would have more information about their teams' perceptions of leadership quality to achieve positive outcomes in players' inside sacrifice and performance. The findings also highlight the importance of developing team identification to improve the relationships between perceived athlete leadership quality, inside sacrifice, and perceived performance.

Keywords: group dynamics, athlete leadership, social identity theory, sport psychology, team sports

INTRODUCTION

Coaches, players, and sports psychologists recognize the importance of leading athletes within a team. For example, Mourinho (2019), one of the best soccer coaches in the last few years said: "when you have them (i.e., team leaders), your team is one step ahead." This quote by Jose Mourinho points out the importance for some coaches of building a good workgroup to promote good athlete leadership in the team. Good athlete leadership can turn the team into an effective operational group in terms of organization, teamwork, and performance (Fransen et al., 2015a).

Athlete Leadership

Athlete leadership has been defined as “an athlete, occupying a formal or informal role within a team, who influences a group of team members to achieve a common goal” (Loughead et al., 2006, p. 144). Athlete leadership has usually been associated with formal team leaders, such as captains. However, according to Fransen et al. (2014), captains are not always the most influential players in the team. Whether the leader is formal or informal may not be so relevant; instead, the quality of that leadership can benefit the team (Cotterill and Fransen, 2016). The quality of athletes’ leadership has been defined as that player leaders who fulfill well his or her specific role, who develop an impact on team functioning and are social well-accepted by teammates (Fransen et al., 2014). In fact, such leadership quality has been related to the leader’s effectiveness (Fransen et al., 2017).

According to Loughead et al. (2006) and Fransen et al. (2014), there are different roles in athlete leadership. On the one hand, some leaders, called task and motivational leaders, are characterized by developing their leadership in training sessions and competition actions. The task leader helps the team to focus on the field, making tactical decisions and giving advice, whereas the motivational leader encourages the teammates’ engagement in any situation on the field. On the other hand, other leaders, known as social and external leaders, are characterized by exercising leadership in an off-sports context. The social leader develops good relations within the team, creating a good atmosphere off the field, and the external leader acts as a link between the players and the club management, social networks, or sponsors. Therefore, the perceived athlete leadership quality of each of these leadership roles (i.e., task, social, motivational, and external) can improve teams’ collective functioning (Price and Weiss, 2011, 2013; Fransen et al., 2017). Previous studies has shown that the optimal fulfillment of all of these four types of leadership together has demonstrated several benefits, such as team cohesion (Fransen et al., 2016a; Loughead et al., 2016), collective efficacy (Fransen et al., 2014, 2016a), or team confidence (Fransen et al., 2016a). Thus, we will focus on the general leadership quality grouping the best athlete leader in each of the four leadership roles. More comprehensive definitions of the four leadership roles (task, motivational, social, and external leader) can be found in Table 1.

Research has shown that high-quality leaders are related to team members’ efforts (Greenlees et al., 1999). When team leaders unite the team through their leadership methods and the team members sacrifice themselves for the team, the teams will achieve their goals more easily (Bandura et al., 2019). Prapavessis and Carron (1997) described sacrifice as “group members voluntarily initiating an action or giving up prerogatives or privileges for the sake of another person or persons” (p. 231). This variable is considered a voluntary behavior that encompasses several concepts such as empathy, altruism, cooperation, or loyalty (Prapavessis and Carron, 1997). These authors pointed out that the specific sacrifice within the context of practicing and competing is called inside sacrifice (i.e., players’ sacrifice during daily practice and competition; Cronin et al., 2015). They also proposed that inside sacrifice involves both personal (e.g., sacrifices I make) and teammates’ sacrifice (e.g., sacrifices my

TABLE 1 | The definitions of the four leadership roles, as described by Fransen et al. (2014).

Leadership role	Definition
1. Task leader	A task leader is in charge on the field; this person helps the team to focus on our goals and helps in tactical decision-making. Furthermore, the task leader gives his/her teammates tactical advice during the game and adjusts them if necessary.
2. Motivational leader	The motivational leader is the biggest motivator on the field; this person encourage his/her teammates to go to any extreme; this leader also puts fresh heart into players who are discouraged. In short, this leader steers all the emotions on the field in the right direction in order to perform optimally as a team.
3. Social leader	The social leader has a leading role besides the field; this person promotes good relations within the team and cares for a good team atmosphere, e.g., in the dressing room, in the cafeteria or on social team activities. Furthermore, this leader helps to deal with conflicts between teammates besides the field. He/She is a good listener and is trusted by his/her teammates.
4. External leader	The external leader is the link between our team and the people outside; this leader is the representative of our team toward the club management. If communication is needed with media or sponsors, this person will take the lead. This leader will also communicate the guidelines of the club management to the team regarding club activities for sponsoring.

teammates make). Considering that teams constitute a collective context, where players are nested in sports teams, it is necessary to examine the personal sacrifice and behaviors they expect and perceive from team members (Cronin et al., 2015).

Decades of research have shown that sacrifice is associated with group processes (Zander, 1982; Cronin et al., 2015). Athletes’ sacrifice has been strongly associated with coach leadership, coach-athlete relationships (Jowett and Timson-Katchis, 2005), and athlete leadership (Cronin et al., 2015). In this wave of research, inside sacrifice represents effort and the effect of good athlete leadership. If players perceive that their leader supports them, coordinates everyone’s actions, and helps everyone to perform well, they will be more likely to put out effort for the team. Therefore, when leaders convince and persuade their teammates (Cotterill and Fransen, 2016), they may increase their inside sacrifice within the team (Bandura et al., 2019).

In this regard, although research analyzing athlete leadership in competitive sports has advanced, much work remains to be done. For instance, previous scientific evidence has shown the benefits of athlete leadership and determined which mechanisms may help to improve teams’ positive outcomes (Fransen et al., 2014, 2016a, 2017, 2018; Loughead et al., 2016). However, we do not know whether perceived athlete leadership quality can encourage athletes to sacrifice themselves for the team. Hence, it would be interesting to examine the relationship between athlete leadership quality and players’ reported inside sacrifice.

Drawing on these previous investigations, we expect that the perceived quality of the athlete leaders within the team (i.e., task, motivational, social, and external leader) will be positively associated with players' inside sacrifice (Hypothesis 1).

Perceived athlete leadership quality could lead to other positive outcomes (Fransen et al., 2014, 2015a). Specifically, perceived athlete leadership quality has been associated with higher satisfaction with team performance (Crozier et al., 2013; Fransen et al., 2020b) or team effectiveness (Fransen et al., 2017). Thus, when team leaders perform their functions well, remembering which tasks must be performed, supporting their players on the field, promoting positive group relationships, and managing external aspects, the team will be more likely to perform well. Promoting athlete leadership is important to improve individual and team performance in team sports (Price and Weiss, 2011, 2013; Cotterill, 2013; Cotterill and Fransen, 2016; Fransen et al., 2017; Leo et al., 2019). Specifically, previous research found that the fulfillment of these four high-quality athlete leadership roles (i.e., task, motivational, social, and external) led to players' perception of better performance (Fransen et al., 2017) and a higher number of free throws scored by every player, or to less time needed to complete a task in an experimental study (Fransen et al., 2015a, 2016b, 2018). Thus, we expect that high-quality perceived athlete leadership will be positively related to players' perceived performance (Hypothesis 2).

Considering inside sacrifice and performance as benefits of perceived athlete leadership quality, we expect that these two variables will not be on the same level. When all team players sacrifice and strive during training sessions and matches, performance is expected to improve and team goals to be achieved (Boyd et al., 2014). Although several studies defend that individual sacrifice and group processes are related to team performance (Prapavassiss and Carron, 1997; Phillips et al., 2010; Cronin et al., 2015), to our knowledge, there is no empirical investigation focused on inside sacrifice within a team and its relationship with performance in the sports context. Thus, our next aims refer to the relationship between inside sacrifice and performance perceptions, and whether inside sacrifice mediates the relationship between perceived athlete leadership quality and perceived performance. Assuming that perceived athlete leadership quality is linked to inside sacrifice and perceived performance and that sacrifice can determine perceived performance, we expect that inside sacrifice will mediate this relationship, as it fulfills the mediation postulates (Hayes, 2009). Also, as prior scientific evidence showed, inside sacrifice was a mediator between coach leadership (i.e., transformational and authentic) and collective behavior in group tasks (i.e., cohesion; Cronin et al., 2015; Bandura et al., 2019). Thus, we will examine the association between inside sacrifice and perceived performance and the underlying mechanisms of the mediation between inside sacrifice, perceived athlete leadership quality, and perceived performance. Hence, we hypothesize that athletes' inside sacrifice will be positively related to perceived performance (Hypothesis 3), and will positively mediate the relationship between perceived athlete leadership quality and perceived performance (Hypothesis 4).

We also seek to explain the underlying mechanism through which high-quality perceived athlete leadership can affect players' reported inside sacrifice, and in turn, their perceived performance. As mentioned, recent research has shown the positive effects of high-quality athlete leaders in different group dynamics applied in team sports (Fransen et al., 2014, 2015a, 2016a,b), where, according to the Social Identity Theory (SIT), team identification has significantly improved these effects (Fransen et al., 2014, 2015a, 2016b). The recently proposed SIT approach related to athlete leadership focuses on team identification as the essential key to influence followers (Haslam et al., 2011). Thus, leadership is a group characteristic that directly influences team identification (Ruggieri and Abbate, 2013).

Team identification is a concept within the framework of SIT. SIT refers to "that part of an individual's self-concept which derives from his/her knowledge of his/her membership of a social group (or groups), together with the value and emotional significance attached to that membership" (Tajfel, 1981, p. 255). Specifically, SIT proposes that people can define themselves depending on the specific context either as unique individuals (i.e., in terms of "I") or as group members (i.e., in terms of "us"). These characteristics of SIT make players feel a part of the same group and they know what the group stands for (Haslam et al., 2011; Steffens et al., 2014; Fransen et al., 2015b). It is precisely their sense of themselves as part of "us" that "makes group behavior possible" (Turner, 1982, p. 21). In other words, effective leaders "don't think 'I'. They think 'team'" (Drucker, 1992, p. 14). The variable team identification has been employed in recent studies to measure this feeling of "us" (Fransen et al., 2014, 2016a).

Previous research has shown that team identification is a potential mediator between perceived athlete leadership quality and several group processes (e.g., collective efficacy or cohesion; Fransen et al., 2014, 2015b, 2016a). It has also been shown that if team leaders promote a sense of "we" and team ownership, this helps the group focus on its goals and keep striving for the best results (Fransen et al., 2020a). This means that when athletes perceive high-quality leaders on their team, they tend to feel more strongly identified with the team. Leaders will make the whole team share a collective belief to achieve the same objectives, generating a team feeling among all the players. Therefore, it is important to identify with the team to be more predisposed toward individual and collective sacrifice to improve team performance (Cronin et al., 2015). Although these associations have not yet been demonstrated in a sports context, some anecdotal quotes have hinted at their potential. For example, one of the best coaches of NBA, Jackson (2014), illustrated the importance of "we" to the team: "Good teams end up being great teams when their members trust each other to give up the 'me' for the 'we'." This quote highlights the feeling of being a part of the same group (i.e., team identification; Haslam et al., 2011), improving cooperation, helping, and making greater efforts (Reicher et al., 2018; Stevens et al., 2019). At the same time, due to team identification, group members should be more willing to sacrifice themselves for the team to achieve their shared goals (Reicher et al., 2018; Stevens et al., 2019).

According to findings in previous studies, we propose that team identification will mediate the relationship between perceived athlete leadership quality and players' inside sacrifice (Hypothesis 5a), and conjointly with players' reported inside sacrifice (i.e., team identification and inside sacrifice), they will mediate the relationship between perceived athlete leadership quality and perceived performance (Hypothesis 5b).

Thus, the current study attempts to extend the existing scientific knowledge of athlete leadership in two ways. First, we analyzed the impact of perceived athlete leadership quality on two types of collective outcomes: inside sacrifice and performance reported by players. Second, the present paper goes beyond the mere relationship between perceived athlete leadership quality, inside sacrifice, and perceived performance, seeking to explain several indirect mechanisms, such as team identification and inside sacrifice, through which these relationships occur.

METHOD

Participants

A sample of 299 athletes correctly completed the questionnaires, a response ratio of 93.32%. Following the exclusion criteria of Leo et al. (2019), 17 questionnaires (5.38%) were removed from the original sample of 316, due to invalid responses (i.e., not fully completed, the same item was answered several times, or due to a clear response pattern). They corresponded to 17 teams (soccer = 260; beach soccer = 14; basketball = 6; volleyball = 19) and were aged between 14 to 42 years ($M = 19.05$, $SD = 5.10$). Of the participants, 272 were male ($M = 18.82$, $SD = 5.12$) and 27 were female ($M = 21.11$, $SD = 4.43$). This study employed convenience sampling methods.

Instruments

All items included in these scales were presented in the players' language (i.e., Spanish). To translate and adapt the instrument in the Spanish sport context, the authors followed the strategies proposed by Muñiz et al. (2013). First, a professional translator with 15 years expertise in sport psychology translated the instrument from English to Spanish. Second, two members of the research team—university professors with PhDs in Sport Psychology and an advanced level of English—individually analyzed each item using the checklist for the quality of the translation/adaptation of items designed by Muñiz et al. (2013). Third, two new experts—university professors with PhDs in Sport Psychology and an advanced level of English—analyzed the content of each item according to its domain representation, relevance, and clarity. Fourth, a pilot test was conducted with 12 players (soccer = 6; beach soccer = 2; basketball = 2; volleyball = 2) who found no problems in the content of the items.

Perceived Quality of Athlete Leaders

We examined perceived athlete leadership quality following a previous study of Fransen et al. (2014), that used a one-item measure to assess the overall perceived leadership quality of each of the four leaders within the team (task, motivational, social, and external leader; see **Table 1**) concerning their specific role. First, to identify the leaders, players were presented with

a description of each leadership role. Second, they indicated which teammates best matched the description of each of the four leadership roles. Third, the quality of the four leadership types was evaluated. When the players had selected the teammate or teammates they considered a certain type of leader (task, motivational, social, and external leader), they rated the following item "To what extent do you think that this leader fulfills his role as leader well?" on a 7-point Likert scale, ranging from 1 (*very poorly*) to 7 (*very well*). Thus, participants were asked to indicate the perceived quality of the motivational, social, and external leader, concerning their specific role and comprised in one factor. A higher score on these items indicated players' perceived better quality of the athlete leaders within the team. Hierarchical Confirmatory Factor Analyses (H-CFA) established that the perceived quality of each of the four different leadership roles contributed to an overall measure of perceived athlete leadership quality. To evaluate model fit, scores >0.90 were considered acceptable for incremental indexes such as CFI and TLI (Hu and Bentler, 1999), and values lower than 0.08 for the RMSEA and SRMR (Browne and Cudeck, 1993): $\chi^2(2) = 6.376$, $df = 2$, $p = 0.04$; CFI = 0.97, TLI = 0.92, RMSEA = 0.06, 95% CI (0.00, 0.11), SRMR = 0.03. Results showed acceptable standardized factor loadings for task ($\lambda = 0.68$), motivational ($\lambda = 0.76$), social ($\lambda = 0.85$), and external leader dimensions ($\lambda = 0.72$). Internal consistency values were also adequate ($\alpha = 0.84$, $\omega = 0.85$; Nunnally and Bernstein, 1994).

Team Identification

Following previous research, this variable was measured using a total of five items for athletes included in one factor (Doosje et al., 1995; Boen et al., 2007; De Backer et al., 2011). These items were: "Being a member of the team is very important for me," "I am very proud to be a member of this team," "I am very happy that I belong to this team," "I feel very connected with this team," and "I identify strongly with this team." Participants assessed each item on a 5-point response scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The one-factor CFA indicated an adequate fit: $\chi^2(2) = 4.009$, $df = 3$, $p = 0.26$, CFI = 0.99, TLI = 0.98, RMSEA = 0.03, 95% CI (0.00, 0.12), SRMR = 0.03. Regarding the factor loadings of the global factor, adequate values were obtained in all cases ($\lambda = 0.51$ – 0.99). The internal consistency of this identification scale was also adequate ($\alpha = 0.87$, $\omega = 0.86$; Nunnally and Bernstein, 1994).

Inside Sacrifice

Athletes' perceptions of inside sacrifice were measured with the Group Sacrifice Scale (GSS), originally designed by Prapavessis and Carron (1997), with a total of 16 items (e.g., "I am willing to carry out responsibilities I don't like for the good of the team"). Specifically, we used the personal and teammate inside sacrifice dimensions created by Cronin et al. (2015) based on GSS. Following to Prapavessis and Carron (1997) conceptualization as a main dimension of sacrifice, we decided to collapse into a general dimension involving the personal and teammate sacrifice factors. Athletes responded to all items on a nine-point scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). An H-CFA model fit the data adequately: $\chi^2 = 153.175$, $df = 71$, $p = 0.000$,

CFI = 0.922, TLI = 0.904, RMSEA = 0.062, 95% CI (0.049, 0.076), SRMR = 0.077. Factor loading values were adequate for personal ($\lambda = 0.40\text{--}0.75$) and teammate sacrifice factors ($\lambda = 0.58\text{--}0.89$). Both dimensions had adequate levels of internal consistency ($\alpha = 0.89$, $\omega = 0.89$; Nunnally and Bernstein, 1994).

Perceived Performance

In team sports, where there is a high number of interactions occurring in competitions, performance is a multifactorial variable and very difficult to measure. As a consequence, there is no standardized and validated instrument to analyze performance in the sports context. On the one hand, several researchers have used objective measures such as league standings (Heuzé et al., 2006). Although this might be useful for some studies, it can be problematic insofar as it could ignore the team's initial expectations and objectives, the actual context of the team, or the confounding contextual factors that are generated during a season (e.g., accumulation of injuries). On the other hand, other researchers have used players' self-reported ratings to analyze performance in team sports (Fransen et al., 2015b, 2017; Davis et al., 2018; Leo et al., 2019). According to Tenenbaum and Gershgoren (2011), this is an ecological and reliable measure to assess this variable in team sports. Therefore, for our study, the subjective perceptions of the performance of the players of each team were evaluated using the one-item scale of Dithurbide et al. (2009). On the one hand, athletes were asked to rate their team performance over the season (e.g., "the team's performance during the season has been..."). On the other hand, the same item was also adapted to measure the individual performance perceived by each athlete (e.g., "your individual performance on the team during the season has been..."). Both items were analyzed for a general dimension called perceived performance and rated on a five-point Likert scale ranging from 1 (*poor*) to 5 (*excellent*).

Procedure

First, the study received the University Bioethics Committee's approval (application number 239/2019), thus following the Helsinki Declaration (1964). Also, all athletes were treated according to the American Psychological Association (2019) regarding consent, confidentiality, and anonymity of responses. Accordingly, the data would be accessed only by the investigators of the work and would be processed exclusively for the field of research. Second, the first author contacted the clubs' managers via email to inform them about all the objectives and stages and to find out which teams were interested in the project. Specifically, clubs were recruited via personal contacts and were required to compete in national leagues in Spain, corresponding to the following team sports: soccer, beach soccer, basketball, and volleyball. In total, the first author contacted 25 teams of which 17 accepted to participate (participant rate = 68%). Third, after they had agreed to participate in the study, all the athletes were informed of the procedure to be followed. In this stage, the first author of this investigation handed out the letter of information and requested informed consent from all senior athletes to participate in the project. For athletes under 18 years

old, consent to participate in the study was signed by the player and the parents.

A cross-sectional quantitative design was used. Data were collected at mid-season, before a training session, through a paper survey. In this way, the athletes had developed an adequate perception of the target variables and could express a critical point of view about the context of the team's coexistence. The athletes were requested to complete the questionnaires individually and without distractions or the presence of any person associated with the club environment. They were supervised by the research assistants. The athletes completed the questionnaires in ~10 min. No rewards were given to players for participation in this research.

Data Analysis

All statistical analyses were carried out using Mplus version 7.3 (Muthén, L. K., and Muthén, 1998–2017). Firstly, as preliminary analyses, we ran a CFA on each scale to determine acceptable model fit. Secondly, descriptive statistics, intraclass correlations, bivariate correlations, and reliability analysis were conducted. Thirdly, in the main analyses, structural equation modeling (SEM) was used to test the relations between perceived athlete leadership quality, team identification, inside sacrifice, and perceived performance. Subsequently, we used SEM to test the hypothesized and alternative models. The robust maximum likelihood (MLR) estimator was used, as it is robust for non-normal observations and can handle random missing data (Yuan and Bentler, 2000). We also controlled for potential group-level effects due to the between-team variance (ICC = 0.05–0.37; Hox, 2010) through the correction of standard errors of the parameters, using the Mplus COMPLEX instruction (Muthén, L. K., and Muthén, 1998–2017). The small sample of teams led us to test a model targeting the individual level of analysis. Finally, indirect effects were tested using the bias-corrected bootstrap method [10,000 samples with 95% bias-corrected confidence intervals (CIs); MacKinnon et al., 2004].

RESULTS

Descriptive Statistics

Table 2 displays the means, standard deviations, reliability analysis, and correlations of the variables included in the investigation. Overall, the correlation analysis revealed positive relationships between all the study variables ($r = 0.25\text{--}0.40$, $p < 0.001$).

Main Analysis

SEM was used to test the different relationships among the variables represented in the model (see **Figure 1**). Specifically, perceived quality of athlete leaders was included as the independent variable, inside sacrifice as a mediator, and perceived performance as a dependent variable. Lastly, team identification was included as a mediator between perceived athlete leadership quality and inside sacrifice.

Firstly, the model showed an adequate fit to the data: $\chi^2 = 43.391$, $df = 24$, $p = 0.009$, CFI = 0.954, TLI = 0.930, RMSEA = 0.052 [95% CI (0.026, 0.076)], SRMR = 0.065. Secondly,

standardized beta values showed that perceived athlete leadership quality was positively related to inside sacrifice ($\beta = 0.32$, $p < 0.001$) and perceived performance ($\beta = 0.37$, $p < 0.001$). Thirdly, inside sacrifice was positively associated with perceived performance ($\beta = 0.64$, $p < 0.001$) and had a positive and partial indirect effect on the relationship between perceived athlete leadership quality and perceived performance [$\beta = 0.21$, $p < 0.001$, 95% CI (0.10, 0.33)]. Finally, team identification presented a positive and partial mediation effect between perceived athlete leadership quality and inside sacrifice [$\beta = 0.10$, $p = 0.002$, 95% CI (0.05, 0.18)], and, together with inside sacrifice (i.e., team identification and inside sacrifice), between perceived athlete leadership quality and perceived performance [$\beta = 0.07$, $p = 0.011$, 95% CI (0.02, 0.13)].

Hypothesized Alternative Models

To ensure that the hypothesized model provided the best fit indices, two meaningful alternative models were tested (see Hershberger, 2006). First, in Model 1, we established team identification and inside sacrifice as two mediators at the same level. Accordingly, team identification and inside sacrifice were

hypothesized as sharing covariance rather than representing a direct path between them. Second, in Model 2, we replaced the direct effect of perceived athlete leadership quality on sacrifice and established a model representing a linear process: (1) perceived athlete leadership quality, (2) team identification, (3) inside sacrifice, and (4) perceived performance. These models were tested because previous empirical evidence suggests that the main role of team identification (Fransen et al., 2014, 2015a, 2016b) and inside sacrifice (Bandura et al., 2019, Cronin et al., 2015) is mediation. However, to our knowledge, there are no previous studies that show how the two variables are associated, as they could operate jointly (Model 1) or at different levels (Model 2). Nonetheless, both alternative models showed a poor fit to the data {Model 1: $\chi^2 = 61.503$, $df = 24$, $p < 0.001$, CFI = 0.910, TLI = 0.865, RMSEA = 0.072 [95% CI (0.050, 0.095)], SRMR = 0.078; Model 2: $\chi^2 = 59.600$, $df = 25$, $p < 0.001$, CFI = 0.917, TLI = 0.881, RMSEA = 0.068, [95% CI (0.046, 0.090)], SRMR = 0.116}.

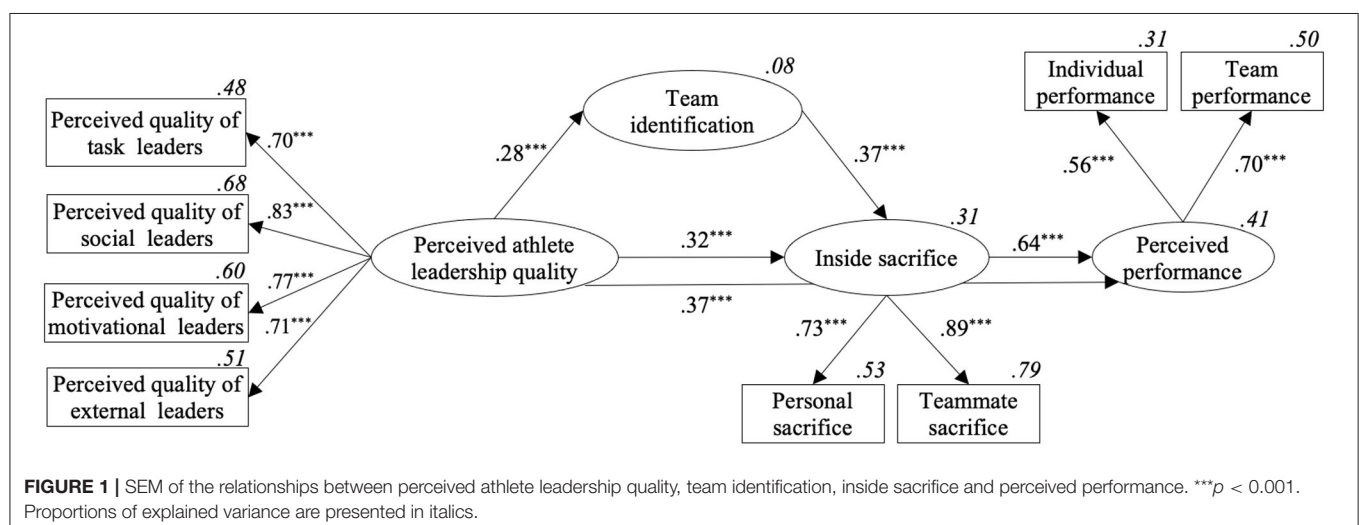
DISCUSSION

This study had five main objectives: (1) to analyze the association of players' perceived quality of athlete leaders with their perceived inside sacrifice, (2) to analyze the association between perceived athlete leadership quality and perceived performance, (3) to examine the relationship between reported inside sacrifice and perceived performance, (4) to explore the mediating effect of perceptions of inside sacrifice in the relationship between perceived athlete leadership quality and perceived performance, and (5) to test the mediating effect of perceived team identification in the relationship between perceived athlete leadership quality and inside sacrifice, as well as in the relationship between perceived athlete leadership quality and perceived performance, with team identification and reported inside sacrifice as mediators. Overall, we observed a positive relationship between perceived athlete leadership quality and inside sacrifice and a positive association between

TABLE 2 | Means, standard deviations, bivariate correlations, and reliability analysis of the variables.

	M	SD	α	ω	1	2	3	4
1. Perceived quality of athlete leaders	6.07	0.86	0.84	0.85	–			
2. Team identification	4.78	0.46	0.87	0.86	0.25***	–		
3. Inside sacrifice	7.76	1.19	0.89	0.89	0.33***	0.40***	–	
4. Perceived performance	4.13	0.66	–	–	0.34***	0.36***	0.40***	–

*** $p < 0.001$.



perceived athlete leadership quality and perceived performance. Furthermore, inside sacrifice was positively related to perceived performance and also acted as a positive mediator between perceived athlete leadership quality and perceived performance. Team identification also acted as a mediator between perceived athlete leadership quality and perceived performance. Finally, team identification and inside sacrifice acted as positive mediators between perceived athlete leadership quality and perceived performance. Thus, after analyzing the results obtained, these findings are conceptually consistent and robust, and are in line with previous research (Fransen et al., 2014, 2016b; Cronin et al., 2015), supporting all the hypotheses.

Firstly, regarding Hypothesis 1, the results showed that perceived athlete leadership quality had a positive association with inside sacrifice (Hypothesis 1). These results are in line with the findings of previous research (Ruggieri and Abbate, 2013), which found a significant relationship between effective leadership and workers' sacrifice in organizational contexts. However, this relationship had not been demonstrated in the sports setting. Hence, our findings provide further evidence of the benefit of an perceived athlete leadership quality approach in team sports settings. A possible explanation for this relationship is that leaders' inspirational motivation for their followers, who accept their leaders' collective view, is likely to promote these positive behaviors (e.g., commitment; Hodge et al., 2014; Fransen et al., 2017) and engage the teammates, correlating with high inside sacrifices (Cronin et al., 2015). Therefore, when athletes perceive their teammates as good leaders, they will probably sacrifice more to achieve team goals. In this regard, further research could consider examining leaders' behaviors that generate more inside sacrifice in team sports.

Secondly, concerning perceived athlete leadership quality and perceived performance (Hypothesis 2), a positive and significant association was found between the two variables (Slater and Barker, 2019). This positive relationship could be due to leaders' ability to positively influence the group, encouraging them through actions, reminding them of the required tasks and the athletes' placement, or indicating when the team should apply pressure. The relationship of these interactions between the leader and the other athletes is the key to team performance (Crozier et al., 2013; Fransen et al., 2017). This influence has also been corroborated in experimental studies, showing that leadership extends throughout the team so that other team members are more self-confident and perform better (Fransen et al., 2015a, 2016b, 2018). Therefore, we conclude that high-quality team leadership can influence athletes (Fransen et al., 2016a) and promote optimal team effectiveness (Fransen et al., 2017), characterized by increased levels of inside sacrifice and perceived performance.

Thirdly, we found that inside sacrifice was positively associated with athletes' perceptions of performance, in accordance with Hypothesis 3. A possible explanation of this finding could be that when players strive and work for the team, positive outcomes, such as better performance, are achieved. Similar associations were previously pointed out by Boyd et al. (2014), suggesting that the collective effort could improve group performance. Boyd et al. stated that sacrifice could improve

performance because each player fulfills an important and special role for the team, players are attracted to the team to achieve collective goals, accepting mistakes as a normal learning process, and focusing on generating player cohesiveness on and off the field. Therefore, it seems logical to conclude that athletes who perceive their teams' optimal inside sacrifice, where all players work for the team, also perceive better results in competitions.

Fourthly, the present study also went beyond the direct association between athlete leadership and possible positive benefits and attempted to explain the underlying indirect mechanisms that help to improve leaders' positive impact on the team's functioning. When analyzing inside sacrifice as a mediator between perceived athlete leadership quality and perceived performance (Hypothesis 4), the results showed that, when players perceive high-quality leaders in the team and strive to meet the challenges of competition, they report achieving higher performance. Prior literature indicated that the greater the confidence of players in their team's abilities, the more effort they exert, and the better they perform (Silver and Bufanio, 1996; Greenlees et al., 1999; Stajkovic et al., 2009; Cronin et al., 2015). This finding is also in line with previous research showing that the positive relationship between several group processes was stronger when there is a greater internal sacrifice by the players (e.g., transformational leadership behaviors and task cohesion; Cronin et al., 2015). Therefore, the players also perceive that athlete leadership quality enhances their performance, especially when they perceive that everyone is making a great sacrifice. Athlete leadership can be fulfilled by several players, making all the players feel closer to these leaders, driven by them, and more willing to sacrifice themselves for the team. This process of support, encouragement, and sacrifice are undoubtedly elements that promote better perceived performance. These findings are relevant because researchers have not yet examined the mediating function of inside sacrifice between perceived athlete leadership quality and perceived performance. Definitely, perceptions of high inside sacrifice seem relevant to improve the relationship between perceived athlete leadership quality and performance perceptions.

Finally, concerning Hypothesis 5, findings showed that team identification acted as a mediator in the relationship between perceived athlete leadership quality and inside sacrifice (H5a), and, together with inside sacrifice, in the relationship of perceived athlete leadership quality and perceived performance (H5b). In other words, perceived athlete quality leadership is associated with team identification ("we," "us"), which produces stronger inside sacrifice and better perceived performance. Previous studies established that team identification also acted as a mediator in the relationship between perceived athlete leadership quality and other outcomes (i.e., collective efficacy, group cohesion, etc.; Fransen et al., 2014, 2015a, 2016b), suggesting that leaders can influence team functioning especially when team members feel identified with their team. In our study, we observed that when players identified with their team, they were more likely to sacrifice themselves for their team. When athletes play on a team with which they do not feel identified, in moments of weakness, their sacrifice may decrease. In this

regard, the present research advances previous studies, analyzing the mediator function of team identification in other variables.

Also, as athlete leaders' work for the team (i.e., they create a shared sense of "we" and "us" within the group; Haslam et al., 2011; Steffens et al., 2014) strengthens team members' identification with the team (Haslam et al., 2011) and facilitates shared success (Fransen et al., 2014), perceived athlete leadership quality may have increased team identification and motivation to exert more effort for the team, thereby, ultimately enhancing their perceived performance (Haslam et al., 2000). This result implies the existence of other mechanisms through which perceived athlete leadership quality can positively affect players' performance perceptions. Hence, team identification, in conjunction with players' inside sacrifice, may be essential to improve perceived performance.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

This research is the first study of the underlying mechanisms that explain the relationship between perceived athlete leadership quality, team identification, inside sacrifice, and perceived performance. We aimed to provide initial evidence for future investigations. However, some limitations should be commented on when interpreting the findings of an investigation of this kind, which may be important to improve future studies.

First, as our findings were correlational and we used a cross-sectional design, we cannot make causal inferences between the constructs included in this research. Future investigations could address the relationship between variables considered in the current study through experimental or quasi-experimental designs, for instance, including several measures across a competitive season to test fluctuations in the variables related to athlete leadership quality. Second, another limitation is the measurement of perceived performance. Although the instrument used in the present study to assess performance has been previously used with positive evidence, it only had two items. Therefore, due to performance is a multifactorial variable, future research should use more detailed scales or an instrument that jointly contemplates objective and perceived performance. Third, another issue of our work is the small sample size in basketball or volleyball. More research is needed with a larger number of players in these sports and others. Besides, due to the small number of female players, we did not consider gender differences. Therefore, for future studies, we recommend determining gender differences in the associations between the variables under investigation. Finally, although previous studies have analyzed the athlete leadership quality reported by players, we recommend examining the leadership quality using a qualitative methodology (e.g., observational design) to analyze the particular mechanisms and behaviors in these leaders.

PRACTICAL IMPLICATIONS

Several recommendations or practical applications can be drawn as strategies to apply in real competitive contexts. The findings suggest that coaches and sports psychologists should carefully

consider the perceptions of leaders' quality to achieve teams' better inside sacrifice and performance perceptions. Coaches should identify athlete leaders within the team to help develop their leadership skills. For example, coaches should stimulate their athlete leaders through individual interviews so they will express positive behaviors in training sessions and matches and show their enthusiasm for the team, striving in each competitive situation. As a result, coaches should be aware that, if they take care of leaders' quality and strengthen this type of leadership, they will achieve better team functioning. In particular, the mediating role of team identification shows the need for coaches to develop their players' feelings of being a part of the group, promoting the use of the term "us" and the achievement of collective objectives. Our model also highlights the important role of inside sacrifice, and the need to reward players' efforts to improve their performance in competition. Coaches could help players to know which roles and sacrifices they expect from them and teach them how to increase these behaviors in practice sessions and competitions. In short, this work could serve as a support for professionals working in these sports, showing the importance of perceived athlete leadership quality and promoting a shared leadership structure that is not yet observed in many team sports.

CONCLUSIONS

This research reveals the benefits of perceived athlete leadership quality, represented by inside sacrifice and perceived performance. First, it has been reported that high-quality athlete leaders are positively associated with inside sacrifice and performance. Second, teams with higher inside sacrifice are more likely to achieve better team performance. Third, it was shown that inside sacrifice is a mediator of the association between perceived athlete leadership quality and performance perceptions. We also conclude that team identification plays an essential mediation role in all these relationships (i.e., athlete leadership with inside sacrifice and athlete leadership with perceived performance). Thus, this research advances the study of athlete leadership quality, including relevant findings of different positive outcomes that can optimize team functioning.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by 239/2019. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

ML-G was responsible for conducting analysis and writing the first draft. MT-S was responsible for the data collection. FL and IR-B both set up the design of the study and consistently

provided feedback on the content, layout, and writing style. IR-B participated in idea development. All authors contributed to the article and approved the submitted version.

FUNDING

This project was supported by the Assistance to Research Groups (GR18102) of the Junta de Extremadura (Ministry of Employment and Infrastructure); with the contribution of the European Union through the European Regional

Development Funds (ERDF). Also, this research was supported by an FPU Ph.D. candidate grant from the Government of Spain (Ministry of Education, Culture, and Sports) to ML-G (FPU17/03489).

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.662250/full#supplementary-material>

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Feasibility of a Responsibility-Based Leadership Training Program for Novice Physical Activity Instructors

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OPEN ACCESS

Edited by:

Katrien Fransen,
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Reviewed by:

Kirsten Spencer,
Auckland University of Technology,
New Zealand
Filip Boen,
KU Leuven, Belgium

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Specialty section:

This article was submitted to
Performance Science,
a section of the journal
Frontiers in Psychology

Received: 31 December 2020

Accepted: 12 July 2021

Published: 06 August 2021

Citation:

Toivonen H-M, Hassandra M,
Wright PM, Hagger MS, Hankonen N,
Laine K and Lintunen T (2021)
Feasibility of a Responsibility-Based
Leadership Training Program for
Novice Physical Activity Instructors.
Front. Psychol. 12:648235.
doi: 10.3389/fpsyg.2021.648235

Most coaches and instructors would like to teach more than just sport skills to their athletes and children. However, to promote athletes' or children's holistic development and teach them to take responsibility and lead, requires the coaches and instructors to first master the skills themselves. Therefore, feasible, high quality leadership training programs where coaches and physical activity instructors are taught to teach and share leadership are needed. The aim of the current study was to evaluate the feasibility of a leadership training program to optimize it and to determine whether to proceed with its evaluation. In the leadership training program, eight Finnish novice physical activity instructors, aged 18 to 22, were taught to promote positive youth development, personal and social responsibility, and shared leadership in a physical activity context. The participants had minimal to no leadership training or experience. The training program consisted of seven meetings totaling 20 h. Hellison's teaching personal and social responsibility (TPSR) model was the theoretical and practical framework of the training program. Feasibility of the leadership training program was evaluated across four domains of an evidence-based framework: demand, practicality, acceptability, and implementation fidelity. Data of the current complex intervention were collected with application videos, questionnaires, researcher's log, lesson plans, video recordings, and a semi-structured focus group interview. The quantitative data were analyzed using descriptive statistics and the qualitative data using deductive and inductive content analysis. There was a demand for the leadership training program. The training program was perceived as practical and highly acceptable by the novice instructors and the trainers, and implemented with fidelity, indicating high overall feasibility. No implementation issues were found. Consequently, the current leadership training program has a high probability of efficacy and can be accepted for further evaluation.

Keywords: shared leadership, positive youth development, feasibility, teaching personal and social responsibility model, novice instructor, leadership training, physical activity

INTRODUCTION

Group-based physical activity sessions offer plenty of opportunities to promote positive youth development (PYD). PYD is a strength-based process seeking to engage youth in activities that nurture a wide range of developmental assets (i.e., life skills) and support young people to grow into happy, healthy, productive, and contributing members of society (Catalano et al., 2004). Although psychosocial development is an important objective of young people's physical activity programs, it is often not accomplished (Côté et al., 2008). Sport participation alone does not guarantee the development of life skills, such as leadership, but these skills need to be taught proactively (Gould and Voelker, 2010; Lintunen and Gould, 2014).

Shared leadership is a group-centered approach to leadership characterized by collective lateral interaction stemming from all or most group members and distributed widely across group members (Zhu et al., 2018). Vertical leadership is a person-centered approach to leadership (i.e., formal leader). Both structures of group leadership are needed as they supplement each other (Carson et al., 2007; Fausing et al., 2015). Formal leaders can initiate, facilitate, and maintain shared leadership in the group (Pearce, 2004). Chiu et al. (2016) found that in teams where shared leadership was used, the formal leaders displayed humility (e.g., by admitting to their own limitations) and allowed team members to take responsibility, which led to the team members embracing shared leadership. In line with their findings, Fransen et al. (2020) found that best coaches adopted a shared leadership approach. Empowering the players strengthened the leadership quality of the players and enhanced the players' perception of the coach as a good leader. Furthermore, Zhu et al. (2018) found that there have been different approaches to "what is being shared in shared leadership?" and "what is the process through which leadership is shared?" In shared leadership, a specific leadership style or the overall leadership can be shared among the members of the group. The sharing of leadership can happen overtime, can be done as a group, or can be done by taking turns or dividing roles. Whichever the case, shared leadership requires more than just a decision to share leadership, and it requires leadership skills from the formal leader and all members of the group. Therefore, coaches and physical activity instructors should be trained to understand and share leadership. In the current study, the shared leadership was embedded in the training program. Novice instructors were, for example, given peer coaching roles, leadership roles in planning, and youth instructor roles. The novice instructors' leadership and responsibility were gradually increased throughout the training program.

Hellison's (1985, 2011) teaching personal and social responsibility (TPSR) model is one of the most comprehensive frameworks frequently used to promote PYD and shared leadership. The model was originally developed for underserved children to empower them and gradually teach them to become responsible leaders. It has since been used with various populations and contexts around the globe (e.g., Rantala and Heikinaro-Johansson, 2007; Hassandra and Goudas, 2010; Beaudoin, 2012; Gordon, 2012; Jung and Wright, 2012), including

after-school physical education context (Gordon et al., 2016). The model uses physical activity as a vehicle for teaching values and life skills, such as autonomy, goal setting, leadership, and teamwork. The main goals of the model are to promote personal (i.e., self-regulation and effort) and social (i.e., cooperation and leadership) responsibility and to apply the responsibility skills in other settings, such as school, sports, community, or home. TPSR has been shown to be a useful model for teaching life skills in numerous youth intervention programs resulting in a range of positive behavioral, social, emotional, psychological, and educational outcomes (Hellison and Walsh, 2002; Pozo et al., 2018).

TPSR approaches leadership from the responsibility perspective (Martinek and Hellison, 2009). Giving instructors a large amount of autonomy and responsibility too early in their training, and without providing them with sufficient instruction on how to utilize it effectively, may negatively impact their ability to cope with their role and may also undermine their confidence. Therefore, responsibility and leadership should be shared to the instructors when they are ready for it and to the extent, they are ready. In TPSR-based programs, sharing is about giving meaningful and genuine voices and choices to everyone in the group. The goal is for everyone in the group to learn to take personal and social responsibility. Personally, a leader needs to learn the importance of effort and learn to set and work toward personal goals. Socially, a leader needs to develop their relational skills and values, be able to share their perceptions and ideas to enhance the group and to ensure that everyone feels safe and heard in the group. Therefore, TPSR practices are based on five levels of responsibility, which are utilized when TPSR-based leadership training is given to young people. The five levels of responsibility are as follows: (1) respect for the rights and feelings of others (2) effort/participation (3) self-direction (4) helping others/leadership, and (5) transferring responsibility to other contexts. These levels of responsibility cannot be learned in a short period of a time but should be practiced step-by-step over an extended period.

When the basics of being responsible have been learned, leadership can be further developed by providing opportunities to help, teach, or coach peers (Martinek and Hellison, 2009). This requires guidance and support as well as feedback and reflection. For example, in a recent project in Belize eight of the 36 coaches were elected by the group to be the leadership team to guide and support their peers and the direction of their project (Wright et al., 2016). Providing opportunities for peer leadership will also create opportunities to learn to follow others' lead and lead together. Peer leadership is one form of shared leadership. Once peer leadership has become a norm in a group, more responsibility and more challenging leadership opportunities can be provided. For example, Cutforth and Puckett (1999) in their apprentice teacher program empowered young people to work in pairs as a leadership team working with younger children. However, it is important to ensure that support is available to help to overcome frustration and challenges the leadership roles entail. Especially, with young people who do not have much experience in leadership, they can find the

amount of responsibility daunting even if they are not leading the group alone. When they are ready for even more extended experiences, the transfer of leadership from one context to another can be emphasized. Gordon et al. (2016) had a feature in their afterschool youth program “Project Leadership” that involved students not just taking on peer coaching roles in the program but taking on a leadership role in planning and hosting a school-wide wellness night as a service project for the whole school community. Through the extended leadership experiences, the trained people can eventually become leaders in their communities and in society. They can also take formal leadership roles and promote and teach shared leadership. Specific strategies to help participants to practice the levels of responsibility in the TPSR model are relational time, awareness talk, physical activity with embedded life skills, group meeting, and self-reflection.

According to Hellison (2011), TPSR program leaders need to create positive relationships with the participants, gradually empower them by sharing responsibility and leadership with them, integrate responsibility roles and concepts into physical activity, and address transfer of life skills from physical activity context to other settings. Leadership skills should be developed in young people to achieve success in their lives and to display positive youth behaviors. Even experienced teachers, coaches, or instructors who recognize the importance of teaching life skills often lack confidence and toolset to effectively teach them (Koh et al., 2017). Therefore, a TPSR-based leadership training program could help teachers, coaches, or instructors to gain knowledge and tools to promote PYD, responsibility, and shared leadership. Among young novice instructors, the need is even greater. Rather than learning leadership solely through trial and error or by observing others, novice instructors would benefit from having a framework and guidelines to follow. The novice instructors could be encouraged to adopt a shared leadership approach from the start and taught to identify the strengths of the participants and include the participants in decision making (Fransen et al., 2020).

There is a lack of research on developing young adults to become leaders, although early adulthood is an especially important time for leadership growth (Karagianni and Montgomery, 2018). Training physical activity program leaders is a key factor in developing quality PYD programs (Martinek and Hellison, 2009). Although many TPSR-based leadership trainings exist (e.g., Escartí et al., 2010; Romar et al., 2015; Wright et al., 2016; Alcalá et al., 2019), to ensure quality implementation and to enhance the ability to interpret findings and generate theory, comprehensive, systematic, and rigorous evaluations of the leadership training programs need to be performed (Wright et al., 2018).

Feasibility studies examine whether the planned intervention and evaluation can be performed (O’Cathain et al., 2015) and whether the intervention approach should be accepted or discarded, so that only those interventions that are worth testing (i.e., have a high probability of efficacy) are advanced (Bowen et al., 2009). Feasibility studies aid researchers in identifying potential implementation issues (Taylor et al., 2006) and examining key uncertainties (Craig et al., 2008),

to determine what needs modification and how changes might occur (Bowen et al., 2009). Therefore, feasibility testing should take place prior to evaluation of the effectiveness or dissemination of the program (O’Cathain et al., 2015). In feasibility testing, mixed methods might yield more conclusive and innovative results than qualitative or quantitative methods alone (Bowen et al., 2009).

Several TPSR studies have examined one aspect of feasibility, namely, the implementation fidelity (Pascual et al., 2011; Lee and Choi, 2015; Cryan and Martinek, 2017; Richards and Gordon, 2017; Escartí et al., 2018). Implementation fidelity refers to the degree to which a program is implemented as intended by the program developers (Breitenstein et al., 2010). Previous TPSR-based studies have been examining fidelity of the teachers’ implementation of the responsibility levels, the TPSR-based teaching strategies, the daily lesson format, and the TPSR themes, as well as the prevalence of responsible student behaviors (Pascual et al., 2011; Lee and Choi, 2015; Cryan and Martinek, 2017; Richards and Gordon, 2017; Escartí et al., 2018). In most of these studies, the fidelity was only moderate and there were significant differences in the fidelity depending on the program leader (Pascual et al., 2011; Richards and Gordon, 2017; Escartí et al., 2018). On the other hand, TPSR-based professional development programs, typically targeting physical education teachers, were found to improve fidelity of the programs (Hemphill et al., 2015; Lee and Choi, 2015), which suggests that continuous training of program leaders is an important part of implementation fidelity of the program. However, high implementation fidelity does not alone mean that the program should be implemented. In some studies (e.g., Wright et al., 2018), also acceptability in terms of instructor satisfaction of the training has been considered. In addition to implementation fidelity and acceptability, other domains of feasibility: demand, practicality, adaptation, expansion, integration, and limited efficacy (Bowen et al., 2009) of the program can be evaluated to ensure sustainability, affordability, and the likelihood of successfully implementing the program in the future (Shields et al., 2018).

The aim of the current study is to assess the feasibility of a 20-h TPSR-based leadership training program for novice physical activity instructors. The TPSR-based leadership training program is presented in detail in the protocol article of Toivonen et al. (2021). The protocol article describes the development of a TPSR-based leadership training program, the content, and a plan for an intervention study in which novice instructors learn to understand and apply the TPSR model in practice. Assessing the feasibility of the leadership training program is important in order to optimize the intervention and to determine whether the program should be accepted for further evaluation. In the current study, the feasibility of the leadership training program is evaluated across four of the domains of an evidence-based framework for feasibility studies: demand, practicality, acceptability, and implementation fidelity (Bowen et al., 2009). The implementation fidelity is further evaluated in terms of four dimensions: adherence, dose, quality of delivery, and program differentiation (Dane and Schneider, 1998).

MATERIALS AND METHODS

Participants and Setting

Recruitment of the novice instructors occurred at four local high schools and one vocational school. An invitation message was sent to about 7,000 current students through online message boards and thousands of former students through alumni mailing lists. Specific numbers are unknown because the invitation was circulated by the schools themselves. The applicants had to be adults (18 years or older) with some experience in organized physical activity, for example, as a participant. However, they could not have extensive coaching, teaching, or instructing experience (full-time position for over 6 months or part-time position for over 1 year) or training (high-level coaching or teaching certificate, or multiple smaller trainings). They had to be interested in physical activity and in helping youth with physical activity and beyond. They also had to be willing to participate in a 20-h leadership training program during summertime. After expressing the initial interest to participate, applicants were asked to send an application video containing information on their age, gender, education, occupation, physical activity background, favorite sports, instructing experience, instructing training, and motivation to participate in the training program and work with young people. Covariate adaptive randomization (Treasure and MacRae, 1998; Lin et al., 2015) was used to select eight novice instructors (4 females and 4 males) aged 18 to 22, to participate in the TPSR-based leadership training program. The randomization and selection processes were performed as described in the study protocol (Toivonen et al., 2021).

All eight participants were Caucasian and fluent in Finnish. Five were starting their final year in high school, one had completed vocational education, and two were starting studies in a University of Applied Sciences. The novice instructors had backgrounds in a variety of sports, such as basketball, mogul skiing, circus, aikido, floorball, and boxing, and five of them had played soccer. Six reported team sports, one combat sports, and one outdoor physical activity as their favorite sport. Six of the novice instructors did not have any sort of previous leadership training, whereas two had completed a short confirmation camp counselor training organized by a church and had been counselors at a confirmation camp. The novice instructors also did not have much experience in leading a group. Two of the novice instructors had been tutors at school, and four had been assisting in a sport camp, a sport tournament, or an afterschool program. One had coached children for one winter, and one had no formal leadership experience. All novice instructors are referred to with pseudonyms.

The leadership training program was organized in a city with a population of approximately 140,000 in Central Finland. The training program was implemented by the first and the last author in a university classroom and gymnasium as well as different sport facilities around the city. Three video cameras were used to record the training. In the classroom, a projector and a screen were used. In the gymnasium and other sport facilities, a variety of physical activity equipment were utilized. Snacks were provided during the first five meetings. This study

was carried out in accordance with “Responsible conduct of research and procedures for handling allegations of misconduct in Finland” – guidelines by the Finnish Advisory Board of Research Integrity. All participants gave written informed consent. The Ethics Committee of the University of Jyväskylä (No. 29062015) approved the study.

Leadership Training Program

The leadership training was an intensive 20-h program consisting of seven meetings organized over five weeks. The theoretical and practical framework is the TPSR model (Hellison, 1985, 2011). Research has shown that coaches learn best through a combination of non-formal (e.g., workshops) and intentional or incidental informal (e.g., observing other coaches) experiential opportunities, and formal lecture-based courses, accompanied with reflective process (Jarvis, 2006; Cushion et al., 2010). The leadership training program combined these different learning situations as an attempt to optimize learning. Consequently, five core components of the leadership training program were theory, activity, experiential learning, evaluation, and experiences of leadership.

The first meeting of the novice physical activity instructors’ leadership training program consisted of practical issues and getting to know one another. The second meeting included a lecture on the TPSR model along with activities to create a safe, trustful, supportive, and positive learning environment. The third meeting had two model lessons, which demonstrated how to implement the TPSR model in physical activity instruction and provided the novice instructors experiences of being a participant in TPSR-based physical activity lessons. The fourth meeting consisted of the first set of practice teaching lessons organized for the peer novice instructors in pairs, which provided the participants their first leadership experience. The fifth meeting included the second set of practice teaching lessons delivered for young volunteer athletes. The sixth and seventh meetings were organized separately for each pair. The sixth meeting consisted of an observation of a sport practice and providing feedback for the coaches on their leadership behaviors based on the observation. The seventh meetings included the third set of practice teaching lessons organized for a sport team or sport group. A more detailed description of the novice instructors’ leadership training program, the included activities, and information needed to replicate the program can be found from the protocol article (Toivonen et al., 2021).

Domains of Feasibility and Measures

Bowen et al. (2009) suggested an evidence-based framework for feasibility studies consisting of eight domains: demand, practicality, acceptability, implementation fidelity, adaptation, expansion, integration, and limited efficacy testing. In the present study, the first four domains were used to evaluate the feasibility of the novice physical activity instructors’ leadership training program. The definition of each domain, the types of data, and the measures used to assess the domain are presented in **Table 1**. All the data were collected in Finnish.

TABLE 1 | The definitions, types of data, and measures of the examined feasibility domains of Bowen et al.'s (2009) evidence-based framework.

Domain	Definition	Types of data	Measures
Demand	The extent to which a program is likely to be used or how much demand is likely to exist (Bowen et al., 2009) The extent to which there is a demonstrated need for the program in the community (Shields et al., 2018)	The number of expressions of interest for the training	Emailed expressions of interest to participate
		The number of applicants waitlisted	Researcher's log
		Novice instructors' perceptions of the need for the training program	Application videos
Practicality	The extent to which the program can be successfully delivered to intended participants using existing means, resources, and circumstances (Bowen et al., 2009) The extent that there are any adverse effects on participants (Shields et al., 2018)	Expressions of public interest and demand for training novice physical activity instructors	Personal contacts from different stakeholders
		Evaluation of program delivery and the existing means, resources, and circumstances	Training intervention feedback form (Renko et al., 2020) Researcher's log
		Number and content of adverse events	Conversations retrieved from the video recordings Researcher's log Novice instructors' lesson plans Semi-structured focus group interview
Acceptability	The program recipients' (i.e., novice instructors') and program deliverers' (i.e., trainers') anticipated and experienced cognitive and emotional responses to the intervention, measured prior to (prospective acceptability), during (concurrent acceptability) or after (retrospective acceptability) the intervention (Bowen et al., 2009; Sekhon et al., 2017)	Novice instructors' and trainers' expectations and experiences of the program	Open-ended question about expectations Application videos
			Conversations retrieved from the video recordings Training intervention feedback form (Renko et al., 2020) Semi-structured focus group interview
		Novice instructors' perceptions of autonomy support and relatedness in the training	Novice instructors' lesson plans Researcher's log Acceptance subscale of the need for relatedness scale (Richer and Vallerand, 1998) Instructors' perceptions of autonomy support in the training intervention (Quested and Duda, 2011) Researcher's log
Implementation fidelity	The degree to which program is implemented as intended by the program developers (Dane and Schneider, 1998; Carroll et al., 2007; Breitenstein et al., 2010)	See Table 2	See Table 2

The implementation fidelity of the novice physical instructors' leadership training program was evaluated in terms of four dimensions (adherence, dose, quality of delivery, and program differentiation) to provide a comprehensive picture of the program integrity (Dane and Schneider, 1998). See **Table 2** for definitions, types of data, and measures of each dimension of implementation fidelity.

Novice instructors submitted *application videos* during the recruitment phase. In the application videos, they reported their age, gender, education, occupation, physical activity background, favorite sports, instructing experience, instructing training, and motivation to participate in the training program and work with young people. The application videos were used in the evaluation of the demand and the trainers' acceptability of the leadership training program.

Novice instructors' expectations toward the training program were assessed qualitatively prior to the training with a written answer to an open-ended question (What do you expect from the training?). These were used to evaluate the novice instructors' acceptability of the leadership training program.

Training intervention feedback form (adapted from Renko et al., 2020) was used to qualitatively and quantitatively assess novice instructors' perceptions of the acceptability of the leadership training program and the trainers' expertise. The feedback form consisted of five open-ended questions (e.g., "How could the training intervention be improved?") and 14 statements (e.g., "I was satisfied with the training intervention," "I understand the TPSR model well," and "The training intervention included appropriate amount of theory") rated on a 5-point Likert scale (1=strongly disagree and 5=strongly agree). The novice instructors filled out the feedback form after the training program.

Novice instructors' and trainers' lesson plans of the practice teaching lessons and model lessons were used to qualitatively assess the practicality and the adherence of the leadership training program. The lesson plan template included background information (i.e., date and place of instruction, number of students, name of the instructors, and topic and life skills of the lesson) and the plan for the lesson (i.e., physical activity and life skill goals, lesson content divided into awareness talk,

TABLE 2 | The definitions, type of data, and measures of the examined implementation fidelity dimensions.

Dimension	Definition	Type of data	Measures
Adherence	The extent to which specified program is delivered as originally designed by the program developers and described in the program manual (Dusenbury et al., 2003; Mihalic, 2004)	Comparison of the implemented and planned programs	Protocol (Toivonen et al., 2021) Researcher's log Trainers' lesson plans
Dose or exposure	The level at which the intervention is delivered to participants. It consists of number, amount frequency, and duration of the meetings (Dane and Schneider, 1998; Ibrahim and Sidani, 2016)	Comparison of the implemented and the planned number of meetings, length of each meeting, frequency of the meetings, and the total length of the training	Protocol (Toivonen et al., 2021) Researcher's log
Quality of implementation	The trainers' competence, such as trainers' skills, attitudes, knowledge, belief in the training, preparedness, and motivation to deliver the program (Mihalic, 2004; Ibrahim and Sidani, 2016)	Description of the trainers' education Trainers' perceptions of the training	Researcher's log Conversations retrieved from the video recordings
Program differentiation	The identification of unique features of the components of the program that distinguish it from other programs (Dusenbury et al., 2003) An analytic process to determine the degree to which these core components that distinguish one program from another are present or absent (Century et al., 2010)	Comparing the core components of the program to other training programs found in the literature	Protocol (Toivonen et al., 2021) Researcher's log
		The degree of the presence of the distinguished core components	Protocol (Toivonen et al., 2021) Researcher's log

physical activity time and group meeting/reflection time, as well as time spent on each activity and other comments). The novice instructor pairs filled out the lesson plan template prior to each practice teaching lesson and trainers prior to the model lessons.

A 30-min semi-structured *focus group interview* was organized four months after the training program. The focus group interview qualitatively assessed the novice instructors' experiences and perceptions of the practicality and acceptability of the leadership training program (e.g., "What did you like best about the training program?" or "What would you have liked to have more in the training program?"). The focus group interview was video recorded.

A *researcher's log* was used prior to, during, and after the leadership training program to qualitatively assess the trainers' perceptions of all domains of the feasibility of the leadership training intervention. The researcher's log included field notes, researchers' perceptions of the training, and a track of attendance, components delivered, and time used. In addition, adverse events were monitored by the trainers and addressed in the researcher's log.

The model lessons, practice teaching lessons, and following conversations and reflections were video recorded. *Conversations* were then retrieved from the video recordings, transcribed, and used to qualitatively assess the novice instructors' and trainers' perceptions of the acceptability of the leadership training program. The conversations were part of the planned reflection time of the lessons.

Acceptance subscale of the need for relatedness scale (Richer and Vallerand, 1998) was a 5-item scale used to quantitatively assess the novice instructors' perceptions of relatedness in the leadership training intervention and to evaluate the acceptability of the training program. Minor adjustments in wording were

made to enhance the items' relevance to the leadership training intervention ("In this training program, I felt..." followed by items, such as "supported," "valued," and "safe"). Ratings were based on a 5-point Likert scale (1=strongly disagree and 5=strongly agree). The novice instructors filled out the scale at the end of the leadership training intervention. The scale has demonstrated adequate reliability in the previous research (Renko et al., 2020).

The perceived autonomy support questionnaire (Reinboth et al., 2004; Quested and Duda, 2011) was a 7-item questionnaire that quantitatively assessed the degree to which the novice instructors perceived trainers as supporting their autonomy. The questionnaire was used to evaluate the novice instructors' acceptability of the leadership training program. Minor adjustments in wording were made to enhance the items' relevance to the training intervention (e.g., "Trainers provided me with choices and options."). Ratings were based on a 7-point Likert scale (1=strongly disagree and 7=strongly agree). The novice instructors filled out the questionnaire at the end of the leadership training intervention. Measure of perceived autonomy support has demonstrated construct validity and internal consistency in the previous studies (Reinboth et al., 2004; Quested and Duda, 2011).

Data Analysis

Descriptive statistics (means and standard deviations) were used to analyze the quantitative data and assess practicality, acceptability, and implementation domains of feasibility of the training program.

Deductive and inductive content analyses were used to analyze the qualitative data and assess the feasibility of the training program (Lincoln and Guba, 1985; Flick, 2014; Patton, 2015).

Four (i.e., demand, practicality, acceptability, and implementation fidelity) domains of feasibility evaluation (Bowen et al., 2009) and four dimensions (i.e., adherence, dose, quality of delivery, and program differentiation) of implementation fidelity (Dane and Schneider, 1998) were used as categories in the deductive content analysis, which was used to analyze the presence, absence, and content of these categories. Data were organized on a timeline, and changes over time were studied inductively. For example, changes in the openness of the participants are described based on this analysis.

The first author was responsible for all the analysis, but she was in constant dialogue with the co-authors who carefully followed up on the whole analysis process as suggested by Elo et al. (2014). The researchers critically assessed their own actions throughout the training program and during the data analysis to prevent the researcher bias and ensure the trustworthiness of the collected data and the content analysis. The credibility of the analysis was confirmed by careful selection of the most appropriate methods of data collection and checking for the representativeness of the data.

RESULTS

The feasibility of the novice physical activity instructors' leadership training program was evaluated across four domains: demand, practicality, acceptability, and implementation fidelity (Bowen et al., 2009).

Demand

Fifty-six applicants expressed an interest in participating in the study, the majority within the first week of recruitment. The extent of the leadership training program (20 h), the timing of the training (summer), other inclusion criteria, and typically low response rate for messages sent through the message boards and mailing lists were expected to significantly limit the number of applicants. However, the demand still clearly exceeded what the research team could organize within the timeframe and existing resources. Eight novice instructors were selected, and nine were waitlisted.

Demand for the training program was also demonstrated by the lack of other leadership training programs available for the novice instructors. The TPSR model had never been used for novice instructors, and there were no other programs teaching life skills for novice instructors in the city or the entire country. The city hires instructors for afterschool physical activity clubs by collaborating with sport clubs. Sport clubs recruit their young athletes to run the clubs without any training or experience, which lead to them merely providing equipment and no instruction. The participants of the afterschool physical activity clubs nor the novice instructors learn any leadership skills.

The demand for the program became even more apparent during the leadership training program, when the novice instructors brought up that they had never before consciously practiced self-expression, evaluated themselves and others after

a physical activity session, or intentionally practiced leadership skills. Laura (female, 18 years) stated,

We are expected to make really big decisions regarding our lives, our future. It's a lot of responsibility. And we are just expected to know how to make these decisions. How is it possible that this is the first time I'm hearing about these [life] skills and actually practicing them? Like, these are so important skills. These should have been taught to us a long time ago.

The novice instructors were not familiar with shared leadership either. Their previous experiences included vertical leadership with the formal leader being hierarchically placed above the followers. Therefore, there was also a demand for learning shared leadership.

Additionally, after the intervention, different organizations heard about the training program. Two cities, several sport associations, and the Finnish Olympic Committee expressed their interest in the program. Consequently, the program has already been disseminated in Finland to novice coaches with immigrant backgrounds as part of the Erasmus+ Sport Peer education, Leadership, Action, Youth! (PLAY) project funded by the European Union and to experienced coaches and educators who train novice physical activity instructors as part of the Hood Coach project funded by the city of Helsinki. These results indicate a demand for leadership training among young novice instructors.

Practicality

Resources and Circumstances

The host university provided the required physical activity equipment and spacious facilities for the training. During the third practice teaching lessons, the sport teams provided the required equipment. Without these resources, the program could not have been delivered according to the training manual.

The first author also created a Web site in Finnish, which was used during the leadership training program and beyond. It included all the relevant materials and information concerning the leadership training program and the study. The novice instructors were able to access it at any time from any device. The Web site proved useful during the training, especially when the novice instructors were planning their practice teaching lessons, but in other times, the novice instructors were not utilizing it. At the beginning, the novice instructors also reported some challenges accessing the password-protected Web site.

The novice instructors were particularly pleased with the snacks. Four of them mentioned them in the anonymous training feedback form, and it was the first thing they mentioned during the focus group interview four months after the training when asked what they remember about the training.

The group size of eight was optimal for the leadership training program with the existing resources. It allowed sufficient individual contribution from each novice instructor, individual

feedback, and a large enough group to organize the first practice teaching lessons.

Timing and Duration

The participants considered the timing of the training convenient; however, during the recruitment, a few applicants indicated they could not participate due to the timing. The trainers considered timing of the training optimal for the target group as it was organized before the new school year started.

The participants considered the duration of the training appropriate. Although they may have liked more practical training, they acknowledged that participation would have been more difficult if the training was extended. Jesse (male, 22 years) summed it up, *“If the training was longer, I couldn’t have made it. Now, I was able to quit my summer job a couple of weeks earlier and made it.”* The trainers considered 20 h as appropriate, sufficient, and necessary duration for the novice instructors’ leadership training program. More meetings or longer training days would have required more resources. Less meetings or shorter training days would have made it impossible to cover all the planned content.

The trainers and the novice instructors were pleased with the timing of the meetings. Leo (male, 18 years) stated, *“It’s good to have to wake up early because school starts soon. And we are done early so plenty of time to still relax.”* Seven meetings were considered appropriate, and three hours would have been the optimal length of a meeting, because in the meetings that lasted three and half hours, the novice instructors started yawning and losing their focus even though the content was very interactive. The meetings were organized frequently enough for the participants and the trainers to maintain their focus on the training but not too frequent to become consumed by the training. In addition, the total length of time over which the intervention was given (five weeks) was perceived suitable by the participants and the trainers.

Adverse Events

No major adverse events were reported, which indicates practicality. A few minor adverse events were reported and observed. For example, when only four female volunteer athletes showed up for the second practice teaching lessons instead of 10, the novice instructors were surprised and became worried and anxious because they had to modify their lesson plans on the spot. During the debrief after the second practice teaching lessons, Laura talked about this challenge, *“There were so few of them that time was not spent on like dividing teams or things like that. So, we had a little more time than we had thought of.”* Her partner Anna (female, 19 years) continued, *“There were a few games that we had not planned to do either but then decided to take them.”*

Some physical fatigue was reported by the novice instructors during and after the third and the fourth meeting. At the end of the fourth meeting, Tom (male, 18 years) stated, *“I can feel that it’s been quite a lot of practice for my legs in the past few days and I still need to bike home.”* Additionally, despite having snacks available, some novice instructors reported being

hungry at the end of the third and the fourth meetings that had included plenty of physical activity.

Acceptability

Novice Instructors

The novice instructors perceived the training program highly acceptable. The descriptive statistics of the novice instructors’ evaluations of the acceptability of the training program can be found in **Table 3**.

Prior to the training, the novice instructors gave a written answer to an open-ended question about their expectations toward the training program. Their expectations included developing their leadership skills, spending quality time with likeminded people, and receiving comprehensive and useful training. In the anonymous training feedback form, the novice instructors considered the training being as they had expected. Some novice instructors also became close friends with each other outside of the leadership training.

The attendance rate in the leadership training program was 100 percent. The novice instructors accepted the training program and its core components (theory, activity, experiential learning, evaluation, and leadership), and engaged in all the content. None of the novice instructors had heard about the TPSR model before the leadership training program or had any experience with it. Anna also brought this up in a conversation during the training,

It [the TPSR model] was a brand new thing. It was not familiar to me at all. Even though I have participated in organized sports and been in school for so many years, I have never come across anything like this.

When the novice instructors applied for the program, they knew the extent of the training and that they would be trained to lead afterschool physical activity clubs. However, it became apparent that the novice instructors had never deliberately practiced or even considered life skills and were not expecting to learn a model or have a theory being taught to them and to base their instruction on. During the focus group interview, some novice instructors mentioned how having a theory component had surprised them. Tom explained,

TABLE 3 | The descriptive statistics of the novice instructors’ evaluations of the acceptability of the training program.

What do you think of the training?	<i>M</i>	<i>SD</i>
Training was as I expected	4.14	0.69
Training was demanding	3.29	0.95
Participating the training was fun	4.57	0.53
Amount of theory was appropriate	4.43	0.53
Training was useful	4.71	0.49
I was satisfied with the training	4.71	0.49
Amount of practical application was appropriate	4.29	1.11
Trainers had expertise	4.86	0.38
I would recommend the training to others	4.57	0.53

5 = strongly agree to 1 = strongly disagree.

At first I was like, this is a physical activity program. So, I did not think that there needed some skills to be transferred and talk about deep stuff. And that kind of hit me a little like what, what is this?

Jesse was also surprised by the extent of the theory, “Theory that we had ...it was at first quite, well, like it was more than expected or what I had personally thought of.” Despite the surprises, the novice instructors considered the training to have a good amount of theory. Jesse continued, “I do not mean there should have been less theory but maybe more practice...if there was time for it.” In the anonymous training feedback, some of the novice instructors specifically thanked for the systematic implementation of the TPSR model throughout the program, “I liked it that the same things were repeated often and from many angles” and “I liked it that the same things were gone through first in theory and then in practice.”

At the beginning of the training, the self-expression activities were challenging for the novice instructors and they did not feel safe enough for personal risk taking. For example, when the trainer explained the activity, “Its berry season now. Think about what berry you would be and why. [break] Why don’t we start with Jesse first.” Jesse was surprised and struggled to express himself, “Oh...well...berry...now this was such a random question at this point that [silence, thinking]...for example [silence].” The trainer helped him, “What first comes to your mind?” and Jesse answered, “For example gooseberry.” Jesse was looking at the trainer and expecting her to call the next person’s name. Everybody was quiet and waiting for Jesse to continue. Soon he realized it was still his turn, “Oh, do I need to? I need to give reasons. Right...umm...it’s big and the bush has a lot of spikes.” When it came to Tom’s turn, he was also struggling to answer, “[nervous laugh] Em...hmm...well...em.” Jesse said sarcastically, “A lot of time to think.” Tom smiled and responded, “It’s a hard task. Hmm. Well, probably strawberry because it is, hmm, big and good.”

Despite the challenging start, over the course of the training the self-expression and team-building activities worked well in getting the novice instructors to interact, feel safe in the group, take initiative, express themselves, and enjoy the training. During the third meeting, which was in a gymnasium instead of a classroom, the novice instructors opened up and from that point on became gradually more engaged in all the activities. For example, during the first practice teaching lessons in a story activity that Anna was leading with Laura, she struggled to continue a story, but the other instructors actively helped her. Anna stated, “Once upon a time there was a little boy who was skinny who had [laughing]...no...how...I don’t remember.” Jesse and Aaron (male, 18 years) simultaneously helped Anna, “Was very skinny.” Anna continued repeating the story, “But who had strawberries that smelled like moss. Once...” and passed the ball to Heidi (female, 18 years). Laura who was leading the activity stated, “Now, can we still get it right?” Heidi tried to repeat the story, “Once upon a time there was a very little boy...no...[paused]” Many of the instructors supported Heidi and simultaneously said, “Yes!” Jesse corrected them, “No, a skinny little boy.” Everybody laughed. Leo stepped in, “No it

did not go like that. [Emma repeated simultaneously with Leo] Once upon a time, there was a little boy, who was very skinny. [Leo continued alone] It was [paused and was thinking]” Ville added, “We can check this from the video!” and everybody laughed.

All the novice instructors completed the three practice teaching lessons and were enthusiastic about them. The novice instructors considered the training having a good amount of practical training, “We were allowed to apply a lot in practice.” However, in the focus group interview, Jesse was also hoping for more practice with the peers before the volunteers, “I would have liked to have more, for example, practice with the own group so that I would have gained some more confidence before leading the group of strangers.” For the practice teaching lessons, the trainers had assigned the pairs based on age, gender, sport background, instructing experience, and personality to generate as heterogeneous pairs as possible of the same gender. However, some of the novice instructors would have liked to work more with different partners and choose their partners for the practice teaching lessons. Two of the pairs were functioning very well from the beginning, but the other two pairs had more challenges with their cooperation. The same pairs were kept for all three practice teaching lessons to give them a chance to develop better communication and teamwork.

All the novice instructors completed all required self-evaluations and reflected on their instructing performance after each practice teaching lesson. The novice instructors also gave each other good, relevant, and positive feedback. For example, Jesse gave feedback to Tom and Aaron after their first practice teaching lesson,

Seriously boys, a great performance! I wouldn’t have personally even known how to start to do what you just did. It requires letting go, which came naturally from both of you. Dance is that kind of, at least for me, it immediately makes me feel uncomfortable. Like, now I should dance and move smoothly in front of others. Boys did very well the whole lesson and it was a really professional lesson. It was fun!

The novice instructors reported that participating in the training was somewhat demanding. One novice instructor also referred to the burden in the anonymous training feedback when asked what he/she did not like about the training, “Too big workload and too high expectations of it.” Despite being somewhat demanding, the training was perceived as fun and useful by all the instructors and they were satisfied with the training as one of the instructors expressed in the anonymous feedback, “The training was clear and efficient. Things that were agreed upon were taken care of.”

All the novice instructors would recommend the training to others and rated the training overall as very good ($M = 4.50$, on a 5-point scale, $SD = 0.53$). In the training feedback questionnaire, Aaron further brought up his satisfaction with the training, “Very comprehensive training from which a novice instructor gets a good foundation as long as he/she has the courage to participate.” as did Jesse, “The training was good. I believe it will be useful for me in the future.”

The participants perceived their basic psychological needs of relatedness ($M = 4.73$ on a 5-point scale, $SD = 0.51$) and autonomy ($M = 6.54$ on a 7-point scale, $SD = 0.69$) being strongly supported during the training program. This demonstrates that the trainers shared leadership and were able to engage the novice instructors. According to the anonymous feedback after the training, the novice instructors also considered the trainers' expertise high, *"The trainers in my opinion were really good and tried to help us."*

Trainers

Based on the application videos, the trainers expected the chosen novice instructors to be quite outgoing. Therefore, it came as a surprise how reserved the group and shy the participants were at first. Despite the hesitations in the beginning, the leadership training went better than the trainers had expected. The trainers were especially pleased with all the activities, the model lessons, and the practice teaching lessons. The trainers enjoyed the training and, on several occasions, expressed their feelings to the novice instructors during the training, *"I have really enjoyed training you. This is a great group and I have a really good feeling about tomorrow."*

The trainers had invested time and effort into gaining an in-depth understanding of the TPSR model in theory and in practice prior to the training. This preparation is described later in results. Despite the extensive preparation, the training was demanding for the trainers. It was long and intense, and required the trainers to focus on the implementation of the TPSR philosophy throughout each meeting. However, the challenge also made the program attractive to the trainers, as it required them to pay careful attention to their own behavior and reflect during and after each meeting.

The only thing the trainers were not fully satisfied with were the observations of the sport practices (i.e., sixth meetings). It was beneficial for the novice instructors to contact the coaches, organize the observations, see the coaches and athletes in action, and provide feedback to the coaches. However, the novice instructors and the trainers struggled to maintain their focus for the entire 60 min, as some of the practices did not have much variability in the content or active coaching. In addition, all the observed coaches were male.

Implementation Fidelity

The implementation fidelity of the novice physical activity instructors' leadership training program and its core components (i.e., theory, activity, experiential learning, evaluation, and leadership) were evaluated in terms of four dimensions: adherence, dose or exposure, quality of delivery, and program differentiation (Dane and Schneider, 1998).

Adherence

The leadership training program and all its core components were delivered as originally designed by the program developers and described in the program manual. One group division activity was changed during the training to a more psychologically safe one to better fit the needs of the group.

Dose or Exposure

The originally prescribed level of the leadership training program was delivered to the novice instructors. The overall length of the training program was 20 h and duration five weeks. The leadership training program consisted of seven meetings ranging from 135 to 210 min. The first three meetings were arranged one day apart during week one, the next two meetings were organized during the first two days of week two, the sixth meetings were completed in pairs during week three, and the last meetings were organized in pairs during week four and five.

The theory component consisted of approximately 90 min of lecturing and 30 min of discussing the model during the second meeting. Approximately, three hours were spent reviewing the content of the theory component throughout the rest of the training. The activity component consisted of a group guidelines activity, five self-expression activities, eight team-building activities, and seven different ways to divide a group, totaling up to approximately two hours. Each novice instructor participated the two 60-min model lessons led by the trainers during the third meeting and three 30-min practice teaching lessons (i.e., first practice teaching lessons) led by their peer novice instructors during the fourth meeting, constituting the experiential learning component. The evaluation component consisted of the novice instructors' evaluations of themselves after each practice teaching lesson (fourth, fifth, and seventh meetings), their peers after the first and second practice teaching lessons (fourth and fifth meeting), the trainers after the model lessons (third meeting), and the sport coaches after the observation of a sport practice (sixth meetings). In addition, it included the trainers' evaluations of the novice instructors after each practice teaching lesson (fourth, fifth, and seventh meetings), the sport coaches after the observation of sport practices (sixth meetings), and themselves and the other trainer after each meeting. The leadership component consisted of two 30-min practice teaching lessons (fourth and fifth meeting) for each pair organized one day apart during week two and a 60-min practice teaching lesson (seventh meetings) for each pair during weeks four and five. Additionally, different leadership and responsibility tasks were given to the participants throughout the training program demonstrating shared leadership.

Quality of Delivery

To ensure quality of the theory component, prior to the training, the trainers acquired an in-depth understanding of the TPSR model and used the principles of the model in their teaching and coaching. Both trainers had discussed with and received guidance from Dr. Don Hellison, the creator of the TPSR model. Both trainers also participated in a small group TPSR training led by the third author. The first author received additional one-on-one training by the third author, including observation and feedback on TPSR implementation and training on how to evaluate TPSR programs for implementation fidelity. The first author also met other members of the TPSR community of practice (i.e., TPSR Alliance) and observed their programs' use of the principles of the TPSR model.

The trainers had used the group guidelines and most of the self-expression, team-building, and random group division activities of the program with several different groups and sport teams in the past. Based on their previous positive experiences, the trainers believed that the activity component increases the individuals' self-awareness and the group's cohesion and were motivated to organize the activities. The trainers also participated in the activities, which further improved the trainer-novice instructor relationships.

Both trainers had extensive experience in instructing physical activity and providing feedback to groups and individuals including novice instructors. They considered the evaluation component as an important tool to influence the novice instructors' future instructing behavior, self-efficacy, and skills to receive and provide feedback. The trainers gave plenty of positive feedback to the novice instructors,

For many of you this was the first time that you led a whole physical activity or any practice. It went great. Awesome. You used so many of these more advanced, challenging teaching strategies that not necessarily experienced, trained, professional teachers and coaches know how to use.

They also gave constructive feedback when it was needed. For example, when a novice instructor had stood with her arms crossed for a long time during a practice teaching lesson, the trainer brought it up during the following debrief by asking, "What feeling do you get if I'm like this [crosses her arms]? Or likewise if I'm holding my hands in my pockets?" Tom responded, "That kind of like you are not interested" and Jesse added, "You are more difficult to approach." The trainer continued, "Exactly. So, pay attention to your body language because you signal a lot with it, in addition to the things that you say."

To ensure the quality of the experiential learning component and the leadership component, the trainers carefully followed the training manual. Both trainers had extensive leadership experience, and they had acquired TPSR-based philosophy that emphasized shared leadership, which was the focus of the experiential learning component and the leadership component. Shared leadership was embedded throughout the training program, and the novice instructors' leadership and responsibility were progressively increased. This was also made concretely known and visible to the novice instructors. Once the trainers had managed to establish a good relationship with the instructors, they gave them a vast variety of individual managerial and leadership tasks. The trainers had also chosen activities throughout the training that supported and required autonomy from the instructors. During the model lessons, the trainers gave each instructor opportunities to take a lead and make decisions individually and as a group. Through following discussions, the novice instructors were asked to identify how the trainers supported the novice instructors' autonomy, what kind of leadership tasks they were given, and how they could lead physical activity groups accordingly. During the practice teaching lessons, the instructors were given autonomy to choose the content of the lessons (i.e., physical activity and life skills)

and lead the group with their partner. The trainers were only observing and providing feedback afterward. Shared leadership was also emphasized in the discussions, and the novice instructors were reflecting and evaluating how they managed to share leadership. These results are presented elsewhere.

The trainers were experienced, motivated, and competent to deliver the training program and all its core components. These trainer qualities were vital in achieving high fidelity of implementation of the training program. Furthermore, having two trainers significantly improved the quality of delivery. For example, one trainer could observe the lesson, while the other one was leading it. Also, if one trainer was forgetting something, the other one stepped in, or if one trainer was asking an unclear question, the other one clarified. The trainers also engaged in critical self-reflection and discussed implementation during and after the meetings.

Program Differentiation

The novice physical activity instructors' leadership training program was based on the TPSR model and covered the model both in theory and in practice. This differentiated the program from a typical physical activity leadership training program, which includes either lectures about a theory without practical implementation or practical training without a theoretical basis.

The uniqueness of the novice physical activity instructors' leadership training program compared to other published TPSR-based physical activity instructors training programs was strongly related to the extensiveness of the core components of the training. Unlike other published TPSR-based physical activity instructors training programs, this leadership training program included an extensive amount of self-expression, team-building, and group division activities. The experiential learning component of the current leadership training program had a unique focus on experiencing the model in practice teaching lessons as a peer participant. Also, live observations of sport practices were included in this leadership training program. In TPSR-based training programs, participants are typically given leadership roles and empowered in the training process. This was also the case in the current study. Additionally, all the novice instructors led practice teaching lessons to three very different target groups (i.e., peers, volunteer athletes, and a sport team or group), whereas TPSR-based training programs typically offer real-life leadership opportunities only with a certain target group or only to some of the participants.

DISCUSSION

Results indicate that the leadership training program for novice physical activity instructors was feasible in the current context with the available resources. There was a demand for the training program, and the training was practical and highly acceptable by the novice instructors and the trainers. The leadership training program was also implemented with high fidelity. Therefore, it has a high probability of efficacy and it can be deemed acceptable for further evaluation.

Demand

Previous research on leadership development has focused almost exclusively on adult leadership (Karagianni and Montgomery, 2018). However, adult leadership models do not consider adolescents' and young adults' unique developmental needs (Linden and Fertman, 1998). Therefore, there is a need for leadership development in young people (Gould et al., 2006; Martinek and Hellison, 2009).

The demand for young adults' leadership training was also demonstrated in the current study. In a matter of weeks, 56 interested participants were reached, exceeding the intake. Due to limited resources, many motivated novice instructors could not be trained. During the leadership training program, the novice instructors continuously expressed their lack of experience in responsibility and leadership skills and claimed that they have not been given opportunities to learn these skills. Perhaps, the skills are practiced at school, but the students are not made aware that they are practicing the skills. Teachers might not be telling the students why it is important, for example, to evaluate oneself, how to do it, and how to transfer the skill to other settings but instead just expects them to learn by themselves. The lack of programs that teach leadership skills to novice instructors means that most afterschool physical activity clubs are run by young inexperienced and untrained instructors. Therefore, in order to improve the quality of the instruction and the programs, and to promote shared leadership, there is a need for further leadership training that deliberately teaches responsibility and leadership skills and the transfer of the skills to novice instructors. The demand has also been reflected in the nationwide interest toward the leadership training program after the training intervention was first presented to the public.

Practicality

The training program was successfully delivered to intended participants using existing means, resources, and circumstances. The host university and sport clubs assisted with the equipment. The timing and duration of the training and the meetings were appropriate for the target group and in line with previous research on TPSR-based leadership training programs, which have shown promising learning outcomes for teachers and coaches trained in a 20-h TPSR training (Escartí et al., 2013) and in intensive TPSR workshops over the course of a week (Wright et al., 2016, 2018). Extending the duration of the training program would have required more resources and could have reduced the number of available participants. The group was optimal size. Larger number of participants would have required a longer training period and more resources and would have reduced the instructors' individual contribution, which all could have influenced the outcomes of the training program. In previous studies, instructor trainings have been typically organized for one to eight teachers or coaches (e.g., Escartí et al., 2010, 2018; Beaudoin, 2012; Hemphill et al., 2015; Lee and Choi, 2015; Wright et al., 2016). When larger groups of instructors are trained, the number of trainers increases and, for example, concurrent sessions are organized in order

to divide the group into smaller groups and to maximize interaction (Wright et al., 2018).

Lack of major adverse events also indicated practicality. Even having less volunteer athletes than expected provided a lesson of how the instructors need to be flexible and able to adjust their lesson plan.

Acceptability

The novice instructors considered the training program somewhat demanding but fun and useful. They were satisfied with the training and would recommend it to others. High satisfaction was found also in other TPSR-based leadership training programs (e.g., Wright et al., 2018). Although the novice instructors felt that their autonomy and relatedness were highly supported during the training program, they also would have liked to have the opportunity to choose their partners for the practice teaching lessons.

All the novice instructors participated in the training program and engaged in all its content. Although none of them had heard about the TPSR model before the training program, they received it well. They especially liked that the model was systematically brought up and followed throughout the training program. Self-expression and evaluation were challenging for them at the beginning of the training. However, once the group had become safe enough for personal risk taking, they opened up more. All the novice instructors completed the three practice teaching lessons and were enthusiastic about them. All the novice instructors also completed all required self-evaluations and reflected on their instructing performance after each practice teaching lesson. Their feedback to each other was appropriate, accurate, and helpful. The trainers were perceived competent by the novice instructors.

The trainers were satisfied with the novice physical activity instructors' leadership training program. At first, the novice instructors were shy and reserved but in the end the training program surpassed the trainers' expectations. The trainers had prepared well and although the training was intense and demanding, the trainers enjoyed it. The only thing they were not fully satisfied with was the observations of the sport practices (i.e., sixth meetings) because some of the practices were too long with not much variability in content. Therefore, in the future, the observations could be replaced with watching video recordings of the trainers instructing the model lessons or the novice instructors instructing the practice teaching lessons. Alternatively, video recordings of female and male and novice and experienced coaches leading teams of different sports and at different competitive levels could be used. Also, if available, videos of TPSR-based programs could be observed as in the teacher education of Escartí et al. (2018).

Implementation Fidelity

The novice physical activity instructors' leadership training program and its core components were delivered to novice instructors as originally designed and prescribed by the program developers in the program manual. The trainers of the leadership training program had acquired an in-depth understanding of

the TPSR model in theory and in practice, which is essential for a quality delivery of the TPSR. The training program cannot be executed without the experienced, motivated, and competent trainers. The trainers also acquired the mindset of TPSR as “a way of being” for the program leaders, not just a way of teaching (Hellison, 2011).

In their systematic review of PYD in sport, Holt et al. (2017) found that theoretical models and conceptual frameworks were used sparingly in PYD programs. Therefore, it is safe to assume that PYD-based leadership training programs are rarely based on theory and the presence of the theory component distinguishes the current novice physical activity instructors' leadership training program from most other PYD-based leadership training programs.

The creation of positive relationships between the leaders and the students and among the students is at the heart of the TPSR model (Hellison, 2011). Therefore, most TPSR-based instructor training programs include some team-building games (Wright et al., 2018; Alcalá et al., 2019). However, tasks to randomly divide groups or self-expression activities have not been mentioned in the TPSR instructor training literature, although Gordon et al. (2016) showed that the TPSR model aligned strongly with the social emotional learning framework, which is a context in which these activities are commonly used (Lintunen and Gould, 2014). These kinds of activities were not the focus of the leadership training program, but they were crucial in creating positive relationships and a psychologically safe learning environment.

The experiential learning component was especially important for the novice instructors because they had never experienced shared leadership or the TPSR model in practice before. The model lessons and first practice teaching lessons provided experiences of how it feels to participate in TPSR-based lessons and demonstrated how to embed shared leadership and the TPSR model in physical activity lessons. Wright et al. (2018) also organized demonstration lessons to coaches in their training program, but the focus was on the latter purpose. Other TPSR-based instructor training programs have not reported providing any form of demonstration lessons for either purpose.

The current leadership training program was built around the concept of shared leadership. Leadership was gradually shared among the novice instructors along with personal and social responsibility. This was done transparently so that the novice instructors knew why the trainers did what they did. In other training programs where people were being trained to use TPSR as a teaching tool, shared leadership was also applied (Wright et al., 2016, 2017, 2018). The people being trained were given leadership roles and empowered in the training process. They shared the leadership roles as a group, provided leadership to their peers who were not on the leadership team, and implemented leadership strategies among youth participants in their program, in a way repeating the cycle. However, typically in other TPSR-based instructor training programs, only some of the coaches are invited to lead a single session (Wright et al., 2018) or all lead but only one familiar group, for example, their students (Hemphill et al., 2015; Lee and Choi, 2015) or

coaches (Jacobs et al., 2020). Therefore, the current study was unique because the novice instructors were given opportunities to lead three very different target groups (i.e., peers, volunteer athletes, and a sport team or group).

Reflection and evaluation are core components of the TPSR model (Hellison, 2011). However, apart from professional development programs (e.g., Hemphill et al., 2015), it is difficult to evaluate the extent of reflection and evaluation in TPSR-based instructor training programs. In the current leadership training program, the novice instructors were reflecting and evaluating their own and other instructors' performance after each practice teaching lesson and throughout the program. Additionally, in some TPSR-based instructor training, video recordings containing examples of the implementation of the TPSR model in physical activity have been used (Hemphill et al., 2015; Lee and Choi, 2015; Escartí et al., 2018). However, live observations of sport practices have not been previously reported. The main purpose of the live observations was to provide the novice instructors with an example of a real-life coaching situation and make them reflect on how to implement the TPSR model to it.

LIMITATIONS

The novice physical activity instructors' leadership training program was designed for the Finnish context where the current study was conducted in Finnish. Therefore, the culture may dictate the quality of the training program because, for example, interpersonal communication that is clear, supportive, and respectful in the Finnish context may be confusing and disrespectful in other contexts.

Adaptation, expansion, and integration domains of an evidence-based framework for feasibility studies (Bowen et al., 2009) were not investigated in this study. Therefore, it is unknown to what extent the program is feasible when implemented to different populations or settings, by different trainers, or into ongoing community practice. However, as the novice physical activity instructors' leadership training program proved feasible, the training program can be attempted with different populations, trainers, and circumstances. Preliminary experiences with the Erasmus+ Sport PLAY! project indicated that the program can be successfully organized for novice instructors with immigrant backgrounds.

Additionally, the limited efficacy testing to examine the extent to which the training program works in making positive changes to the novice instructors' responsibility and instructing behaviors will be presented elsewhere. Bowen et al. (2009) stated that for an intervention to be worthy of testing efficacy, it must address the relevant questions within feasibility. They also emphasized that researchers need to choose the domains that best match the needs of the situation. Hence, we examined demand, practicality, acceptability, and implementation fidelity to determine the feasibility of the leadership training program (Bowen et al., 2009).

One concern that might be leveled at our recruitment strategy might be the issue of self-selection, which we acknowledge.

However, the goal was to recruit people who were sufficiently motivated to participate in our program, so, by definition, our recruitment process would recruit motivated, interested applicants. This strategy has also been used in other leadership programs for recruiting adolescents and young adults (Karagianni and Montgomery, 2018).

Contribution to the Field and Future Directions

The leadership training program is the first TPSR-based training program for young novice physical activity instructors in Finland. Previous training programs in Finland targeted experienced physical education teachers (Rantala and Heikinaro-Johansson, 2007; Romar et al., 2015).

To our knowledge, this is also the first feasibility evaluation of a TPSR-based physical activity instructors' leadership training program. Currently, there is no guidance for conducting feasibility studies, although Craig et al. (2018) are in the process of creating one for public health interventions. This study contributes to the evaluation research of TPSR-based programs by using an evidence-based framework for feasibility studies (Bowen et al., 2009), which can be used in the future to evaluate ongoing or new TPSR-based programs and leadership trainings until further guidance is developed. Therefore, this study responded to Martinek and Hellison's (2016) call to discover new ways to evaluate TPSR-based programs to confirm fidelity of the programs and to provide ideas that can be applied to other programs.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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ETHICS STATEMENT

The studies involving human participants were reviewed and approved by The Ethics Committee of the University of Jyväskylä (No. 29062015). The patients/participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

AUTHOR CONTRIBUTIONS

All authors were involved in designing the study and procedures. H-MT and TL collected the data and drafted the manuscript. H-MT analyzed the data. All authors edited the manuscript, read, and approved the submitted version.

FUNDING

This study was funded by the Finnish Ministry of Education and Culture under grant no. OKM/34/626/2015. MH's contribution was supported by a Finland Distinguished Professor (FiDiPro) award No. 1801/31/2015 from Business Finland.

ACKNOWLEDGMENTS

We thank all our novice instructors who participated in the training program and the volunteer athletes and teams who enabled successful implementation of the training program. We gratefully acknowledge Iita Pienimäki and Juho Polet for their valuable support in data collection.

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Does Fair Coach Behavior Predict the Quality of Athlete Leadership Among Belgian Volleyball and Basketball Players: The Vital Role of Team Identification and Task Cohesion

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OPEN ACCESS

Edited by:

Roberta Antonini Philippe,
University of Lausanne, Switzerland

Reviewed by:

Roland Seiler,
University of Bern, Switzerland
David Troulloud,
Université Grenoble Alpes, France

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Specialty section:

This article was submitted to
Performance Science,
a section of the journal
Frontiers in Psychology

Received: 23 December 2020

Accepted: 23 December 2021

Published: 07 February 2022

Citation:

De Backer M,
Van Puyenbroeck S, Fransen K,
Reynders B, Boen F, Malisse F and
Vande Broek G (2022) Does Fair
Coach Behavior Predict the Quality
of Athlete Leadership Among Belgian
Volleyball and Basketball Players:
The Vital Role of Team Identification
and Task Cohesion.
Front. Psychol. 12:645764.
doi: 10.3389/fpsyg.2021.645764

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A vast stream of empirical work has revealed that coach and athlete leadership are important determinants of sport teams' functioning and performance. Although coaches have a direct impact on individual and team outcomes, they should also strive to stimulate athletes to take up leadership roles in a qualitative manner. Yet, the relation between coach leadership behavior and the extent of high-quality athlete leadership within teams remains underexposed. Based on organizational justice theory and the social identity approach, the present research tested whether perceived justice of the coach positively predicts the quality of athlete leadership. Furthermore, we examined the role of group dynamic processes (i.e., team identification and task cohesion) within this relation. Belgian volleyball ($N = 161$) and basketball players ($N = 78$) were asked to rate the justice of their coach, their team identification, the task cohesion, and the athlete leadership quality in the team. Structural equation modeling indicated that coaches' perceived justice positively predicted the quality of athletes' leadership, and that this relation was established through three intermediate steps (i.e., from team identification to task cohesion, to athlete leadership quality). These results suggest that fair coach behavior does not only bridge the gap between leadership and followership, it also has the potential to improve the quality of athletes' leadership within sport teams. More specifically, findings suggest that coaches' perceived justice cultivates a shared social identity characterized by high levels of players' identification with their team, which in turn increased their perceptions of the team's task cohesion. Finally, this increased task cohesion encouraged the athlete leaders to demonstrate high-quality leadership.

Keywords: organizational justice, fairness, social identity approach, group dynamics, team sports, coaching

INTRODUCTION

Bringing talented players together is only the first step toward success in team sport competition. The second and more important step is persuading these players to function together as a team. It is this team functioning that often makes the difference between winning and losing. Effective leadership of the coach plays an important role in the process of optimizing this team functioning (Cotterill, 2013). Research in the business setting concluded that leadership effectiveness predicts optimal team functioning (Stoker et al., 2001; Judge et al., 2004) and depends on the perceived justice of the leader (Colquitt and Greenberg, 2003; van Knippenberg et al., 2007). In line with these results, research in the sport setting (De Backer et al., 2011, 2015) has shown that when coaches are perceived as fair, athletes would more strongly identify with their team. More specifically, instead of defining themselves in terms of their personal identity (as “I” and “me”), players would rather define themselves as members of their team (as “we” and “us”) and strongly valued this group membership. Moreover, it has been shown that a high level of team identification and team cohesion decreased the amount of social loafing within sport teams (De Backer et al., 2011, 2015). Recent research also indicated that athletes who perceived their coach as fair showed higher levels of satisfaction with the working method of their coach and reported more progression (De Backer et al., 2020).

However, the coach is not the only source of leadership that can influence the team functioning. Also leaders within the team can occupy important leadership roles. These athlete leaders have been defined as “athletes, occupying a formal or informal role within a team, who influence a group of team members to achieve a common goal” (Loughead et al., 2006). Recent work has demonstrated that these athlete leaders have the potential to improve their team’s functioning, performance, and teammates’ well-being (Mertens et al., 2018; Fransen et al., 2020c). As a result, it seems valuable to examine whether and how coaches can stimulate athletes to take up leadership roles in a qualitative manner.

The first studies on athlete leadership in sport teams distinguished between three different leadership roles (Loughead et al., 2006): (1) Task leadership, which focused on the accomplishment of the team goals on the field (e.g., offering teammates tactical instructions when required); (2) Social leadership, which fostered on cultivating positive interactions between team members outside the field (e.g., offering support to teammates and caring for a good atmosphere off the field); and (3) External leadership, aiming for a good representation of the team toward people outside the team, such as media, sponsors,.... However, research of Fransen et al. (2014b) demonstrated the existence of a fourth distinct role, namely the motivational leader on the field. This motivational leader encourages teammates to stay motivated during games and practices (e.g., by encouraging teammates to do their utmost on the field). Fransen et al. (2014a) demonstrated that each of the four leadership roles contributes to an overall perception of athlete leader quality. High-quality athlete leadership in the team has been linked to higher levels of team cohesion

(Price and Weiss, 2011, 2013; Fransen et al., 2014b), team confidence (Fransen et al., 2014a), and even team performance (Fransen et al., 2015a).

It is thus well-known that qualitative athlete leaders positively impact the team’s functioning and several performance-enhancing outcomes. Yet, research on athlete leadership has almost exclusively focused on outcomes of high-quality leadership within teams, thereby ignoring how the quality of athlete leaders can be fostered within a team. Only recently, scholars have started to develop intervention protocols to develop athlete leadership (e.g., Fransen et al., 2020b). Yet even these studies mainly target players within the team, thereby underlighting the potential role of coaches’ leadership style and coach behavior in stimulating high-quality athlete leadership within their teams. The current study aimed to address this question by investigating the relation between the perceived justice of the coach and athlete leadership quality in sport teams. De Backer et al. (2011, 2015) already referred to the importance of the perceived justice of the coach for shaping team identification and cohesiveness within the team. We assume that such positive group dynamics are key conditions to foster high qualitative athlete leadership.

In order to gain insight in the process through which a fair coaching style could foster high qualitative athlete leadership, we draw on the organizational justice theory (Greenberg, 1987). This theory describes and explains the importance of a leader’s fairness in the workplace (Greenberg, 1990). Scientists have translated organizational justice to the team sport context (Jordan et al., 2004), in which they have focused on the three original subtypes of organizational justice: distributive justice (i.e., the perceived fairness of decision outcomes such as the playing time; Adams, 1965); procedural justice (i.e., the perceived fairness of the procedures used to obtain outcomes, such as the use of objective scouting information; Thibaut and Walker, 1975), and interactional justice (i.e., the interpersonal treatment and the information individuals receive from the coach; Bies and Moag, 1986).

Organizational justice research has been characterized by studies on the unique effects of these different types of justice. However, researchers have demonstrated that individual’s justice perceptions may not be accurately evaluated when the various dimensions of justice are differentiated (Hauenstein et al., 2001). Therefore, a shift toward examining overall justice judgments is recommended (Ambrose and Arnaud, 2005). For example, Törnblom and Vermunt (1999) stated that the components of fairness are only meaningful in relation to the overall fairness of the situation (i.e., the justice of a situation as a Gestalt). Accordingly, Greenberg (2001) suggested that when individuals form justice perceptions, they do so with a “holistic judgment in which they respond to whatever information is both available and salient” (p. 211). In line with these suggestions, the present research used the composite score of the three perceived justice subcomponents and aimed to study whether athletes’ overall perceived justice of the coach predict athletes’ leadership quality.

As mentioned before, to our knowledge no research has been performed on the effect of coach behavior on athletes’ leadership quality. However, previous research in the team sport

setting clearly demonstrated that coaches' behavior strongly predicts the extent to which team members' take initiative by correcting others or providing suggestions for improvement (Van Puyenbroeck et al., 2017). In addition, research on justice in sport did support a positive link between the perception of fair coach behavior and athletes' team identification and team cohesion (De Backer et al., 2011, 2015). Both team identification and cohesion are known to be crucial for group-oriented behavior, such as cooperative behavior, task performance, and the amount of effort that people are willing to exert for their team (Haslam, 2004; Høigaard et al., 2006). Furthermore, De Backer et al. (2015) showed that team identification and task cohesion mediate the relation between perceived fairness of the coach and athletes' social loafing.

As a result, this research does not only aim to provide evidence that the perception of justice is an important antecedent of high-quality athlete leadership in sport teams. It also aims to explore the pathways that lead from the perception of justice to the perception of high-quality athlete leadership. Therefore, our hypothesized model was not only grounded on the organizational justice theory, but also on the social identity approach (SIA; Haslam, 2004). This theory, which distinguishes between a personal identity and a social identity, explains how the perceived fairness of the coach fosters athletes' social identity, which in turn is positively linked to increased levels of task cohesion on the team. Personal identity refers to the self as a unique individual, while social identity refers to the self as an interchangeable group member (i.e., people's sense of themselves as part of "us"). Furthermore, SIA states that perceiving the self as an interchangeable member of a category (i.e., the self-categorization process) is the cognitive process associated with social identity. Turner (1982) argued that the "switching on" of social identity is the cognitive mechanism that makes group behavior possible. Consequently, when an athlete identifies with the team (e.g., based on situational incentives such as the presence of an opponent team), this social identity will dominate, which in turn will lead to the internalization of the norms and behaviors prescribed by this group.

The closely related concept of team cohesion was defined by Carron et al. (1998, p. 213) as "a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs." They distinguished between a social subcomponent (i.e., a general orientation toward developing and maintaining social relationships within the group) and a task subcomponent (i.e., a general orientation toward achieving the group's goals and objectives). Both components have been further differentiated into an individual (i.e., individual attraction to the group) and a group component (i.e., group integration). Previous research (Heuzé et al., 2006; De Backer et al., 2015) has indicated that especially task cohesion plays a vital role in the group functioning of elite sport teams.

The group engagement model (Tyler and Blader, 2003) connects both the organizational justice theory and the SIA. More precisely, it indicates that the impact of perceived justice on peoples' engagement in groups is mediated by identity judgments. In support of the group engagement model, De Backer et al.

(2011, 2015) showed that high perceived justice of the coach shapes high levels of identification with the team, which in turn increases the team cohesion and decreases the social loafing among team athletes. The group engagement model explains this increased team identification as a logical consequence of the fact that two essential functions of organizational justice (i.e., quality of decision making, and quality of interpersonal treatment) contribute to people's assessment that it is safe for them to merge their identity with their group. Furthermore, the results of De Backer et al. (2011, 2015) showed that team identification and team cohesion were closely related but different constructs. In line with these results, Dutton et al. (1994) stated that the perception of a shared categorical identity (i.e., team identification) creates an in-group bias by accentuating the perceived similarities with other group members and results in positive attitudes toward these in-group members. This process eventually leads to increased intragroup cohesion (Dutton et al., 1994). In other words, team identity is the fundamental process of internalizing norms and values of a group, which lead to more process-based outcomes such as task cohesion.

Finally, in line with a previous statement of Zaccaro et al. (2001), we assume that the relation between leadership and team processes (i.e., team identification and cohesion) is not unidirectional, but bidirectional. More specifically, we expect that these team processes may also foster athletes' leadership quality. Research in business settings has revealed that members of highly cohesive and more specifically task cohesive groups show more qualitative leadership behavior: (a) They plan more efficiently and develop more appropriate performance strategies (Hackman and Morris, 1975; Hackman, 1976); and (b) They set and enforce stringent performance norms to compel maximal effort of all team members (Zaccaro and McCoy, 1988). Zaccaro et al. (2001) confirmed that task-oriented cohesion is associated with strong work norms and that once these norms have been established, they are enforced by the members themselves (e.g., by communicating in various ways with non-conforming individuals to bring them in line with group work expectations). These behaviors closely align with athlete leadership behaviors. Therefore, we expect that task cohesion in particular will be positively related to athletes' leadership quality.

To summarize, and based on this theoretical background, we expect that perceived fairness of the coach will positively predict athletes' leadership quality. More specifically, we expect that this prediction will be established through three intermediate steps. That is, we expect that coaches' perceived justice will foster athletes' team identification, which in turn is hypothesized to positively predict task cohesion. The increased levels of task cohesion, in turn, are expected to be related to increased levels of perceived athlete leadership quality.

Hypothesis 1: Athletes' perceived justice of the coach positively predicts the perceived quality of athlete leadership.

Hypothesis 1a: Athletes' perceived justice of the coach positively predicts team identification.

Hypothesis 1b: Team identification positively predicts task cohesion.

Hypothesis 1c: Task cohesion positively predicts athlete leadership quality.

All hypotheses were combined into one comprehensive research model (Figure 1).

MATERIALS AND METHODS

Participants and Procedures

Participants

We defined our sample size using the proposed ratio of sample size/parameters by Kline (2005). He argues that this ratio should at least be 5:1. Our model includes 30 parameters that need to be estimated, which requires at least a sample size of 150 athletes. Based on the response rates of previous studies in sport teams (e.g., Van Puyenbroeck et al., 2020), we contacted 30 teams in order to obtain this sample size. To recruit the research sample, we first listed all Flemish (i.e., Dutch speaking part of Belgium) basketball and volleyball clubs from the highest national to the first regional level of the Belgian competitions. Second, we randomly and blindly selected 18 Belgian volleyball and 12 Belgian basketball teams. Consequently, the head coaches of these 30 teams were contacted by telephone and informed about the purpose and the design of the research. Twenty-six coaches allowed their teams to take part in the study (i.e., seven male and 11 female volleyball teams, and five male and three female basketball teams). Four basketball coaches indicated that the workload of their players was too high and refused to participate in the study. The final research sample consisted of 239 senior athletes (i.e., 62 male and 99 female volleyball players, and 54 male and 24 female basketball players). This gives a total response rate of 81.3% (i.e., the response rate was respectively, 81.3% for volleyball, and 81.2% for basketball). It should be noted that the response rates for two volleyball teams were significantly lower (i.e., 36.4 and 45.5%) than the response rates of the other 24 teams (i.e., at least 58%). The lower response rates could be partly explained by the fact that both teams struggled with a lot of injured players. The mean age of the players was 23.10 years ($SD = 4.95$) and they had worked together for on average 2.17 years with their current coach ($SD = 1.84$).

Procedure

During or after a practice, we verbally informed the athletes about the objectives of our study and invited them to participate. The accurate timing of this briefing depended on the coach's preference. Athletes who agreed to participate first provided their written informed consent and afterward completed a paper-and-pencil questionnaire. A trained research assistant was present to clarify ambiguities and answer possible questions. The current study was approved by the Doctoral School of Biomedical Sciences (i.e., by the Doctoral Committee of Kinesiology, Rehabilitation Sciences and Physiotherapy) of the KU Leuven. Furthermore, the ethical standards of the American Psychological Association (APA) were followed in the conduct

of the study. No rewards were given for participation, and prior to completing the questionnaire, it was stated that participation was completely voluntary and that the players' anonymity was guaranteed. Prior to the data analysis, the names of the athletes and teams were replaced by numeric athlete and team ID's. The analyses were performed on this dataset. The original pencil-and-paper questionnaires were stored in a locked cupboard, thereby complying to the research institute's data management regulations. No individual or team scores were shared with the coaches or other athletes/teams. We emphasized the importance of responding independently and honestly to the questions.

Measures

Perceived Justice (Nine Items)

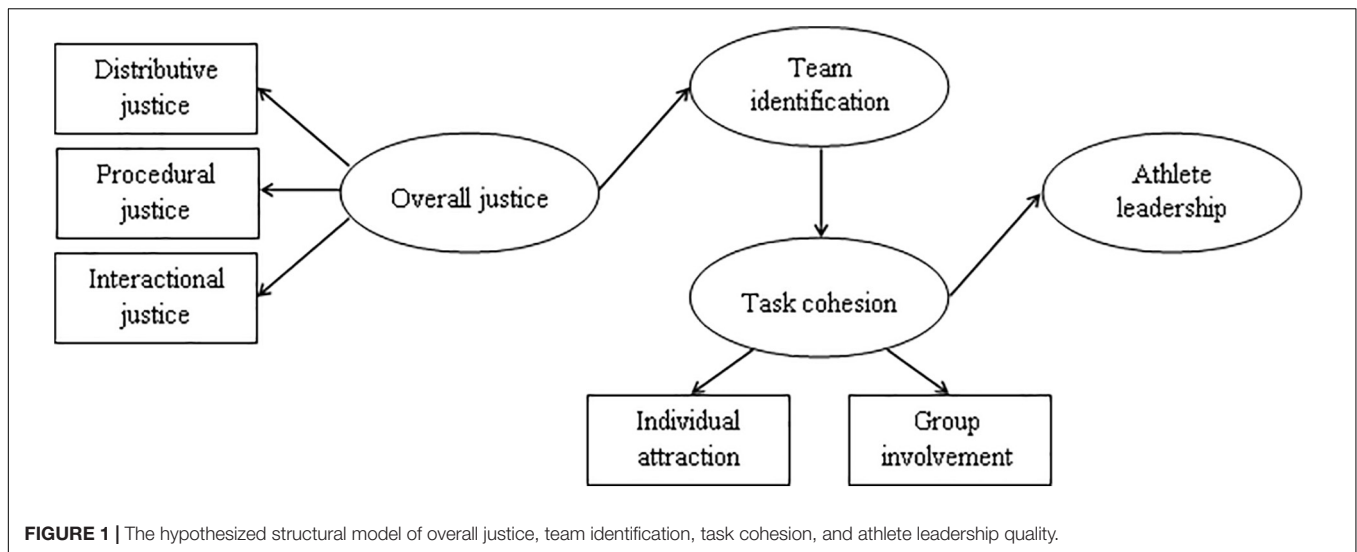
Justice perceptions were assessed with nine items selected from a 12-item justice measurement used in previous research (De Backer et al., 2015). This Dutch justice measurement was based on the justice questionnaire developed by Colquitt (2001) in the business setting and used a 5-point Likert scale (*strongly disagree* = 1; *strongly agree* = 5). We shortened the questionnaire to limit the workload of the athletes, by selecting the three highest loading items of each of the three subscales previously used in the team sport setting by De Backer et al. (2015). The shortened nine-item measurement consisted of three items that assessed the perception of distributive justice (e.g., "The minutes I play per game are a true reflection of my commitment and efficiency during the game"), three items that assessed the perception of procedural justice (e.g., "The decisions of my coach are based on objective information"), and three items that assessed the perception of interactional justice by evaluating the degree to which the procedures and outcomes are clear for the athletes (e.g., "My coach motivated and argued his decisions"). A second-order confirmatory factor analyses (CFA) established that the nine items formed three subcategories of justice (distributive, procedural, and interactional justice), which in turn significantly contributed to an overall measurement of perceived justice ($\chi^2 = 46.61$, $df = 23$, $p = 0.00$; $\chi^2/df = 2.03$; GFI = 0.96; CFI = 0.98; RMSEA = 0.07). The internal consistency of the overall justice scale (Cronbach's $\alpha = 0.87$) was high.

Identification With the Team (Five Items)

Team identification was measured using five items. These items were based on the fan identification scale constructed by Boen et al. (2008). We slightly rephrased the items to fit the specific team sport context (e.g., "this team" replaced "my old club"). The reliability of this adapted scale was already demonstrated in a sample of Flemish team athletes (Fransen et al., 2014a, 2015a; De Backer et al., 2015). The five items used a 7-point Likert scale (*strongly disagree* = -3; *strongly agree* = 3). An example item is "I strongly identify with this team." CFA showed good fit to the data ($\chi^2 = 3.05$, $df = 3$, $p = 0.38$; $\chi^2/df = 1.02$; GFI = 1.00; CFI = 1.00; RMSEA = 0.01) and the internal consistency of the five-item scale was excellent (Cronbach's $\alpha = 0.91$).

Task Cohesion (Nine Items)

Task cohesion was questioned with the two task-related subcomponents of the Group Environment Questionnaire (GEQ;



Carron et al., 1998) using a 9-point Likert scale (*strongly disagree* = 1; *strongly agree* = 9). Four items assessed the individual attraction to the group-task subcomponent (e.g., “I am unhappy with the team’s level of desire to win”), and five items assessed the group involvement-task subcomponent (e.g., “Our team is united in trying to reach its performance goals”). The CFA of the two-factor task cohesion measurement showed an acceptable fit to the data ($\chi^2 = 63.91$, $df = 24$, $p = 0.00$; $\chi^2/df = 2.66$; GFI = 0.95; CFI = 0.96; RMSEA = 0.08). However, the factor loading for one item of the individual attraction to the group subcomponent (i.e., “I am satisfied with the playing time I get”) was low (0.24). When this item was removed, the fit of the model improved significantly ($\chi^2 = 26.86$, $df = 17$, $p = 0.06$; $\chi^2/df = 1.58$; GFI = 0.97; CFI = 0.99; RMSEA = 0.05) and the internal consistency of the individual attraction to the group subcomponent increased from $\alpha = 0.72$ to $\alpha = 0.80$. Therefore, we removed this item for further analyses.

Another consideration was the high correlation ($r = 0.88$) between the two task cohesion subcomponents in this two-factor model. In addition to this high correlation, the Cronbach’s α for a combined subscale of overall task cohesion (0.89) was higher than the Cronbach’s α for individual attraction to the group-task (0.80) and group involvement-task (0.84) separately. Therefore, we decided to combine the individual attraction to the group-task (three items) and the group involvement-task (five items) subcomponents into one latent variable (i.e., overall task cohesion) for the following main analyses.

Athlete Leadership Quality (Four Items)

In line with previous overall leadership research (Chemers et al., 2000; Fransen et al., 2014a) we opted for a single-item approach of athletes’ leadership quality. Tenenbaum et al. (2007) and Tenenbaum and Gershgoren (2011) already argued for a higher ecological validity of such single-item measurements. The current study examined the overall perceived leadership quality of the four athlete leaders on each of the leadership roles (i.e., task, motivational, social, and external leader). First, the exact descriptions of the four leadership roles, as outlined

in previous research (Fransen et al., 2014b) and displayed in **Supplementary Appendix 1**, were presented to the participants. With these descriptions in mind, players had to appoint the player in their team who corresponded best to the description of the four leaders. Subsequently, participants were asked to complete the item “To what extent do you think that this leader fulfils his/her role as task/motivational/social/external leader well?” for each of the appointed leaders on a 7-point Likert scale (*very bad* = −3; *very good* = 3). This measurement already showed to be reliable and valid in a sample of Flemish team sport athletes (Fransen et al., 2014b). CFA confirmed that each of the four different leadership roles significantly contributed to an overall measure of perceived athlete leader quality ($\chi^2 = 0.85$, $df = 2$, $p = 0.66$; $\chi^2/df = 0.42$; GFI = 1.00; CFI = 1.00; RMSEA < 0.001).

Data Analysis

First, the hypothesized model was examined through Structural Equation Modeling (SEM) with Mplus (Muthén and Muthén, 2017). Mplus also allows us to control for the nested structure of our data, as players were nested within teams, by using the TYPE = complex command. If we would ignore this nested structure and only test a simple single-level model using SEM, the standard errors would be inflated resulting in Type I error. The statistical procedure used in this study therefore adjusts the standard errors to prevent them from being inflated due to clustering (for more information, see McNeish et al., 2017; Muthén and Muthén, 2017).

The skewness of the studied variables ranged from −1.56 to −0.05, which are considered acceptable values when conducting SEM (Brown, 2015). SEM is a robust analytical technique of which the assumptions are not sensitive to such small deviations (Griffin and Steinbrecher, 2013). Furthermore, we used the robust maximum likelihood estimator (MLR) for the estimation of our models, which is robust to non-normality and non-independence of observations when used with TYPE = complex command (Muthén and Muthén, 2017).

We used the following fit indices to evaluate model fit: the normed chi-square statistic (χ^2/df), the Comparative Fit index (CFI), the Tucker-Lewis index (TLI), and the Root Mean Square Error of Approximation (RMSEA). While a non-significant chi-square (χ^2) implies a good fit of the model, the significance of this statistic is largely dependent on sample size. Accordingly, we used the normed chi-square statistic (χ^2/df), where a good fit is reflected by a ratio below 3/1 (Kline, 2005). Furthermore, a good fit of the model to the data is signified by CFI and TLI values larger than 0.90 and an RMSEA equal or smaller than 0.08 (Hu and Bentler, 1999).

Finally, we tested an additional model in which we added a direct link between athletes' perceived justice and athlete leadership quality. If this direct link is non-significant, in combination with a significant indirect effect of athletes' perceived justice on athlete leadership in the hypothesized model, this would confirm that athletes' perceived justice predicts athlete leadership quality through the expected intermediate steps.

RESULTS

Descriptive Statistics, Correlations, and Scale Reliabilities

Scales, means, standard deviations, and correlations for the variables are provided in **Table 1**. Scale reliabilities (Cronbach's alphas) are provided on the diagonal. The significant correlation ($r = 0.21, p < 0.01$) between athletes' perceived justice of the coach and the quality of athletes' leadership supports Hypothesis 1. Furthermore, we performed an ANOVA to check for differences between the volleyball and the basketball players. We found only one significant, and small difference of 0.24 in the mean score on the 7-point Likert scale for team identification. Taking into account that this was the only difference between both sports, we decided not to split the sample and to perform our main analyses on the combined research sample.

Structural Equation Modeling

The hypothesized model showed a good fit to the data ($\chi^2 = 146.25, df = 74, p < 0.001; \chi^2/df = 1.98; TLI = 0.93; CFI = 0.94; RMSEA = 0.06$). The standardized regression path coefficients and the proportions explained variance are illustrated in **Figure 2**. The results demonstrated that athletes' perceived fairness of the coach positively predicted team identification. Team identification positively predicted task cohesion which, in turn, positively predicted athlete leadership quality. In addition to the effects that are presented in **Figure 2**, all standardized indirect effects of the hypothesized model are depicted in **Table 2**. Further, we added a direct link between athletes' perceived fairness of the coach and athlete leadership quality. This direct link was non-significant ($\beta = 0.18, p = 0.09$), while the indirect effect of athletes' perceived justice on athlete leadership quality, through team identification and, in turn task cohesion, was significant within the hypothesized model ($\beta = 0.11, p = 0.01$). The results of this analysis confirmed that athletes' perceived justice predicts athlete leadership quality through the expected intermediate steps.

DISCUSSION

Recent research indicated that high-quality athlete leaders improve the effective functioning of sport teams. More specifically, some studies have demonstrated the positive link between athlete leaders and team functioning and performance in sport teams (Fransen et al., 2015a; Mertens et al., 2018). Despite these promising results, no research has examined the role of coaches' behavior in fostering the development of the athlete leadership quality in team sports. The current research demonstrated that a specific aspect of coach leadership, namely coaches' fairness, was positively related to athletes' leadership quality through its inter-relations with athletes' team identification and task cohesion, thereby confirming our hypotheses.

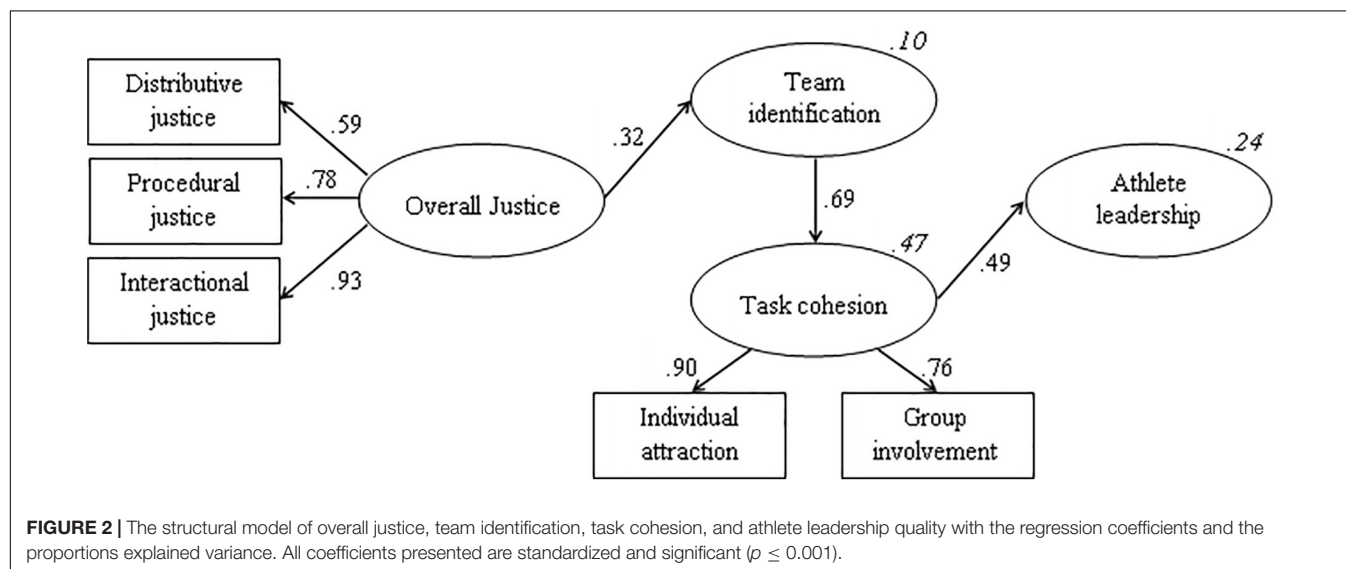
First, when coaches were perceived as fair, the identification of the athletes with their team seemed stronger. A possible explanation for this positive relation can be found in the group engagement model (Tyler and Blader, 2003). This group engagement model assumes that "perceived justice provides key information that shapes the degree to which people regard their group as having high status, regard themselves as having high status in their group, and identify with the group by merging their sense of self with the group" (Tyler and Blader, 2003, p. 357). These results are in line with the statement of Haslam et al. (2011) that leadership is an active process that has the ability to shape social identities. Furthermore, our findings support the theoretically based assumption that team identification is a fundamental process of internalizing norms and values of a group, which ultimately leads to more intragroup cohesion. In other words, our results are in line with the social identity mediation hypothesis, which suggests that identity evaluations and concerns mediate the relationship between justice judgments and group engagement (Tyler and Blader, 2003).

Second, the current research indicated that fair coach behavior positively predicted athletes' leadership quality and that this prediction was established through three intermediate steps. That is, coaches' perceived justice fostered athletes' team identification, which in turn positively predicted task cohesion. The increased levels of task cohesion, in turn, were related to increased levels of perceived athlete leadership quality. These results suggest that fair coach behavior does not only bridge the gap between leadership and followership (Haslam et al., 2011), it also has the potential to improve the quality of athletes' leadership within sport teams. More specifically, fair coach behavior seems to guide the important group processes of team identification and task cohesion, and as a result shapes a climate in which athletes get the opportunity to develop qualitative leadership. A possible explanation for the predictive value of justice for athletes' leadership quality can be found in the statement of Haslam et al. (2011, p. 110–111) that "leader's fairness can unite us by both creating and clarifying shared group memberships, and in this way, that it can become a basis for influence and inspirational leadership." Indeed inspirational leadership is known to: (a) Reinforce the common goals of the team (i.e., task cohesion) and (b) Encourage interpersonal interaction among team members (Joshi et al., 2009).

TABLE 1 | Scales, means, standard deviations correlations, and Cronbach's alphas for all variables.

	Variable	Scale	M	SD	1	2	3	4
1.	Overall justice	1, 5	3.46	0.81	<i>(0.87)</i>			
2.	Team identification	–3, 3	2.01	0.87	0.29**	<i>(0.91)</i>		
3.	Task cohesion	1, 9	6.57	1.29	0.45**	0.57**	<i>(0.89)</i>	
4.	Athlete leadership quality	–3, 3	1.53	0.74	0.21*	0.35**	0.30**	<i>(0.65)</i>

* $p < 0.01$; ** $p < 0.001$. Scale reliabilities (Cronbach's alphas) are provided in italics on the diagonal.



Setting clear and common goals as well as high-quality interpersonal interactions are essential conditions for qualitative leadership behaviors in sport teams. Furthermore, previous research (Hackman and Morris, 1975; Hackman, 1976; Zaccaro and McCoy, 1988) demonstrated that members of highly task cohesive groups: (a) Plan and develop efficient and appropriate performance strategies (i.e., task leadership), and (b) Compel maximal effort of all team members by setting and enforcing stringent performance norms (i.e., motivational leadership). In addition, Zaccaro et al. (2001) indicated that team members with a high perception of task cohesion communicate in various ways with non-conforming individuals to bring them in line with group work expectations (task and motivational leadership). In line with those findings, our results suggested that team identification and task cohesion are intermediate steps in the relation between perceived justice of the coach's and athletes' leadership quality.

Limitations and Practical Implications

As with any research, the current study had not only strengths, but also specific limitations. A first limitation is the cross-sectional nature of our data, thereby limiting our ability to infer causality from the results. Based on previous research (Hackman and Morris, 1975; Hackman, 1976; Zaccaro and McCoy, 1988; Zaccaro et al., 2001; Haslam et al., 2011), we constructed a theoretically founded research model. In line with those studies, our results supported the fact that group dynamical

TABLE 2 | Standardized indirect effects and standard errors (SE) for all paths in the model between predictors (in rows) and outcomes (in columns).

	Task cohesion	Athlete leadership quality
	Effect (SE)	Effect (SE)
Overall justice	0.22** (0.06)	0.11* (0.04)
Team identification		0.34** (0.08)

* $p < 0.05$; ** $p < 0.001$.

processes (i.e., team identification and task cohesion) form the intermediate steps in the relation between coaches' justice and athletes' leadership quality. Nevertheless, some previous research also indicated that athlete leadership qualities positively predict athletes' team identification and cohesion in sport teams (Fransen et al., 2014a). While our results seem contradictory to these previous findings, Zaccaro et al. (2001) indicated that the relation between leadership and team processes is reciprocal and not unidirectional (i.e., leadership and team processes influence each other). As a result, longitudinal and experimental studies are required to assess the direction of the different relations and to explore how these relations fluctuate across a season.

Another reason to be cautious when interpreting the significance of our findings is the lack of control variables or other potential predicting variables in the model. For example, previous studies revealed the importance of a mastery-oriented climate in predicting the extent of initiative and constructive

peer corrections within sport teams (Van Puyenbroeck et al., 2017). Others demonstrated that specific behaviors of the athlete leaders (e.g., problem-solving skills) or certain personality traits (e.g., extraversion) also predict the quality of athlete leaders (Fransen et al., 2020a). Future work should therefore include more variables as control variables or as additional potential mechanisms that predict athlete leadership in addition to this study's variables. When these relations would be confirmed, this would increase the validity of our study findings and the significance of its implications.

Second, we assessed leadership quality with a commonly used measurement of athlete leadership quality. This one-item measure assessing the perceived quality with which athlete leaders fulfilled their specific leadership role showed to be a valid measure both in previous studies (Fransen et al., 2014a) and in the current study. In this study, we asked participants to rate the quality of the best leader in their team (on the different leadership roles). However, only rarely leadership is occupied by only a single team member. Previous studies have shown that leadership is rather shared, not only across, but also within each of these leadership roles (e.g., Leo et al., 2019). Therefore, future studies should consider using a social network approach, in which the leadership quality of every team member is assessed, rather than only of the best leader (e.g., Fransen et al., 2015b).

Third, although we controlled for the nested structure of our data, we did not conduct a multilevel SEM with a second level that included all of our variables at team level as our sample consisted of players from only 26 different teams. Maas and Hox (2005) stated that it is not recommended to perform such multilevel analyses based on such a small sample size at team level (i.e., level 2). However, the variables of interest (e.g., perceived justice, team identification, task cohesion, and athletes' leadership qualities) potentially exhibit a significant degree of intra-group consensus within sport teams. In this study, the within-group agreement ($r_{wg(j)}$; James et al., 1984) was moderate to high for perceived justice ($r_{wg(j)} = 0.82$), team identification ($r_{wg(j)} = 0.91$), task cohesion ($r_{wg(j)} = 0.65$), and athlete leadership quality ($r_{wg(j)} = 0.91$). For this reason, future research should sample a larger number of teams and simultaneously test the hypothesized relations at team level.

Notwithstanding those limitations, we want to underline that the current study was an important first step in the examination of the link between perceived fair coach behavior and athletes' leadership quality. More specifically, the interrelations between perceived justice, team identification (SIA), task cohesion, and athletes' leadership qualities offer important insights into the mechanisms that underpin the impact of coaches' justice on the development of qualitative leadership behavior of senior team athletes.

From a more practical point of view, our comprehensive research model indicates that the perceived fairness of team coaches may possibly affect key group processes and consequently foster the quality of athlete leadership. Previous research has shown that high-quality athlete leaders improve the effective functioning of sport teams (Price and Weiss, 2011, 2013; Fransen et al., 2014a, 2015a). As a result, our model can be used to optimize team performance in senior interactive sport teams.

An important practical take-away of our study is the fact that if we value high-quality athlete leaders, we must not lose sight of the impact of coach behavior. Nowadays, athlete-oriented leadership development programs receive a lot of attention. However, our results indicate that the quality of athlete leadership is not only the result of specific leadership development programs that target team athletes. It is also related to specific group dynamical processes driven by fair coach behavior.

Therefore, coaches should be aware of the importance of how athletes perceive their justice. Research in the business setting suggested that there are a number of strategies, such as the application of Leventhal's rules (Leventhal, 1980; e.g., be consistent, suppress bias, ...), and the provision of voice (Skarlicki and Latham, 1996, 1997), to improve employees' perception of fairness (Cropanzano and Greenberg, 1997). Both strategies have been shown to be effective even when people were disappointed with the outcomes they received. How leaders can apply these strategies is described in detail by multiple researchers within the business context (Leventhal, 1980; Skarlicki and Latham, 1996, 1997; Greenberg and Lind, 2000). For a more in-depth description of the application of organizational justice in a team sport setting we would like to refer to Jordan et al. (2004). Furthermore, our findings highlight the team dynamics that underpin the relationship between fair coach behavior and the quality of athlete leadership. In this regard, we suggest that coaches of interactive sport teams should pay sufficient attention to create a sense of shared social identity that results in the integration of the individual tasks and goals of the players into the overall team objectives. For a more detailed overview of how leaders can create, represent, advance, and embed this sense of shared social identity, we would like to refer to Haslam et al. (2011). A practical example of how coaches could highlight that necessity of a sense of "us-ness" is by emphasizing that the team goals prevail over the individual goals at all times. Important in this process is the framing of an effective goal agreement, including commonly agreed goals for both the individual players and the team as a whole. This ensures that each player knows how every specific task fits within the bigger framework of the team. Consequently, we assume that a collectively agreed goal arrangement, due to the shared knowledge of the different tasks, will enhance athletes' task cohesion and thus the quality of athletes' leadership.

To conclude, this study supported a positive link between the perceived fairness of team coaches and athletes' team identification and task cohesion. This increased team identification and task cohesion in turn leads to increased perceived athlete leadership quality. Based on the current findings, the organizational justice theory seems to be a promising theoretical framework to underpin the impact of coaches' leadership in sport settings. From a practical point of view, fair coaches strengthen the quality of athletes' leadership and potentially may lead to a more optimal team functioning. Therefore, coaches should not only attempt to act in a fair manner toward all team members but should also make sure that their actions are interpreted as fair by team members.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Leuven International Doctoral School Biomedical Sciences. The Doctoral Committee of Kinesiology, Rehabilitation Sciences and Physiotherapy. The patients/participants provided their written informed consent to participate in this study.

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AUTHOR CONTRIBUTIONS

MD, KF, FB, and GV contributed to the design of the research. MD, SV, KF, BR, FB, and GV contributed to the implementation of the research. MD, SV, KF, BR, FB, FM, and GV contributed to the analysis of the results, and writing of the manuscript. All authors contributed to the article and approved the submitted version.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.645764/full#supplementary-material>

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Athlete Leadership Development Within Teams: Current Understanding and Future Directions

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OPEN ACCESS

Edited by:

Rita F. De Oliveira,
London South Bank University,
United Kingdom

Reviewed by:

Patricia Jackman,
University of Lincoln, United Kingdom
Ihsan Sari,
Sakarya University of Applied
Sciences, Turkey

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Specialty section:

This article was submitted to
Performance Science,
a section of the journal
Frontiers in Psychology

Received: 23 November 2021

Accepted: 21 January 2022

Published: 17 February 2022

Citation:

Cotterill ST, Loughhead TM and
Fransen K (2022) Athlete Leadership
Development Within Teams: Current
Understanding and Future Directions.
Front. Psychol. 13:820745.
doi: 10.3389/fpsyg.2022.820745

Leadership has been shown to be a fundamental factor influencing the performance of sport teams. Within these teams, leadership can be provided by coaches, formal athlete leaders, such as team captains, and other 'informal' athlete leaders. The role of the athlete leader in a team, either formal or informal, has been consistently reported over the last 10 years to have a significant impact upon a teams' functioning and effectiveness, as well as teammates' general health and mental wellbeing. As such, cultivating the provision of this leadership within a team has emerged as an important focus for managers, coaches, sport psychologists and scholars alike. While the recognition of the importance of athlete leadership is well established, there has been a lag in the development of systematic approaches to enhance and develop the leadership skills and capabilities of the athletes within sport teams. As a result, this paper seeks to review contemporary examples and current understanding of approaches to athlete leadership development. The paper will also highlight future areas for research and applied practice development.

Keywords: leadership development, mentoring, peer leadership, shared leadership, athlete leadership

INTRODUCTION

Leadership is a fundamental aspect of sport, particularly as it relates to the effectiveness of teams within sport environments (Cotterill and Fransen, 2016). The concept of leadership has been examined across a wide range of contexts, both within and outside of sport, which has led to a broad spectrum of leadership definitions and theories. However, the common features of these various conceptualisations of leadership are that leadership is a process that involves influencing others, occurs within the context of a group and focuses on the attainment of common goals (Northouse, 2018). In current conceptualisations of leadership in organisational settings, team leadership has been recognised as a distinct form of organisational leadership (Kozlowski et al., 2016). That is, team leadership can be viewed as any individual fulfilling a team's needs. Within sport teams, team leadership can stem from coaches, formal athlete leaders, such as team captains, but also informal athlete leaders. This leadership of and within sport teams has emerged as an important focus for managers,

coaches, sport psychologists and scholars alike (Day et al., 2014). Athlete leadership has been defined more specifically as ‘an athlete, occupying a formal or informal role within a team, who influences a group of team members to achieve a common goal’ (Loughead et al., 2006, p. 144). Athlete leaders have been reported to positively influence team cohesion, athlete satisfaction, team identification, team confidence and the motivational climate within the team (Cotterill and Fransen, 2016). Recent work has reported that the leadership needs of a sport team exceed the capabilities of one individual, and it is often multiple persons in the team who occupy the different leadership roles on and off the field (e.g., Fransen et al., 2014; Duguay et al., 2019). The leadership needs within a sports team can be met in a range of different ways by different individuals undertaking different roles including, coaches, team captains and informal athlete leaders (Mertens et al., 2021).

However, while there has been an increasing focus on understanding leadership within sports teams, and athlete leadership in particular in recent years (Cotterill and Fransen, 2016), far less attention has been paid to approaches to the development of leadership within teams. As a result, the aim of this review is to clarify current understanding regarding the sources of leadership within sports teams, and then crucially to review current understanding regarding the development of leadership and leaders within sports teams.

The Different Leadership Sources in Sport Teams

Team Captains

In many sport teams, the captain (i.e., the formal athlete leader in the team) is perceived to fulfil an important leadership function. Indeed, it has been suggested that good captaincy can have a marked impact upon performance (Cotterill and Fransen, 2016). The captaincy role itself is something that has historically suffered from a lack of clarity. Several different roles and responsibilities for team captains have been suggested over the past 50 years. For example, Mosher (1979) outlined three main responsibilities, which are to act as a liaison between the coaching staff and the team, to be a leader during all team activities and to represent the team at events, meetings and press conferences. In addition to this, Mosher also highlighted specific duties the captain might perform including to ensure a constant flow of information between the coach and team, to lead by example, to help the coach in the planning stages for the team and to conduct themselves in a professional manner before, during and after games. Dupuis et al. (2006) highlighted some common functions of ice hockey captains including being effective communicators, remaining positive and controlling their emotions. In professional football teams, having a good captain on the team has also been associated with better team member health and lower burnout (Fransen et al., 2020a). Although players and coaches have high expectations of their team captains, in practice, it seems that only few team captains can live up to these high standards (Fransen et al., 2019).

While many attempts have been made to describe the role of the captain, a strong evidence base has been lacking, particularly in terms of the demands of captaincy and the challenges faced. There is little consensus regarding the role of the captain, which can make it difficult to understand the context-specific demands of the role (Cotterill et al., 2019). One of the reasons for this is that the role can vary significantly from sport to sport, and across levels of performance (Cotterill and Cheetham, 2017). For example, in soccer, the captain is a formal leader on the pitch and a role model off it, but the way the team plays and major tactical decisions during the game are generally determined by the coach. In comparison, the sport of cricket adopts an enhanced role for its captains, with the captain making all the decisions on the pitch and also being part of the formal leadership structure off the pitch (i.e., captain, coach and director of cricket; Cotterill, 2014). This does not suggest that the role of the captain is less important in soccer compared to cricket but does highlight significant differences in the role. While captains are consistently suggested to be an important aspect of team performance, to date, there is currently limited research explicitly exploring the specific role of captain and its development in sport (Cotterill and Fransen, 2016).

Informal Athlete Leaders

In addition to athletes that are formally recognised as leaders, such as the team captain, some athletes also achieve their leadership status in an informal way, namely, through natural interactions with their teammates (Loughead et al., 2006). Regardless of their leadership status, both team captains and informal athlete leaders can occupy different leadership roles. Building on earlier athlete leader categorisations (Bales and Slater, 1955; Loughead et al., 2006), Fransen et al. (2014) advanced a 4-factor athlete leadership categorisation system, including four leadership roles that athlete leaders could undertake for the team: (a) *the task leader*, who gives teammates tactical advice and adjusts them when necessary; (b) *the motivational leader*, who encourages teammates to perform at their best; (c) *the social leader*, who develops a good team atmosphere; and (d) *the external leader*, who handles the communication with club management, media and sponsors. The study conducted by Fransen et al. (2014) emphasised the relevance of this leadership classification by demonstrating that an effective fulfilment of the four leadership roles by members of the team resulted in higher team confidence, stronger team identification and better team performance outcomes (e.g., ranking). Expanding upon the work of Fransen et al. (2014), Maechel et al. (2020) suggested an additional change-oriented leadership role, focused on promoting change and innovation and encouraging team learning.

The notion that leadership within teams is not just the preserve of team captains was suggested by Fransen et al. (2014). In a large cross-sectional study with 4,451 athletes and coaches across nine different sports, it was reported that almost half of the participants (44%) did not perceive their captain as the best leader on any of Fransen et al.’s four roles, neither

on the field, nor off the field. These findings reported by Fransen et al. (2014) further highlight the importance of not restricting conceptualisations of leadership and associated leadership development to the team captain, but also more broadly to cultivate the leadership capacities of other leaders in the team, and potentially to all members of the team.

LEADERSHIP DEVELOPMENT

The ability to develop the leadership capabilities of individuals within a team can increase the likelihood that the leadership needs of a team are met (Cotterill, 2016). In this regard, enhanced leadership provision within a team has been linked to increases in team cohesion, athlete satisfaction, team identification, team confidence and the motivational climate within the team (Cotterill and Fransen, 2016). Building upon this point, in their study of professional sports teams, Fransen et al. (2017) reported that the team with the highest-quality athlete leadership on each of the four leadership roles excelled in all indicators of team effectiveness. More specifically, athletes in this team had a stronger shared sense of the team's purpose, they were more highly committed to realising the team's goals, and they had a greater confidence in their team's abilities than athletes in the other teams. Moreover, this team demonstrated a higher task-involving and a lower ego-involving climate and excelled on all measures of performance. As a result, adopting a focus on enhancing leadership within their team is one way sports teams can seek to enhance team functioning and ultimately to positively influence both individual and team performance, while also having a positive impact upon health and wellbeing within the team (Fransen et al., 2019).

Leadership development has recently emerged as a scholarly discipline, separate and distinct from the more traditional approaches to studying leadership, such as the link between personality and leadership (Day et al., 2014). Across multiple domains, the required areas of knowledge, behaviours, skills and expertise have been identified as crucial building blocks for the development of effective leaders in sport. The concept of leadership development has been defined as involving expanding the collective capacity of team members to engage effectively in leadership roles and processes (McCauley et al., 1998).

Within the leadership development field, there had initially been some confusion between the different but related concepts of *leader* development and *leadership* development. According to Day et al. (2014), leader development focuses on developing the leadership ability of specific individual leaders (e.g., developing the leadership of a coach or a team captain), whereas leadership development focuses on a process of leadership development that involves multiple individuals (e.g., leaders and followers) designed to meet the leadership needs of the team and the context. While much historical research has focused primarily on leader development (e.g., cultivating traits and behaviours that characterise a good leader), leadership development has until recently received far less attention (Day, 2012). Day (2001) suggested that the optimal approach to the development of

leadership in a specific context is to link leader development with leadership development such that the development of leadership 'transcends but does not replace the development of individual leaders' (p. 605).

In a sporting context, this distinction between leader development and leadership development is important because historically where 'leadership development' has taken place, there has been a tendency to focus on trying to develop the individual as a leader rather than to specifically seek to meet the context-specific leadership needs. Interestingly, it has also been suggested that many leadership training and development initiatives failed to produce effective leaders (Allio, 2006). This is mainly because these programmes have focused on promoting leadership literacy (e.g., by teaching leadership theory, concepts and principles) at the expense of developing leadership competencies. This finding emphasises that leadership needs to be learned to be effective, not just taught. Applied to a sporting context, this perspective on leadership development then advocates the importance of 'on the job' learning, with athletes getting the opportunity to develop their leadership abilities in practice. Illustrating the importance of this experiential learning in practice, Grandzol et al. (2010) found that serving as a team captain provided athletes with a rich opportunity to learn and practice their leadership skills. The authors suggested that effective programmes of leadership development should include the opportunity for future leaders to practice leading and applying leadership skills.

There has been a growing interest in athlete leadership development and the development of leadership among athletes within teams in the sport psychology literature over the last decade. Initially, there was a focus on the development of personal leadership skills in youth athletes through sport (e.g., Martinek and Hellison, 2009; Gould and Voelker, 2012; Gould et al., 2013), but more recently, there has begun to be an expansion in the studies exploring leadership development with adult athletes (Voight, 2012; Cotterill, 2016), the development of formal leaders, such as captains (e.g., Cotterill and Cheetham, 2017), and the implementation of shared leadership structures, which encompass the development of informal leaders as well (e.g., Mertens et al., 2020, 2021; Fransen et al., 2020d). We will first discuss the leadership programmes focusing on the team captain, after which we will elaborate on the leadership programmes targeting the broader team, which may encompass either all athletes on the team or selected leadership groups.

Leadership Development With Team Captains

Several studies have examined how to develop the leadership ability of those members of the team who occupy formal (e.g., captain/vice-captain) positions within that team. The rationale behind this approach is that in many sports teams, the captain is perceived to fulfil an important leadership function. Not surprisingly, several published studies have reported the effectiveness of leadership programmes involving the development of team captains. At the youth level, Gould and Voelker (2010) created a 1 day workshop for high school

captains on how to be an effective team captain. This programme involved learning about topics that included 'What you need to know as a leader' and 'Handling common team problems'. At the end of the 1 day workshop, the participants were also given a guidebook, titled *Becoming an Effective Team Captain: Student-Athlete Guide*, focused on topics, such as the role of a team captain, effective communication, team motivation, team building and cohesion, handling tough team situations and recommendations from captains and coaches. One particular concern that needs to be highlighted when developing the leadership of youth sport team captains is the ongoing support and guidance provided to them by their coaches (Collins et al., 2009; Voelker et al., 2011). Part of the problem is that often the coaches are not sufficiently equipped or educated (in relation to leadership development) to develop the leadership skills and abilities of their athletes (Gould et al., 2013).

At the intercollegiate level, Voight (2012) oversaw a season-long athlete leadership development programme with two women's volleyball teams directed to the leadership development of the team captains and assistants. The programme consisted of 15 stages (e.g., leadership assessment, leadership roles and responsibilities and captain platform) and was developed to help improve team communication and functioning, to assist the team daily and to foster the personal leadership development of the team's formal leaders. To determine the programme's effectiveness, two captains and two assistant captains were interviewed. Based on these interviews, the author concluded that the programme was effective in developing the leadership potential of these formal leaders as they indicated that the programme had a positive impact on their own personal leadership skills, enhanced their team's cohesion and impacted both the team's and individual teammates' performances.

At the professional level, effective captaincy development programmes have been designed to reflect the specific requirements of this role within a specific sport. Once required knowledge, skills and expertise are identified, programmes that focus on prioritising those factors can be developed. For example, Cotterill (2016) developed a leadership development programme for elite (international) United Kingdom professional cricketers, building upon the key captaincy demands of this sport including: tactical decision-making, selection, player management, liaison with the coach and representing the team. This captaincy development was delivered through a focused 'captaincy development' group (a group of players elected as potential future captains) within the broader squad of players that focused on awareness of the self and others using the Myers-Briggs Type Indicator (MBTI) tool. This structured programme used a range of relevant guest speakers and offered all the players in the group the opportunity to get practical experience as a captain in practice games as part of the broader performance programme and to receive leadership performance debriefs from a sport psychologist and coaches. The programme in this case study focused on developing leadership at three distinct levels: (a) personal growth and leadership development; (b) leadership skill development; and (c) leader (captain)

development. These three levels have been identified as crucial in helping to cultivate leaders at an international level of performance (Cotterill, 2016). Reflections on the programme by the participants suggest that a formal development programme can be beneficial in enhancing the leadership capabilities of elite captains. It is important to note that these findings are context-specific and while the approaches show promise, further research and exploration are required.

Leadership Development of All Players Within the Team

Given the large variations in abilities needed to fulfil the leadership roles within sport teams, current thinking suggests that the most effective way to meet this diverse range of leadership needs within a team is to adopt a 'shared' approach to athlete leadership. Indeed, recent research adopting a shared approach to leadership has highlighted that leadership is often distributed within sport teams (Fransen et al., 2014, 2015; Leo et al., 2019). For instance, using a social network approach with four soccer teams, Duguay et al. (2019) found that every player was viewed by at least one other teammate as providing leadership to them. This finding underscores the importance of fostering the leadership development of all athletes beyond those who are captains.

This has been the approach taken by Duguay et al. (2016), who developed the leadership capabilities of all athletes, regardless of their leadership status, in two intercollegiate volleyball and basketball teams. The athlete leadership programme was grounded in Chelladurai's (2007) Multidimensional Model of Leadership and Avolio's (1999) Full Range Model of Leadership, where participants learned about numerous leadership behaviours and how these behaviours impacted the team's dynamics. The leadership training was completed over the course of the regular season using four 1 h workshops. Each workshop consisted of a 3-step procedure, including: (a) a presentation of the leadership behaviours to be learned; (b) a demonstration of these leadership behaviours in action; and (c) the opportunity to practice these leadership behaviours. Throughout the workshops, the activities (e.g., role playing and case studies) highlighted how the leadership behaviours benefited the participants individually and how they enhanced the psychological factors grouped under the title team dynamics (cohesion, communication, motivational climate and satisfaction). The results from pre- and post-intervention indicated that the leadership programme enhanced eight of the 10 leadership behaviours (i.e., training and instruction, democratic behaviour, social support, positive feedback, appropriate role model, inspirational motivation, high-performance expectations and fostering acceptance of group goals and promoting teamwork). In addition, the findings concerning the team's dynamics showed increases in athlete satisfaction and motivational climate, while maintaining levels of cohesion and communication over the course of the season.

Another approach to shared athlete leadership development of all athletes was advanced by Maechel et al. (2021) using a solution-focused approach. This approach assumes that for shared leadership to develop, teammates communicate with

one another through the exchange of ideas, values and information. As a result, this approach also assumes that athletes can and have the resources to effect changes within their team with the assistance of a facilitator (e.g., sport psychology consultant). The authors delivered four separate workshops over the course of the season to three teams (while three other teams served as a control group). These four workshops were designed using the four athlete leadership meta-categories advanced by Maechel et al. (2020) that contained social, task, change and external-oriented forms of leadership. Using a mixed-methods approach, the quantitative data showed that all four meta-categories were significantly higher for the three teams in the intervention condition compared to the control condition. Further, the qualitative aspect of the study indicated that the intervention enhanced communication among team members, increased interpersonal relationships among teammates, whereby teammates got to know each other better, which in turn led to enhanced team cohesion, enhanced coach-team interactions with better communication and contributed to the processes of enhancing the shared nature of leadership within the team (e.g., transitioning from a few athletes leading the team to the whole team displaying varying forms of leadership).

Leadership Development With Leadership Groups

The Importance of Leadership Groups

Athlete leadership groups are a designated group of athlete leaders from within the team who either provide shared leadership or support the decision making of a formal athlete leader (Cotterill et al., 2019). As the previous paragraphs outlined, shared leadership can encompass a range of leadership structures that vary in the extent and manner of sharedness, ranging from the sole focus on the team captain to involving all athletes within the team. Current perspectives have argued that neither one of these extremes is optimal. It is likely that not all team members will have the requisite skills and/or motivation to lead (Seibert et al., 2003). More importantly, if all team members assume leadership roles, then the task of coordinating their messages is considerable, and the difficulty of doing this increases the likelihood of confusion and miscommunication (Eys et al., 2007). As Gockel and Werth (2010, p. 179) observed as: 'It might be good to share the burden of leading, but too many cooks might spoil the broth'. Conversely, minimal shared leadership structures, involving only two team members (e.g., the coach and team captain), do little to address problems associated with leadership role overload (Turner, 2002). Here, then, individuals could potentially have more roles than they have the time, energy or expertise to perform, creating role conflict that can put them under considerable strain (Fransen et al., 2014).

Taken together, the evidence would suggest that optimal leadership sharedness can be found somewhere between the minimal and maximal extremes. Consistent with this assumption, there is evidence that the relationship between the number of appointed leaders in a shared leadership structure and team outcomes is curvilinear (Eys et al., 2007; Gockel and Werth,

2010; Fransen et al., 2018; Leo et al., 2019). Specifically, an intermediate level of shared leadership is preferable to having either too few leaders or too many. In this regard, working with leadership groups addresses the need to steer a middle path by combining vertical and shared leadership in a way that distributes formal leadership responsibilities broadly—but not too broadly—within the team.

Also in professional sport, there is an increasing focus on the use of leadership groups and the adoption of formal leadership groups by coaches to meet the perceived leadership needs of the team (Haddad et al., 2021). In professional football in Australia, for example, coaches advocated the use of leadership groups as they believed that player ownership and autonomy regarding leadership had a positive impact upon performance, upon on and off field functioning, and ultimately upon the team's culture (Haddad et al., 2021). Fransen et al. (2017) corroborated these assumptions and showed that the quality of those leadership teams within Australian professional football teams indeed predicted their effectiveness. More specifically, athletes in the team with the highest-quality leadership team had a stronger shared sense of the team's purpose, they were more highly committed to realising the team's goals and they had a greater confidence in their team's abilities than athletes in the other teams. Moreover, this team demonstrated a higher task-involving and a lower ego-involving climate and excelled on all measures of performance. In line with this work, Mertens et al. (2021) showed that as teams that grew towards more shared leadership throughout a season they also experienced improvements in their functioning and performance.

Creating Leadership Groups

Realising that the quality of these leadership groups is a key predictor of the team's effectiveness, an important step in creating these leadership groups is to identify the optimal leaders within the team. Here, it is suggested to develop clarity regarding different leadership roles in the leadership group (e.g., as task, motivational, social or external leaders; Fransen et al., 2020a). This role differentiation will also foster role clarity so that leaders can focus on the clearly defined responsibilities attached to their specific role. Previous evidence highlights this role clarification as one of the cornerstones of successful team development interventions (Shuffler et al., 2011) as it also cultivates greater role efficacy and enhanced role performance in sport teams (Bray and Brawley, 2002).

To identify the best leaders on the team on each of these roles, it is critical to look beyond the team captain, as often the informal athlete leaders are the real drivers of the team's success (Fransen et al., 2020d). While coaches are often keen on appointing the leaders themselves, it seems that in most teams, coaches and athletes do not agree on who the best leaders are in their team, suggesting that the acceptance of athlete leaders who are chosen by the coach is likely to be insufficient to obtain effective leadership (Fransen et al., 2020d). To obtain the necessary insight in the leadership structure within the team on specific leadership roles, Shared Leadership Mapping can be used (Fransen et al., 2020b). This is a diagnostic tool that uses social network analysis to map

all leadership perceptions in the team with the aim of identifying the best leaders on the team on each role (Fransen et al., 2020d).

After identifying the most suitable leaders in the team, it is also important to formally appoint them in their role (e.g., as task, motivational, social or external leaders). As this formal appointment is based on the perceptions of other athletes, athlete leaders will realise that their leadership is accepted and appreciated by their team. This support base will boost their motivation to fulfil their leadership role well and to take on their responsibility, especially in difficult times (Cotterill and Fransen, 2016; Fransen et al., 2020a). Therefore, one could argue that the appointment of these athlete leaders is already a first important step in the leadership development process.

Enhancing the Leadership Quality of the Leadership Group

Given the importance of the quality of these leadership groups, in the next stage, the leadership potential of the appointed athlete leaders should ideally be further developed. In recent years, an alternative approach to understanding effective leadership within sport teams has posited that athlete leaders are only effective to the extent that they are able to create and manage a shared social identity within their team (Haslam et al., 2020; Fransen et al., 2020a; Stevens et al., 2021). In other words, these leaders encourage their teammates to not only think, feel and behave as individuals (in terms of personal identity as 'I' and 'me'), but also, and more importantly, as group members (in terms of a shared social identity as 'we' and 'us'). This leadership quality in which the best athlete leaders distinguish themselves from others is also termed identity leadership.

A programme that specifically aims to build leaders' identity leadership skills is the 5R Programme originally designed for formal leaders in organisational settings (Haslam et al., 2017). The 5R Shared Leadership Programme (or in short 5R^s) tailors the programme to the sport context and adds the benefits of implementing a structure of shared leadership (Fransen et al., 2020c). More specifically, 5R^s involves two steps. In a first step, Shared Leadership Mapping is used to identify the best task, motivational, social and external leaders in the team. After formally appointing these athlete leaders to this role, in a second step, these leaders guide their teams throughout five workshops (i.e., the 5R's), in which they learn in an applied setting how to provide identity leadership. More specifically, the first *Readying* phase seeks to demonstrate why 'we' matter building commitment to the programme through informing the team members about the importance of group and social identity processes. In the *Reflecting* phase, leaders clarify people's understanding of what the group stands for by guiding their team through the process of defining its core values and seeking to understand their shared social identity. In the next *Representing* and *Realising* phases, the leadership group then works together with their team to bring this social identity into practice. More specifically, the team identifies shared team goals that represent their core identity and develop strategies that help

them in achieving these goals. After the team has had sufficient time to put their strategies into practice and attain their goals, the final *Reporting phase* involves assessing the progress towards the identified goals and evaluating the effectiveness of the adopted strategies. This programme adopts a team-centred approach, where workshops are delivered to the entire team and where the appointed athlete leaders are given additional responsibilities to learn practical skills relating to how to take the lead.

Qualitative data from two initial implementations with an organisational team (Belgian University administrator team) and a sport team (female volleyball team) revealed that participants positively evaluated the programme and showed the benefits of 5R^s for the team's functioning (Fransen et al., 2020b). Further building on the qualitative insights from these case studies, some recent intervention work further supports the effectiveness of 5R^s. In a first step, Slater and Barker (2018) adopted the core three Rs of the second phase of this programme (i.e., reflecting, representing and realising) in an intervention study with an elite disability football team. Instead of guiding the entire team throughout the programme, these researchers focused on delivering the programme to a senior leadership group consisting of three coaches and four senior athletes. Their longitudinal data showed that the core 3R's had a positive effect on perceived identity leadership and athletes' identification with their team, although these increases were only significant in the second year of the programme. Furthermore, qualitative data supported that the intervention helped in building connectedness within the team.

More recently, Mertens et al. (2020) conducted an experimental-control group intervention with eight national-level basketball teams. The results revealed that the 5R^s programme was successful in strengthening athlete leaders' identity leadership skills that also served to increase team members' identification with their team. Furthermore, in contrast to athletes in the comparison condition, athletes in the 5R^s condition were able to maintain their levels of intrinsic motivation and commitment to team goals, while also reporting improved wellbeing. In a follow-up study, Mertens et al. (2021) tested the effectiveness of 5R^s by conducting a wait-list controlled trial with a larger sample (i.e., 16 basketball teams). The authors reported that the 5R^s programme enhanced athlete leaders' identity leadership skills, strengthened athletes' identification with their team, enhanced the perceived social support available in the team, helped athletes to remain motivated and confident in their abilities and nurtured athletes' health.

DRIVING FORCES BEHIND SHARED LEADERSHIP STRUCTURES

Coach-Led Leadership Development

Given that coaches play a vital role in the development of athlete leadership, this section focuses on the role of the coach in enhancing athlete leadership and athlete leadership development. Duguay et al. (2020) examined how coaches nurtured and developed athlete leadership within their teams.

Through interviews with 15 intercollegiate coaches, four overarching themes were developed relating to how coaches facilitated the development of athlete leaders. The first theme revolved around the significance of empowering their athletes. The coaches noted that to develop athlete leadership, it was critical to be athlete-centred and this required the athletes to be involved in some of the decision-making around team matters, encouraging the athletes to take initiatives related to team activities, such as team building and community events. The second theme concerned how coaches utilised the concept of team leadership. The coaches expressed the belief that the leadership of the team was too large a responsibility for just one athlete. Instead, the coaches preferred the use of leadership groups. The size and composition of these leadership groups were not universal and were dependent on factors, such as the number of veteran athletes on the team and the maturity of the athletes. In some cases, coaches had leadership teams of 5–6 players composed of 1–2 captains along with future/promising athlete leaders. In other cases, coaches rotated the team's captaincy and designated athletes for different leadership roles (e.g., academic captains and weight room captains). The third way in which coaches supported the development of athlete leadership was through the creation of a positive team culture for leadership to flourish. The coaches created a team environment that eliminated status differences between athletes (e.g., rookies vs. returning players), making sure that all athletes had a voice through the facilitation of open communication, developing trust and having team-building activities. Lastly, coaches discussed the importance of intentionally developing the leadership capabilities of their athletes. The coaches emphasised the importance of having experiential learning opportunities including team discussions on the importance of displaying effective leadership, providing books to their athletes on leadership, having leadership workshops and modelling effective leadership behaviours among the coaching staff. Some coaches have also adopted a mentoring approach to the development of athlete leadership and athlete leaders (e.g., Mead and Gilson, 2017). Coaches have previously highlighted that a lack of clarity regarding the role of the athlete leader and the skills they need to be successful has hampered coach-led athlete leader development (Cotterill et al., 2019).

Mentorship Approaches

A relatively recent advance in the leadership development literature relating to sport is the application of mentorship approaches (Mead and Gilson, 2017) to enhance the leadership ability of individual leaders. In this approach, a more experienced leader (e.g., the team's coach or a senior athlete) trains a protégé by consistently interacting and sharing ideas (Day, 2001). The effectiveness of this approach relies heavily on how positive the relationship is between the mentor and the protégé (Riggio, 2013). In a study of American high school basketball, Mead and Gilson (2017) explored the impact of coach mentoring on athlete leadership development. The study itself provided a rich and detailed description

of the coach's approach to mentoring, and his successes and failures. Specifically, the coach sought to allow formal leaders to use their personal voice, distribute and delegate leadership tasks to these leaders, offer reminders of important leadership concepts and set an effective example as coach. The captains in this study were also encouraged to reflect on their own leadership development, an approach that has been suggested to be an important part of the leader development process (Grandzol et al., 2010). The coaches are in a great position to role model desired prosocial behaviours and to create an environmental culture in which cooperation and skill development are emphasised to further foster personal growth and prosocial behaviour (Kavussanu et al., 2006).

In addition to coaches, athletes mentoring one another has been used to foster leadership development. Hoffmann et al. (2017) defined peer athlete mentoring as a dynamic process where a more experienced and knowledgeable athlete, serves as a trusted role model to another athlete, referred to as the mentee, assisting the mentee in achieving their goals along with supporting their personal growth and development. While it is widely recognised that many athletes benefit from being mentored, it should be highlighted that many athletes never get to experience these benefits. It has been reported that nearly 40% of Canadian intercollegiate athletes never considered another athlete as a peer mentor (Hoffmann and Loughhead, 2016), and 25% of a sample of Canadian National team and intercollegiate athletes have never been peer mentored (Hoffmann and Loughhead, 2019).

Consequently, Hoffmann (2019) suggested several strategies for those interested nurturing peer athlete mentoring relationships. In general, two broad strategies can be utilised, whereby the first allows for mentoring relationships to develop informally. Informal mentoring relationships are preferable due to their natural occurrence between mentor and mentee (Hoffmann, 2019). Informal mentoring stems from a process of mutual discovery where mentors and mentees identify with one another. The second is to formalise peer mentoring relationships among athletes whereby athletes are assigned to their mentor using one of three strategies: (a) where the practitioner assigns the mentee to a mentor, (b) a choice based approach where the mentors and mentees mutually agree to engage in a mentoring relationship, and (c) an assessment-based approach where the compatibility between mentor and mentee is derived through some type of assessment tool (e.g., personality questionnaire, such as the NEO Five-Factor Inventory; Costa and McCrae, 1992).

The enhancement of leadership within sports teams has been positively linked to team functioning and team-related outcomes (Cotterill, 2016), and as a result is an important aspect of team functioning. The increased focus on leadership development in recent years has provided the opportunity to positively impact on athlete leadership in an evidence-informed way. Seeking to enhance leadership development at different levels within the team (i.e., formal leader, informal leader or leadership group level) provides different ways in which team leadership provision can be enhanced.

FUTURE DIRECTIONS FOR RESEARCH AND PRACTICE

While there has been an increasing focus on leadership development in sport in recent years, there are still a number of important questions that remain unanswered and areas that need further exploration relating to both research and applied practice. Of particular importance is understanding how best to set about seeking to apply both leader and leadership development knowledge to enhance the delivery of leadership development programmes. Historically, much of the leadership development activities and programmes outlined in this article have been delivered in a traditional face-to-face format. Recent developments though have seen the development of online leadership development programmes, allowing for broader and more flexible engagement. For example, Pierce et al. (2018) developed an online course for high school captains that could be accessed free of charge. The course was composed of video narration, personal leadership vignettes and interactive web-based activities, taking around 2 h to complete. This type of approach could be replicated in other domains with different populations.

Future research should also seek to explore both the impact and effectiveness of athlete leadership development programmes that seek to utilise different modes of delivery (e.g., online vs. face-to-face and synchronous vs. asynchronous). The majority of athlete leadership research to date has understandably focused on sport teams. These are, though, not the only domains in which athletes are required to demonstrate leadership abilities. Future research should also explore the leadership needs and approaches to leadership development in individual sports as well. This is an area that has received very little attention in the published literature to date.

Across the athlete leadership literature, the leadership needs of different sports have been explored, though the range of different sports is still relatively narrow. A better understanding of the leadership needs within specific sports will enable better focused leadership programmes and activities to be developed within those sports. In some sports (such as cricket), the formal leader (captain) is a crucial aspect of the game, but for some other sports, the need for a specified formal leader is far less clear. As a result, the leadership and leader development needs of different sports may vary greatly.

For sports in which the position of a captain is required, understanding how to select the best candidate for this formal position without suppressing the leadership potential in the rest of the team is key. Previous research has highlighted a particular disconnect between the demands of the captaincy role and the process of selection and appointment (Cotterill et al., 2019). Also, Franssen et al. (2019) showed a clear discrepancy between what players and coaches expect from their captain and the criteria used to select team captains. Therefore, having a good insight in the most effective internal leadership structure for a team is important before making this decision.

Even though a formal captain position might be required, it is still important to invest in broader leadership development in the team to fully harness the leadership potential of the

team. There is evidence to imply that the relationship between the centralisation of the leadership networks and the outcomes is curvilinear, suggesting that the most effective leadership structures are those with a limited number of leaders, neither too few, nor too many (Eys et al., 2007; Gockel and Werth, 2010; Franssen et al., 2018; Leo et al., 2019). An outcome that implies that the development of leadership groups might well be the most effective way to meet the leadership needs of a team. Though it is important to recognise there should still be a focus of the development of individual leadership skills, particularly at a junior/developmental level (e.g., youth or academy level). In youth sport teams, having rotating leadership roles allows a greater range of athletes to get the chance to develop their leadership skills. As the area of athlete leadership has developed, it would also be useful to take stock of developments to date, potentially through the adoption of a meta-analysis and/or systematic review to best understand current knowledge and crucially gaps in our current understanding and approaches to practice. There are also significant differences in the size and scope of much of the preceding research cited. Some studies focus on brief interventions (i.e., single workshops) while a limited number has focused on a much longer timescale (i.e., over 6 months). There are unanswered questions relating to the development of athlete leadership and athlete leaders over time and the potential to explore the transitions of athlete leaders from one team to another. It is interesting to see in recent years an expansion of the methodological approaches adopted in athlete leadership research, such as social network analysis. In addition, researchers should also explore the application of different leadership approaches in other research fields that have focused on enhancing group or team leadership, with a view to generate an enhanced evidence base to underpin intervention approaches in sport.

CONCLUSION

The last 10 years have seen a small but expanding literature that has sought to build upon the broader athlete leadership body of knowledge to better understand and report approaches to athlete leadership development. There is though still a long way to go, further clarity is required regarding the knowledge, skills and expertise required to undertake the athlete leadership roles in sport, and crucially to better understand how the development of current and future athlete leaders can be maximised.

AUTHOR CONTRIBUTIONS

SC, TL, and KF all contributed to the initial scoping of the review and were involved in the continued revision, extension and redrafting of the manuscript. SC took the lead in developing the initial content with TL and KF further expanding and extending this initial content. All authors contributed to the article and approved the submitted version.

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SPECIALTY SECTION

This article was submitted to
Performance Science,
a section of the journal
Frontiers in Psychology

RECEIVED 31 December 2020

ACCEPTED 26 September 2022

PUBLISHED 14 October 2022

CITATION

Boisvert MM, Loughead TM and
Munroe-Chandler KJ (2022) The
implementation and evaluation of an
athlete leadership development program
with male youth ice hockey players.
Front. Psychol. 13:648039.
doi: 10.3389/fpsyg.2022.648039

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The implementation and evaluation of an athlete leadership development program with male youth ice hockey players

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The purpose of the current study was to implement and evaluate an athlete leadership development program in youth boys ice hockey. The sample consisted of 14 male U17 hockey players ($M=16.46$, $SD=0.78$) from one team playing in a competitive hockey league. The players participated in six leadership intervention workshops over the course of the season, and completed inventories measuring athlete leadership behaviours, cohesion, and collective efficacy pre-and post-intervention. In addition, a focus group was conducted to assess the impact of the athlete leadership development program at the end of the season. Bayesian t tests showed that the leadership program generally helped to maintain levels of athlete leadership behaviours, cohesion, and collective efficacy pre-and post-intervention. The results of the focus group following the intervention revealed the players believed the leadership development program helped buffer against the negative effects of their on-ice performances.

KEYWORDS

applied sport psychology, group dynamics, cohesion, collective efficacy, athlete leadership, athlete leadership development

Introduction

The importance of leadership in sport is well documented (e.g., [Bucci et al., 2012](#)). In fact, effective leadership is identified as a crucial factor in achieving team success ([Zaccaro et al., 2002](#)). To date, most of the research examining leadership in sport has primarily focused on the coach, which is not surprising given the coach is responsible for making decisions with respect to team matters such as strategy, tactics, and team personnel ([Loughead et al., 2006](#)). Despite Gould's statement in [Gould et al. \(1987\)](#), suggesting that coaches consider athlete leadership as an important component for effective team performance, only recently has athlete leadership in sport teams received attention ([Loughead, 2017](#)).

Athlete leadership is defined as “an athlete occupying a formal or informal role within a team who influences team members to achieve a common goal” (Loughhead et al., 2006, p. 144). The above definition highlights two types of leadership roles that are shared within sport teams. First, formal athlete leaders are those who are assigned to their leadership role by the coach or through team selection (e.g., captain, assistant captain). Second, informal athlete leaders emerge based on their interactions with other teammates (e.g., veteran players). Crozier et al. (2013) examined what athletes considered to be the ideal number of athlete leaders on a team as well as the benefits of having athlete leaders. Athletes indicated that 85% of a team’s roster should be composed of athlete leaders, with 19% occupying formal roles and 66% occupying informal roles. Furthermore, athletes reported that having an ideal number of athlete leaders created opportunities to share athlete leadership responsibilities and increased the resources available to the team. Moreover, an ideal number of athlete leaders was believed to positively influence a number of group dynamic constructs, including variables related to team structure (e.g., enhanced role clarity), team processes (e.g., team cohesion, collective efficacy), and outcomes (e.g., athlete satisfaction, performance; Crozier et al., 2013).

While Crozier et al. (2013) indicated that the presence of athlete leaders could potentially have a positive impact on many group dynamic variables, the current study concentrated on two specific group dynamic variables: cohesion and collective efficacy. The selection of cohesion in the current study was based on two premises. First, cohesion has long been considered one of the most important group variables in sport teams (Lott and Lott, 1965; Carron et al., 2002), meaning it is critical to team functioning (Carron et al., 1998). As such, cohesion is defined as “a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron et al., 1998, p. 213). One aspect of this definition is how cohesion reflects both a task and social orientation towards the group. Specifically, a task cohesion orientation refers to the general tendency of the group to stick together to achieve its objectives, while a social cohesion orientation represents feelings of closeness, similarity, and bonding of the group as a social unit.

Second, cohesion was selected for the current study given its positive association to athlete leadership behaviours. For example, Vincer and Loughhead (2010) surveyed varsity athletes to examine the relationship between athlete leadership behaviours and perceptions of cohesion. Athlete leaders who were perceived as showing higher frequencies of the leadership behaviours of training and instruction (i.e., improving teammate performance) and social support (i.e., satisfying interpersonal needs of team members) had teammates with stronger perceptions of both task and social cohesion. Furthermore, the leadership behaviour of democratic behaviour (i.e., including group members in the decision process) was positively related to task cohesion. Similarly, Callow et al. (2009) found the athlete leadership behaviours of individual consideration (i.e., leaders attending to individual

follower’s needs and concerns), fostering acceptance of group goals (i.e., leader behaviours that promote teamwork to achieve team goals), and high-performance expectations (i.e., leaders showing that he/she expects high standards from the team) were positively related to task cohesion. Additionally, fostering acceptance of group goals was positively associated with social cohesion.

In addition to cohesion, the other group dynamics variable targeted in the current study is collective efficacy. Bandura (1997) defined collective efficacy as a “group’s shared belief in its conjoint capability to organize and execute the courses of action required to produce given levels of attainment” (p. 477). Collective efficacy was selected for the current study due to its contribution to optimal team functioning, motivation, and perseverance, and its influence on individual team members’ behaviours, effort, and persistence in the face of adversity (Bandura, 1997). Similar to cohesion, collective efficacy has been shown to be related to athlete leadership. Specifically, Price and Weiss (2011) found that being viewed as an effective athlete leader was associated with teammates having greater perceptions of collective efficacy. Furthermore, athletes who rated themselves higher in athlete leadership behaviours reported greater collective efficacy.

With athlete leadership behaviours related to both cohesion and collective efficacy, it would be helpful to have a conceptual model that highlights these relationships. Frameworks used to study athlete leadership have largely been based on organizational psychology and sport coaching research. Two of the most widely used theoretical models are Chelladurai’s (2007) Multidimensional Model of Leadership (MML) and Avolio’s (1999) Full Range Model of Leadership (FRML). The MML is a procedural framework that assesses the relationship between constructs (e.g., athlete leadership and cohesion/collective efficacy), whereas the FRML is a behavioural framework assessing where behaviours fall on a continuum (i.e., passive versus active). The MML is a linear model composed of three factors: (a) antecedents, (b) leader behaviours, and (c) consequences. Antecedents consist of situational (i.e., team norms and goals), leader (i.e., leaders’ personal characteristics), and member characteristics (i.e., members’ personality, experience, and ability). Leader behaviours consist of three behaviour types: (a) required, (b) preferred, and (c) actual. Required behaviours refer to the types of behaviours the leader is expected to display. Preferred behaviours refer to the preferences of team members for certain leadership behaviours. The preferences for certain behaviours from the leader are determined by the team’s situation and the nature of the group. Actual behaviours refer to how the athlete leader behaves, and are largely dependent on the leader’s personal characteristics, such as personality, expertise, and experience. Finally, the consequences in the model refer to outcomes, such as performance and satisfaction. In relation to the present study, the model highlights that leadership behaviours can impact emergent team processes (e.g., cohesion and collective efficacy). Both these emergent team processes, cohesion (e.g., Grossman et al., 2021) and collective efficacy (e.g., Fuster-Parra et al., 2015), have an influence on

performance. Consequently, it becomes important to develop these leadership behaviours in order to positively influence these emergent team processes.

The FRML proposes that effective leaders utilize a wide variety of behaviours including transformational leadership behaviours (Avolio, 1999). According to Bass and Riggio (2006), transformational leaders inspire their followers to commit to the team's common goal and vision, challenge them to solve problems, and help them grow and develop into leaders themselves. The FRML highlights four different transformational leadership behaviours: a) idealized influence (i.e., leader sets a good example and instils pride), b) inspirational motivation (i.e., leader outlines a vision that is inspiring to followers), c) intellectual stimulation (i.e., leader challenges assumptions and encourages creativity), and d) individualized consideration (i.e., leader attends to individual follower's needs and concerns). As such, leadership development involves enhancing the leadership capability by putting an emphasis on individual knowledge, skills, and abilities and by expanding the collective capacity of team members to engage effectively in leadership roles and processes (Day, 2001). Consequently, the MML and FRML were operationalized based on the leadership behaviours assessed in the Leadership Scale for Sports (LSS; Chelladurai and Saleh, 1980) and the Differentiated Transformational Leadership Inventory (DTLI; Callow et al., 2009). These two inventories measure several different leadership behaviours. The assessment of these leadership behaviours is common in athlete leadership research (see Loughhead, 2017 for a review).

Research focusing on athlete leadership development programs is limited. Currently, most athlete leadership development research has been conducted among two demographic groups, youth and intercollegiate athletes. Among the few studies focusing on youth athlete leadership development, Gould and Voelker (2010) found that their one-day workshop on how to be a high school team captain was helpful and enjoyable by the participants. Seeking to expand Gould and Voelker's one-day workshop, Blanton et al. (2014) implemented a two-year long high school youth leadership club intended to develop leadership capabilities. The results indicated that the leadership development program was well received by the middle school students. At the intercollegiate level, Voight (2012) implemented a season-long athlete leadership development program with two NCAA Division I volleyball teams to improve team communication and team functioning and foster the personal leadership development of team captains. The captains reported the program had a positive impact on their personal leadership skills, team cohesion, and team and teammate performance. Expanding to include all athletes from two teams, Duguay et al. (2016) developed and administered a season-long athlete leadership development program. A total of 27 female varsity athletes participated in four 1 h-long leadership workshops throughout their season. The program positively impacted most of the athlete leadership behaviours targeted, specifically training and instruction, democratic behaviours, social support, positive

feedback, appropriate role model, inspirational motivation, high performance expectations, and fostering acceptance of group goals and promoting teamwork. That is, participants reported employing these behaviours more after the leadership development program. Furthermore, the athlete leadership development program positively influenced athlete satisfaction and peer motivational climate (Duguay et al., 2016).

Although these studies highlight the benefits of conducting athlete leadership development programs, limitations remain. Primarily, Gould and Voelker (2010) and Voight (2012) simply stated their programs were grounded in leadership research and organizational psychology without any additional insight or information into the specific theories used to develop the leadership development program. Without a theoretical framework, a leadership development program can be nothing more than a collection of interesting leadership activities lacking an intentional and development approach (Redmond and Dolan, 2016). The current study attempted to fill this theoretical gap by conducting an athlete leadership development program grounded in the MML (Chelladurai, 2007) and the FRML (Avolio, 1999). Additionally, there were no quantitative measures used to objectively assess the results of these previous studies. The current study sought to address this gap including both quantitative measures and qualitative interviews through the use of a mixed methods approach. Youth sport was selected since the call for leadership development of young people is important for their social development (e.g., Wright and Côté, 2003). Youth who take on leadership roles are less likely to adopt negative behaviours (Allen et al., 2006). As such, we believe that leadership development for youth is a positive developmental activity that provides these individuals with supportive relationships (e.g., teammates) and opportunities to see themselves as having the ability to make valuable contributions to their team (e.g., leadership, cohesion, collective efficacy). Thus, the primary purpose of the current study was to implement and evaluate a theoretically-based leadership development program that targets the enhancement of athlete leadership behaviours, cohesion, and collective efficacy among male youth hockey players. Based on the success of Duguay et al.'s (2016) leadership development program among intercollegiate athletes, it was hypothesized that the athlete leadership development program would positively influence athlete leadership behaviours, cohesion, and collective efficacy of youth male hockey players.

Materials and methods

Participants

Participants in the current study were 14 male U17 ice hockey players from one Southwestern Ontario team playing in a competitive hockey league. In Canada, U17 is the second highest level of minor youth hockey. Players in the present study ranged in age from 15 to 17 years ($M = 16.46$, $SD = 0.78$) and had been

playing hockey for an average of 10.79 years ($SD=2.04$). The regular season for this team started in September and concluded in March. The team ended their season with a record of 3–26–5 (i.e., win-loss-tie), collecting 11 points out of a possible total of 68 points for a 16.18% winning percentage.

Measures

Athlete leadership behaviours

Athlete leadership behaviours were assessed using two questionnaires. The first questionnaire was the Leadership Scale for Sports (LSS; Chelladurai and Saleh, 1980) consisting of 40 items and assessing five dimensions of leadership behaviours: training and instruction (13 items), positive feedback (5 items), social support (8 items), democratic behaviour (9 items), and autocratic behaviour (5 items). All responses on the LSS are scored on a 5-point Likert scale ranging from (1) *never* to (5) *always* with higher scores reflecting higher occurrences of the leadership behaviours. Vincer and Loughhead (2010) found the LSS in measuring athlete leadership had a reasonably good model fit: CFI = 0.99, TLI = 0.98, and RMSEA = 0.05. Further, Cronbach's alpha coefficients were as follows: training and instruction ($\alpha=0.88$), democratic behaviour ($\alpha=0.79$), autocratic behaviour ($\alpha=0.74$), social support ($\alpha=0.86$), and positive feedback ($\alpha=0.84$; Vincer and Loughhead, 2010).

The second questionnaire used to measure athlete leadership behaviours was the Differentiated Transformational Leadership Inventory (DTLI; Callow et al., 2009). The DTLI contains 27 items and measures six transformational and one transactional behaviours: inspirational motivation (4 items), appropriate role modeling (4 items), individual consideration (4 items), intellectual stimulation (4 items), high performance expectations (4 items), fostering acceptance of group goals (3 items), and contingent reward (4 items). Each item from the inventory is scored on a 5-point Likert scale ranging from (1) *not at all* to (5) *all the time*. Callow et al. (2009) found a very good fit for this 6-factor model: CFI = 0.98, SRMR = 0.06, NNFI = 0.98, and RMSEA = 0.05. Further, Cronbach's alpha coefficients were as follows: individual consideration ($\alpha=0.66$), fostering acceptance of group goals ($\alpha=0.73$), high performance expectations ($\alpha=0.86$), appropriate role model ($\alpha=0.81$), inspirational motivation ($\alpha=0.75$), intellectual stimulation ($\alpha=0.82$), and contingent reward ($\alpha=0.82$) (Callow et al., 2009).

Cohesion

Cohesion was assessed using the Youth Sport Environment Questionnaire (YSEQ; Eys et al., 2009). The YSEQ was developed to measure cohesion in adolescent athletes aged 13–17 years. The YSEQ is a 16-item questionnaire measuring task (8 items) and social cohesion (8 items). All items are scored on a 9-point Likert scale ranging from (1) *strongly disagree* to (9) *strongly agree*, with higher scores reflecting greater perceptions of cohesion.

Confirmatory factor analyses provided support for the factorial validity of the YSEQ with an acceptable model fit: CFI = 0.90 and SRMR = 0.07 (Eys et al., 2009). Further, Cronbach's alpha coefficients were as follows: task cohesion ($\alpha=0.92$) and social cohesion ($\alpha=0.94$) (Bruner et al., 2014).

Collective efficacy

Players' perceptions of their team's collective efficacy were assessed using the Collective Efficacy Questionnaire for Sports (CEQS; Short et al., 2005). The CEQS is a 20-item questionnaire that measures the five dimensions of collective efficacy: ability (4 items), effort (4 items), persistence (4 items), preparation (4 items), and unity (4 items). All items are scored on an 11-point Likert scale, ranging from (0) *not at all confident* to (10) *extremely confident*, with higher values representing a greater rating of the team's confidence in their ability to successfully achieve a goal. A CFA revealed a good model fit: CFI = 0.92, NNFI = 0.90, SRMR = 0.04, and RMSEA = 0.09 (Short et al., 2005). Further, Cronbach's alpha coefficients were as follows: ability ($\alpha=0.91$), effort ($\alpha=0.87$), persistence ($\alpha=0.81$), preparation ($\alpha=0.87$), and unity ($\alpha=0.85$) (Short et al., 2005). A correlation matrix showing the relationship between collective efficacy and cohesion dimensions are found in Table 1.

Procedure

Prior to data collection, ethics approval was obtained from the authors' university ethics board. Data collection occurred at two-time points: baseline (i.e., beginning of the season prior to the leadership development intervention) and post-intervention (i.e., end of the season). At baseline, athletes were asked to read and sign a consent to participate in research form. Pre-intervention questionnaires were administered measuring demographics, athlete leadership behaviours (i.e., LSS, DTLI), cohesion (i.e., YSEQ), and collective efficacy (i.e., CEQS). Following baseline testing, athletes participated in six leadership development workshops, approximately every 3 weeks, over the course of the season. The baseline data collection occurred at the end of October and post-intervention data were collected at the end of January. Each workshop lasted approximately 45–60 min. One week following the final workshops, participants completed all of the questionnaires post-intervention. One month following post-intervention data collection, a focus-group interview was conducted to evaluate the impact of the athlete leadership development program.

Athlete leadership intervention

The six workshops were based on Duguay et al.'s (2016) athlete leadership development program. The athlete leadership development program was theoretically grounded

TABLE 1 Intercorrelations between task cohesion, social cohesion, and collective efficacy.

Dimension	Pre-intervention							Post-intervention						
	Task	Social	Ability	Effort	Pers.	Prep.	Unity	Task	Social	Ability	Effort	Pers.	Prep.	Unity
Pre-intervention														
Cohesion														
Task	1													
Social	0.21	1												
Collective Efficacy														
Ability	0.57*	0.26	1											
Effort	0.44	0.37	0.60**	1										
Pers.	0.76**	0.18	0.82***	0.70**	1									
Prep.	0.74**	−0.02	0.73**	0.58*	0.85***	1								
Unity	0.81***	0.18	0.81***	0.74**	0.85***	0.81***	1							
Post-intervention														
Cohesion														
Task	0.38	0.19	0.35	0.52**	0.55*	0.57*	0.39	1						
Social	0.43	0.84***	0.46	0.27	0.28	0.25	0.31	0.19	1					
Collective efficacy														
Ability	0.35	−0.06	0.77***	0.72**	0.72**	0.62*	0.67*	0.56*	0.03	1				
Effort	0.44	−0.18	0.53*	0.60*	0.74**	0.69**	0.55*	0.75**	−0.14	0.79***	1			
Pers.	0.45	−0.07	0.56*	0.69**	0.63**	0.59*	0.60*	0.67**	−0.01	0.80***	0.88***	1		
Prep.	0.37	−0.17	0.52	0.63*	0.64**	0.60*	0.58*	0.76**	−0.12	0.74**	0.87***	0.91***	1	
Unity	0.35	−0.07	0.68**	0.69**	0.71**	0.68**	0.65**	0.76**	−0.02	0.93***	0.84***	0.79***	0.86***	1

Pers., persistence; Prep., preparation. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

using both Chelladurai's (2007) MML and Avolio's (1999) FRML frameworks. The MML was used to guide the development of the content of the workshops. In particular, the model states that aspects such as age of the athletes should be taken into consideration; therefore it was important to have age appropriate language and examples when teaching the leadership behaviours during the intervention. Further, the MML also hypothesizes that the leadership behaviours influence team outcomes and in this case we would discuss how the leadership behaviours could influence aspects such as cohesion and collective efficacy. As for the FRML, this model states that effective leaders utilize numerous and a wide host of leadership behaviours. Empirical support for this premise was found by Duguay et al. (2016) indicating that it is important for athletes to utilize a wide range of leadership behaviours (see Table 2 for a list of those leadership behaviours).

As for the delivery of the workshops, we utilized an educational approach recommended by Whetten and Cameron (2011), whereby the participants were given (1) a presentation of the leadership behaviours to be learned, (2) a demonstration of the leadership behaviours in action, (3) the opportunity to practice these newly learned leadership behaviours, and (4) feedback from peers and the instructor. The explanation of the leadership behaviours was accompanied by examples of appropriate and inappropriate

applications, in addition to an analysis of why and how they can be effective or ineffective. In addition, participants worked either individually or in small groups to complete activities designed to reinforce and practice the leadership behaviours covered within each workshop, receiving feedback and assistance at every step along the way from peers and the instructor (i.e., first author). All activities finished with a team discussion highlighting how these leadership behaviours benefited the participants themselves and the team as a whole. Finally, participants were encouraged to apply and foster the development of these leadership behaviours to their sport of ice hockey. An outline of the leadership behaviours covered in each workshop is provided in Table 2. To encourage maximum participation from the participants, workshops were delivered prior to the team's practices. Consequently, nearly every participant was present for each workshop. The four absences by four separate players occurred due to a work conflict, school commitment, or illness. The participants were provided with a leadership workbook to support, reinforce, and expand on the material presented in the workshops that they could refer to outside of the workshop sessions. The workbook included an introduction to the importance of leadership development, important terms and definitions, activities to accompany the topics (i.e., leadership, cohesion, collective efficacy), and a reflection section.

TABLE 2 Workshop behaviours and sample activities.

Behaviours and sample activities

Leadership behaviours

Training and instruction

- Leader behaviours aimed at improving the athlete's performance through physical and skill development
- Athletes reflect on their technical, tactical, physical, and mental skills

Democratic behaviour

- Leader involves his/her teammates in the decision-making process
- Athletes reflect on how they could encourage inclusive decision making on their team

Social support

- Show concern for teammates' welfare by establishing warm interpersonal relationships
- Athletes given three cases and explore options for providing social support

Positive feedback

- Reinforce teammates by recognizing and rewarding good performance
- Athletes share influential positive feedback they have received and explain what made it effective

Individual consideration

- Leaders are empathetic, supportive, and attends to individual follower's needs and concerns.
- Athletes reflect on how they could pay more attention and show respect for each teammate

Inspirational motivation

- Leaders developing, articulating, and inspiring teammates with their vision for the future
- Athletes discuss the motivational effects of a sports video clip by reflecting on how they become motivated to perform their best

Intellectual stimulation

- Leaders challenge assumptions, encourage their followers to be creative, and are open to new ways to solve problems.
- Athletes examine how their team has handled various roadblocks and whether they could have been handled differently

Acceptance of group goals

- Leader behaviours that promote teamwork to achieve team goals.
- Athletes make a link between their individual goals and their team goals

High performance expectations

- Leaders showing that they have high standards for the team
- Athletes explore the expectations they hold for themselves and their teammates

Appropriate role model

- Set examples for teammates that are consistent with the values the team promotes
- Athletes reflect on how they be a role model on their team

Outcomes

Task cohesion

- Tendency of the group to stick together to achieve its objectives
- Athletes work together to build the tallest tower with marshmallow and spaghetti

Social cohesion

- Feelings of closeness, similarity, and bonding of the group as a social unit
- Athletes form a circle and lock arms and work together to untangle themselves

Collective efficacy

- Team's confidence in their ability to achieve their goals
- Athletes build launching machine to throw cotton balls

Bulleted points are the athlete leadership behavioural principles and dashes represent athlete leadership development sample activities.

Data analyses

Quantitative analysis

The data were screened for missing values, outliers, skewness, and kurtosis. The data were deemed to be normally distributed, therefore no transformations to the data were necessary. To determine whether there were differences in leadership

behaviours, cohesion, and collective efficacy from pre-to post-intervention, a series of Bayesian paired-samples *t* tests were carried out to determine the impact of the intervention.

Calculating Bayes factors provides evidence in favour of the null hypothesis or the alternative hypothesis (Wagenmakers, 2007). In contrast to frequentist *p* values, Bayes factors provide a more accurate estimate of the evidence present in the data available

(Wagenmakers, 2007). In Bayesian analyses, the posterior distribution (equivalent to Frequentist point estimates and standard error) is a combination of prior distributions (determined by the researcher) and the likelihood (determined by the data). An advantage of Bayesian analyses is the inclusion of prior information into the model through prior distributions, which can help the accuracy of predictions (McNeish, 2016). The inclusion of prior distributions in the analysis allows research with small sample sizes to base the results on more information than is available from the data itself. The contribution of the prior distribution and likelihood to the posterior distribution is not equal. When dealing with a small sample size, the prior distribution is given more weight than the likelihood (McNeish, 2016).

For the current study, the weight of the athlete leadership and cohesion priors were set based on the results of Duguay et al.'s (2016) study (i.e., Cohen's d and standard deviation). Due to the lack of prior knowledge regarding the relationship between collective efficacy and athlete leadership, the weight of the prior for collective efficacy was set at the default value of 0.707, which is the recommended weighting when no prior information is known (Hoffmann, 2019).

Bayesian analyses were conducted using the JASP software (JASP Team, 2018). The results from Bayesian analyses are reported in the form of a Bayes factor. In particular, a Bayes factor of BF_{+0} quantifies evidence for the one-sided alternative hypothesis (H_1) that the difference is larger than zero. Additionally, a Bayes factor of BF_{0+} quantifies evidence for the null hypothesis (H_0) relative to the one-sided alternative hypothesis that the difference is larger than zero. According to Jeffreys (1961), Bayes factors below 1 represent weak evidence, Bayes factors between 1 and 3 represent anecdotal evidence, Bayes factors between 3 and 10 represent substantial evidence, Bayes factors between 10 and 30 represent strong evidence, Bayes factors between 30 and 100 represent very strong evidence, and Bayes factors above 100 represent decisive evidence.

Qualitative analysis

Following the end of the intervention, an email was sent to all participants asking if they wanted to participate in a focus group. The four athletes who responded were members of the team's leadership group consisting of one captain and three assistant captains. The purpose of this focus group was to allow participants to reflect on their season and qualitatively evaluate the effectiveness of the athlete leadership development program. Athletes were able to provide a detailed account of their personal opinions and perceptions concerning the leadership program and its effect on individual players and the team as a whole.

The qualitative aspect of this study was conducted using a constructivist philosophical position, focusing on understanding the meanings people create for themselves and attribute to their experiences (Tamminen and Poucher, 2020). The underlying assumptions of constructivism include a relativist ontology and a subjectivist and transactional epistemology. According to the relativist ontological position, there is no single external reality

independent of the individual, that is, reality exists in the form of multiple individual constructions about the world shaped through lived experiences (Tamminen and Poucher, 2020). Essentially, a relativist viewpoint implies that different people will make different interpretations of their experiences. Therefore, the purpose of conducting qualitative research from a relativist ontological position is to attempt to understand the various interpretations people make about their experiences, and to try and understand why people view things the way they do (Tamminen and Poucher, 2020).

To better understand the various idiosyncrasies concerning people's experiences, the constructivist viewpoint assumes a subjectivist and transactional epistemological position (Tamminen and Poucher, 2020). That is, knowledge is created through transactions between the researcher and participant (e.g., focus group interview), and the researcher cannot separate themselves from their previous experiences and their interpretations of those experiences. In fact, the researcher's subjective understandings about a phenomenon or experience cannot be removed from the research process and/or findings (Tamminen and Poucher, 2020). As such, meaning and knowledge are created based on interdependent interactions between individuals. This notion of a subjectivist and transactional epistemology underlies the concept of co-construction of knowledge. That is, both the participant and the researcher bring their own understandings about the meanings of experiences to their interactions. Essentially, during an interview, the researcher forms interpretations and meanings concerning the participant's interpretations of an experience (Tamminen and Poucher, 2020).

The data were examined using hierarchical content analysis, allowing for the identification and description of patterns in the data (Sparkes and Smith, 2014). Specifically, meaningful pieces in the transcript were organized into raw data themes. Next, themes that appeared to fit well together were combined into categories. Athletes' names were changed for the quotes below to HP (i.e., hockey player) and a given a number (e.g., HP1). The study followed Sparkes and Smith's (2014) concept of reflexivity and Smith and McGannon's (2018) recommendations to utilize member reflections and critical friends. The second author, who has extensive experience in conducting leadership development programs and leading focus groups, served as a critical friend and met with the lead author at every step of the analysis to promote reflexivity and explore various interpretations of the data.

An interview guide, composed of four sections, was developed for this study and is available upon request. The interview guide consisted of questions designed to create discussion around the team's performance throughout the season, athlete's impressions of the leadership development program, the content of the responses, and concluding questions that allowed participants to provide recommendations on how to improve the athlete leadership development program. The focus group was audio recorded and transcribed verbatim.

TABLE 3 Descriptive statistics for athlete leadership behaviours, cohesion, and collective efficacy.

Variable	Pre-intervention			Post-intervention		
	<i>M</i>	<i>SD</i>	α	<i>M</i>	<i>SD</i>	α
<i>Leadership</i>						
TI	3.24	0.61	0.87	3.24	0.62	0.83
DB	3.59	0.76	0.75	3.61	0.83	0.88
AB	2.53	0.83	0.81	2.86	0.83	0.71
SS	3.96	0.58	0.77	3.74	0.59	0.71
PF	4.57	0.48	0.85	4.11	0.76	0.79
IC	3.95	0.84	0.59	3.98	0.65	0.83
IM	4.04	0.60	0.76	3.83	0.69	0.62
IS	3.57	0.66	0.85	3.26	0.96	0.90
AGG	4.24	0.62	0.78	3.83	0.60	0.61
HPE	4.20	0.61	0.66	4.14	0.53	0.59
ARM	4.06	0.61	0.77	3.94	0.77	0.87
CR	4.29	0.49	0.79	4.11	0.58	0.83
<i>Cohesion</i>						
Task	6.46	1.09	0.85	6.54	1.55	0.93
Social	6.97	1.98	0.96	6.98	1.73	0.94
<i>Collective efficacy</i>						
Ability	6.95	1.94	0.85	6.77	1.61	0.86
Effort	7.73	1.35	0.77	7.02	1.75	0.83
Persistence	7.27	1.65	0.82	6.99	1.71	0.90
Preparation	7.57	1.69	0.90	7.23	2.03	0.92
Unity	7.61	1.36	0.88	7.52	1.37	0.75

Scores for the leadership behaviours range from 1 to 5, Cohesion from 1 to 9, and Collective efficacy from 1 to 10. TI, Training and Instruction; DB, Democratic Behaviour; Autocratic Behaviours; SS, Social Support; PF, Positive Feedback; IC, Individual Consideration; IM, Inspirational Motivation; IS, Inspirational Motivation; AGG, Fostering Acceptance of Group Goals and Promoting Teamwork; HPE, High Performance Expectations; ARM, Appropriate Role Model; CR, Contingent Reward.

Results

Descriptive statistics

Means, standard deviations, and internal consistencies for the leadership behaviours, cohesion, and collective efficacy are presented in Table 3. For the athlete leadership behaviours, the means for social support, positive feedback, inspirational motivation, intellectual stimulation, acceptance of group goals, high performance expectations, appropriate role model, and contingent reward trended downward from pre-to post-intervention, while democratic behaviour, autocratic behaviour, and individual consideration trended upward. Training and instruction remained the same from pre-to post-intervention. As for cohesion and collective efficacy, both the means of task and social cohesion trended upward from pre-to post-intervention, while the means for the five dimensions of collective efficacy trended downward.

Quantitative analysis

Athlete leadership behaviours

When quantifying evidence in favour of the alternative hypothesis (H_1), the Bayesian paired samples t tests indicated

weak evidence for training and instruction ($BF_{+0}=0.12$), democratic behaviour ($BF_{+0}=0.11$), social support ($BF_{+0}=0.55$), appropriate role model ($BF_{+0}=0.34$), inspirational motivation ($BF_{+0}=0.61$), high performance expectation ($BF_{+0}=0.31$), intellectual stimulation ($BF_{+0}=0.72$), and individual consideration ($BF_{+0}=0.27$). Additionally, substantial evidence was found for positive feedback ($BF_{+0}=3.18$) and acceptance of group goals ($BF_{+0}=3.00$).

When quantifying evidence in favour of the null hypothesis (H_0), the Bayesian paired samples t tests indicated weak evidence for positive feedback ($BF_{0+}=0.32$) and fostering acceptance of group goals ($BF_{0+}=0.34$). However, the results indicated anecdotal evidence for social support ($BF_{0+}=1.82$), inspirational motivation ($BF_{0+}=1.66$), and intellectual stimulation ($BF_{0+}=1.39$). Finally, the results indicated substantial evidence for training and instruction ($BF_{0+}=8.06$), democratic behaviour ($BF_{0+}=4.27$), appropriate role model ($BF_{0+}=3.00$), high performance expectation ($BF_{0+}=3.25$), and individual consideration ($BF_{0+}=3.68$).

Cohesion

When quantifying evidence in favour of the alternative hypothesis (H_1), the Bayesian paired samples t tests indicated weak evidence for both task cohesion ($BF_{+0}=0.09$) and social cohesion ($BF_{+0}=0.15$). When quantifying evidence in favour of

the null hypothesis (H_0), the Bayesian paired samples t tests indicated substantial evidence for social cohesion ($BF_{0+} = 6.48$) and strong evidence for task cohesion ($BF_{0+} = 10.65$).

Collective efficacy

When quantifying evidence in favour of the alternative hypothesis (H_1), the Bayesian paired samples t tests indicated weak evidence for ability ($BF_{+0} = 0.42$), persistence ($BF_{+0} = 0.50$), preparation ($BF_{+0} = 0.52$), and unity ($BF_{+0} = 0.34$), and anecdotal evidence for effort ($BF_{+0} = 2.00$). When quantifying evidence in favour of the null hypothesis (H_0), the Bayesian paired samples t tests indicated weak evidence for effort ($BF_{0+} = 0.50$), anecdotal evidence for ability ($BF_{0+} = 2.34$), persistence ($BF_{0+} = 2.00$), and preparation ($BF_{0+} = 1.93$), and substantial evidence for unity ($BF_{0+} = 3.00$).

Qualitative analysis

A focus-group interview was conducted to evaluate the impact of the athlete leadership development program with four members of the ice hockey team. These participants consisted of the team's leadership group. Based on the focus group interview, athletes' responses were grouped into four themes focused on cohesion, communication, shared leadership, and the benefits of the leadership program.

Cohesion

The participants described some of the ways the athlete leadership development program positively influenced cohesion. In particular, they described how the leadership program was able to bring them closer together as a team.

It [athlete leadership development program] brought us together more, we all got along before, but we were not really united. It brought us all together as more than just friends. If something happened on the ice, everyone took it to heart. For instance, if someone got checked from behind or got high-sticked and got hurt, everyone took it to heart. We just cared about each other more (HP1).

Furthermore, the athlete leadership development program was useful in maintaining the team's cohesiveness despite having a lack of team success. As HP2 noted:

The leadership program gave us the mindset that hockey is a team sport and while losing is difficult, the program put it into perspective that you have to stick together win or lose. Our win-loss record definitely does not imply that we had a good season, but we bonded as a team, we got closer and this was important since we had a lot of new players this year on the team.

Despite not having a successful season, the participants discussed how the leadership behaviors they learned during the workshops impacted the way the team played. In particular, the participants noted that the team played in a tournament following the season and credited the way the team performed well to what they learned throughout the

workshops. Specifically, the players mentioned being more cohesive, which influenced their performance.

The team benefited from it [the leadership program] because right after the season, we had a tournament and we won most of our games, we only lost one game. We got a lot of goals but the leadership program inspired everyone to work together and be on the same page (HP3).

Communication

The players mentioned how the athlete leadership development program helped them deal with their frustrations (e.g., losing games) by teaching them to communicate more effectively with one another. As one participant noted, "We were talking to each other more, people were actually stepping up and saying what they had to say" (HP4). The enhanced communication was particularly useful in dealing with conflicts that occurred throughout the season.

When conflict arose, instead of yelling and getting mad at each other, we just told ourselves let us settle down, talk it out, and find a good solution that benefits both sides and let us get back in the game and focus (HP3).

Shared leadership

The participants noted how the athlete leadership development program taught them about the importance of sharing the leadership responsibilities among team members. As one player noted,

I learned that you do not have to have a "C" or an "A" on your jersey to be a leader. Anyone can step up. As well, you do not have to necessarily be a verbal leader, you can lead by example (HP2).

The participants also expressed how their own leadership behaviours impacted their teammates, "The athlete leadership development program taught you how to make everyone around you a leader as well and teach everyone else how to lead the team" (HP3).

Benefits of the leadership program

The participants revealed some of the benefits of the athlete leadership development program. Specifically, the participants discussed learning how to motivate their teammates and taking their teammates' opinion into consideration when making decisions. One player noted,

The athlete leadership development program taught me how to motivate my teammates, get them to be on the same page, be more open minded. It also taught me how to take other people's opinion and work it in with my own ideas and form one single plan that would work for everyone (HP1).

The participants also discussed how the leadership program was useful outside of hockey. The players noted that they transferred the knowledge gained from this program to other aspects of their life.

I used what I learned here and brought it to the classroom. For instance, at school one thing we have to do is to help younger students with their studies. So, I definitely used these skills and transferred them over to different aspects of my life. (HP2).

Discussion

The purpose of the current study was to implement and evaluate an athlete leadership development program targeting the enhancement of athlete leadership behaviours, cohesion, and collective efficacy with male youth hockey players from one team. It was hypothesized that the athlete leadership development program would positively impact athlete leadership behaviours, cohesion, and collective efficacy. The results partially support this hypothesis. When quantifying evidence in favour of the alternative hypothesis, the results of the Bayesian paired-samples *t* tests indicated weak to anecdotal evidence. That is, the athlete leadership development program did not positively impact the measured constructs pre-to post-intervention. However, when quantifying evidence in favour of the null hypothesis of no change, the results indicated that the program maintained the level of athlete leadership behaviours, cohesion, and collective efficacy throughout the season. These findings are corroborated in the focus group interview which showed that the athlete leadership development program was beneficial in helping the players maintain their leadership behaviours, along with perceptions of cohesion and collective efficacy. Further benefits from the focus group interview included better communication amongst team members and dealing with conflict more effectively.

Beyond these findings, one aspect of the current study that should be kept in mind when interpreting the results is the team's performance throughout the season. The team finished their season with a record of 3–26–5 (i.e., win-loss-tie), collecting 11 points out of a possible total of 68 points for a 16.18% winning percentage. When we started delivering our athlete leadership development program with this team, we did not know that their on-ice performance was going to be poor as the season progressed. Very little research has examined the impact of losing within the context of sport teams. However, as Van Puyenbroeck et al. (2019) noted, losing games negatively impacts a group's dynamics. One way that losing may impact a group's dynamics is through the “bad apple phenomenon” (Felps et al., 2006), whereby negative group members can have repercussion on team functioning. In sport, these types of athletes are labeled *cancers* (Cope et al., 2010). As for the consequences of team cancers, these athletes can become a distraction to other team members, engage in negative behaviours that affect the team, form cliques that are destructive to team functioning, and decrease a team's cohesiveness (Cope et al., 2010). We believe that our athlete leadership development program was able to mitigate the emergence of team cancers on this losing team and the associated negative consequences.

The quantitative results indicated the participants did not increase their use of athlete leadership behaviours following the athlete leadership development program, as measured using the LSS (Chelladurai and Saleh, 1980) and the DTLI (Callow et al., 2009). This result may have been due to the high baseline mean scores of the athlete leadership prior to the start of the intervention. In Duguay et al. (2016), the authors measured athlete leadership behaviours using both the LSS and DTLI using a pre-and

post-intervention design. Duguay et al. (2016) reported post-intervention mean scores for the athlete leadership behaviours that are similar or lower than the pre-intervention mean scores from the current study. As such, it may have been difficult for participants in the current study to increase their scores significantly post-intervention. That is, participants in the current study reported using leadership behaviours to a high degree at the beginning of the athlete leadership development program. Therefore, when the athletes completed the post-intervention leadership behaviour questionnaires, it would have been difficult for the mean scores to increase greater than what was reported at baseline.

In fact, the findings of the focus group interview helped shed light on the usefulness of the intervention on the development of various leadership behaviours. The participants mentioned learning how to step up and take action, regardless of whether they fulfilled a formal leadership role (e.g., team captain). Additionally, participants mentioned learning how to communicate more effectively with teammates, remain positive in face of conflict, share the leadership roles, and the importance of staying cohesive. This is consistent with previous athlete leadership development research where participants in Duguay et al. (2016) mentioned that the leadership development program encouraged team members to step up and fulfill leadership roles. Similarly, athletes in Voight's (2012) study reported that the leadership program taught them what it takes to be a leader, and how to effectively communicate with teammates. Players in the current study also mentioned that the program helped put their performance-related frustrations from losing regularly into perspective, emphasizing that hockey is a team sport and as such the team must work together to overcome these frustrations.

Similar to the athlete leadership behaviours, cohesion levels also were maintained from pre-to post-intervention. This result is similar to the findings of Sénécal et al.'s (2008) study examining the effects of a season-long team-building intervention aimed at enhancing cohesion. Athletes in the intervention group showed no significant increase in cohesion from the beginning of the season to the end of the season, while athletes in the control condition showed a significant decrease in cohesion during the season. Based on their study (i.e., Sénécal et al., 2008), it would appear that the intervention was helpful in maintaining levels of cohesion throughout the season. This result is impressive when examining research that has measured cohesion over the course of a season with no intervention. That is, researchers have reported decreases in levels of cohesion over the course of a season (Heuzé et al., 2006, 2007; Leo et al., 2012). In their investigation of basketball and handball perceptions of cohesion, Heuzé et al. (2006) found that players reported higher levels of cohesion at the beginning of the season. However, over the course of the season, players reported lower levels of cohesion. As mentioned in Carron et al.'s (1998) definition, cohesion is a dynamic process where changes in cohesion is impacted by a wide variety of personal, environmental, and team factors (Carron et al., 2002). In the context of the present study, one team factor that may have played

a role is the team's poor performance throughout the season. Nonetheless, it should also be noted that the mean scores of task cohesion at baseline (i.e., $M=6.46$) in the current study was similar to the level of task cohesion in previous research utilizing the YSEQ (e.g., Bruner et al., 2014, $M=6.66$; McLaren et al., 2015, $M=7.01$; Vierimaa et al., 2018, $M=5.99$). In contrast, the mean score for social cohesion in the current study ($M=6.97$) was higher than in other studies (e.g., Bruner et al., 2014, $M=6.27$; McLaren et al., 2015, $M=4.02$). As such, it appears that the athletes in the current study were already a fairly cohesive team at baseline. It is possible that a comparable effect to Sénécal and colleagues occurred in the present study given the results of Bayesian t tests when quantifying evidence in favour of the null hypothesis of no change. However, it is difficult to ascertain this without the presence of a control condition.

The results of the current study are impressive when you consider the losing record of the team. Meta-analyses examining cohesion (Carron et al., 2002; Grossman et al., 2021) have found that this construct has a moderate to large positive impact on performance, indicating that higher levels of cohesion are associated with more successful performances in various sports (Muthiane et al., 2015). In fact, perceptions of cohesion are significantly lower for athletes on losing teams than those on winning teams (Muthiane et al., 2015). When asked in the focus group interview concerning the cohesiveness amongst teammates, the participants mentioned that the leadership program brought the team closer together and made them feel more united, despite many team members already being friends and getting along before the start of the program.

Conflict and communication were two unique results from the focus group interview pertaining to the benefits of having participated in the athlete leadership development program. Athletes noted their poor on-ice performances created moments of conflict amongst the team. However, the participants mentioned that the leadership development program provided them with the skills to communicate more effectively, allowing them to constructively deal with conflict by finding solutions that benefited all team members. According to Dionne et al. (2004), communication and conflict management are crucial processes to team development. Moreover, communication is an essential component in preventing, processing, and resolving conflicts (Rhind and Jowett, 2010). As such, athletes who accept each other and deal with disputes in constructive and integrative ways are better equipped at managing conflict (Sullivan and Feltz, 2003). Consequently, the athlete leadership development program in the current study may have provided the participants with the necessary skills to more effectively deal with their intra-team conflicts, especially during a losing season.

Additionally, participants mentioned utilizing the skills they learned during the leadership development program outside of the sporting context. The findings of the current study are consistent with previous research exploring life skill development and transfer among wrestlers (Pierce et al., 2016), where several participants reported applying the skills learned outside their

sport, including leadership (Pierce et al., 2016). However, it is important to consider the fact that the transfer of skills is not a guaranteed outcome of the learning process. In fact, mere participation in sport does not guarantee a transfer of the skills acquired through sport (Trottier and Robitaille, 2014).

The current study is not without limitations. First, the small sample size may have impacted the statistical power. Studies with low statistical power have a reduced ability to detect a true effect (Button et al., 2013). Therefore, it is important for future researchers to recruit more participants to further examine the impact of an athlete leadership development program. Second, without the inclusion of a control group, it is difficult to determine with certainty whether the intervention was effective at maintaining the levels of athlete leadership behaviours, cohesion, and collective efficacy, which in turn helped buffer the effect of losing. Another possible limitation to this study is the athlete leadership inventories used in this study (i.e., LSS and DTLI). These inventories were developed for adult populations and primarily utilized with intercollegiate athletes. Paradis and Loughead (2009) presented the factorial validity of the LSS and DTLI for youth populations. The results revealed good factorial validity for both inventories. Further, an application of the Flesch–Kincaid assessment of readability to the items contained within the LSS and DTLI resulted in a sixth-grade level of readability (i.e., youth aged 12–13). Therefore, we felt confident that the LSS and DTLI could be used with 17-year-old participants. Consequently, the development of a youth athlete leadership inventory may be useful to more accurately capture the factors that are important to younger athletes. It is worth noting that for the qualitative focus group interview, the participants consisted of the team's leadership group. While all of the participants were invited, only the team's leadership group volunteered for this aspect of the study. Having participants who were involved in the team's formal leadership structure raises questions pertaining to homogenous sampling. Future research should strive to include a diversity of participant including those not holding a formal leadership role within the team. Also, emanating from the interview was the emergence of enhanced communication and conflict resolution as a result of the athlete leadership development program. Unfortunately, we did not collect quantitative data on these two outcomes. Future research should examine other outcomes of the leadership program.

Taken together, the results from the current study provide researchers, coaches, and mental performance consultants with preliminary evidence highlighting the importance of an athlete leadership development program as a method of maintaining levels of athlete leadership behaviours, cohesion, and collective efficacy throughout the season. Specifically, it appears that the athlete leadership development program can potentially act as a buffer against the negative effects of poor performance. Hopefully, this study will lead to further examination into the benefits of developing athlete leadership behaviours, cohesion, and collective efficacy. Finally, it is hoped that the information presented in this study will encourage

coaches and mental performance consultants to implement an athlete leadership development program with their teams.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by University of Windsor Research Ethics Board. Written informed consent from the participants' legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

MB implemented the athlete leadership development program, analyzed the data, and wrote the first draft of the manuscript. TL and KM-C contributed to the development of the athlete leadership development program, assisted in analyzing the data, and writing/editing subsequent drafts of

the manuscript. All authors contributed to the article and approved the submitted version.

Funding

This research was supported by the Social Sciences and Humanities Research Council (SSHRC) Insight Grant program (grant no. 435-2020-0526).

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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