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Advancing Athlete Leadership Research: An Examination of Shared Leadership and
Emotional Competence

By

Ashley Duguay

A Dissertation
Submitted to the Faculty of Graduate Studies
through the Department of Kinesiology
in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy
at the University of Windsor

Windsor, Ontario, Canada

2019

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Advancing Athlete Leadership Research: An Examination of Shared Leadership and
Emotional Competence

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DECLARATION OF CO-AUTHORSHIP / PREVIOUS PUBLICATION

I. Co-Authorship

I hereby declare that this thesis incorporates material that is result of joint research, as follows: Chapter 2 of the thesis was co-authored with Dr. James M. Cook, Chapter 3 with Dr. Matt D. Hoffmann, and Chapter 4 with Drs. Matt D. Hoffmann and Jeffrey G. Caron, all under the supervision of Dr. Todd M. Loughead. In all cases, the key ideas, primary contributions, data collection, data analysis, interpretation, and writing were performed by Ashley M. Duguay, and the contribution of co-authors was primarily through the provision of critical feedback to enhance the quality of the research. Drs. Cook, Hoffmann, and Caron provided feedback on the refinement of ideas and interpretation of study results, and assisted with the editing of the manuscripts.

I am aware of the University of Windsor Senate Policy on Authorship and I certify that I have properly acknowledged the contribution of other researchers to my thesis, and have obtained written permission from each of the co-author(s) to include the above material(s) in my thesis.

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II. Previous Publication

This thesis includes three original papers that have been previously published/submitted for publication in peer reviewed journals, as follows:

Thesis Chapter	Publication title/full citation	Publication status*
Chapter 2	Duguay, A. M., Loughhead, T. M., & Cook, J. M. (2019). Athlete leadership as a shared process: Using a social network approach to examine athlete leadership in competitive female soccer teams. <i>The Sport Psychologist</i> . Advance online publication. doi:10.1123/tsp.2018-0019	Published
Chapter 3	Duguay, A. M., Loughhead, T. M., & Hoffmann, M. D. (2019). Psychometric properties of the Profile of Emotional Competence (PEC) with a Sample of Intercollegiate Athletes: Implications for Athlete Leadership Research.	Submitted
Chapter 4	Duguay, A. M., Loughhead, T. M., Hoffmann, M. D., & Caron, J. G. (2019). Facilitating the development of shared athlete leadership: Insights from intercollegiate coaches.	Submitted

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ABSTRACT

Athlete leadership is the process of one or more individuals (i.e., players) within a sports team influencing their team members to achieve common objectives (Loughead, Hardy, & Eys, 2006). The study of athlete leadership has gained attention in the sport literature with accumulating research demonstrating its positive role in effective team functioning (for reviews, see Cotterill & Fransen, 2016; Loughead, 2017). However, as a relatively young field of research, there remain many gaps in the current literature. As such, the aim of this dissertation was to extend our knowledge of athlete leadership by contributing to two underexplored lines of enquiry: athlete leadership as a shared process and athlete leaders' emotional competence. This objective was accomplished through three separate studies. In Chapter 2, social network analysis (SNA) was used to examine athlete leadership across multiple levels (i.e., individual, dyadic, and network) within four competitive youth soccer teams. Findings demonstrated differences in the degree to which athlete leadership was shared within each team. In addition, skill nomination and formal leadership status were significant predictors of how often participants reported looking to their teammates for leadership. The purpose of Chapter 3 was to assess the construct validity of the Profile of Emotional Competence (PEC; Brasseur, Grégoire, Bourdu, & Mikolajczak, 2013) with a sample of intercollegiate athletes. The factor structure of the PEC was examined using confirmatory factor analysis (CFA) and exploratory structural equation modeling (ESEM). Findings did not support the a priori factor structure of PEC. Finally, the purpose of Chapter 4 was to examine the practices of intercollegiate coaches for facilitating the development of shared athlete leadership in their teams using semi-structured interviews. Coaches discussed their desire to empower

athletes, which appeared to directly influence their adoption of shared athlete leadership.

To facilitate the development of shared athlete leadership in their teams, coaches described using leadership groups and alternative leadership structures (e.g., rotating captain, defined leadership roles, and ‘captainless’ teams), creating a positive team environment, and deliberate athlete leadership development efforts. The findings from this dissertation help advance our understanding of athlete leadership and offer new directions for research and practice.

DEDICATION

For my Mom, the kindest, strongest, and most courageous woman I have ever known.

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CHAPTER 1

INTRODUCTION

While the study of leadership in sport emerged as early as the 1970s, there has been a growing appreciation for the importance of effective leadership across *all* levels of sport organizations in recent years (O’Boyle, Cummins, & Murray, 2015; Welty Peachey, Damon, Zhou, & Burton, 2015). At the team level, the sport coach has been positioned as the principal leader; however, the study of athletes’ contributions to leadership has been gaining increased attention in the sport literature (Loughead, 2017). To date, researchers examining athlete leadership have generally focused on examining the roles, behaviors, attributes, and distribution of athlete leaders in teams (for reviews, see Cotterill & Fransen, 2016; Loughead, 2017). Furthermore, positive associations have been demonstrated between athlete leadership and several indicators of effective team functioning such as athlete satisfaction (Eys, Loughead, & Hardy, 2006), task and social cohesion (Loughead et al., 2016), team resilience (Morgan, Fletcher, & Sarkar, 2015), team identification (Fransen, Vanbeselaere, De Cuyper, Vande Broek, & Boen, 2014), and collective efficacy (Fransen et al., 2014). Despite this research, the empirical examination of athlete leadership is still relatively young, especially compared to other fields of leadership research (e.g., education, military, and business). As such, there remains much to be learned about the leadership provided by athletes in a team context. Therefore, the purpose of this dissertation was to extend our knowledge of athlete leadership by contributing to two underexplored lines of enquiry: athlete leadership as a shared process and athlete leaders’ emotional competence.

Athlete Leadership Defined

Athlete leadership is the process of one or more individuals (i.e., players) within a sports team influencing their team members to achieve common objectives (Loughead, Hardy, & Eys, 2006). Athlete leaders are typically labeled as being either formal or informal in nature. Formal athlete leaders (i.e., team captains) are officially appointed by the coaching staff or through team selection. Traditionally, these formal positions are limited to a small group of athletes. Conversely, informal athlete leaders emerge unofficially over time through their interactions with teammates. As such, all athletes can contribute to team leadership even if the structure of a sport organization limits the number of team captains (Loughead & Hardy, 2005). Regardless of formality (formal vs. informal), the behaviors of athlete leaders are typically classified by four main roles: task, social, external (Loughead et al., 2006), and motivational leadership (Fransen et al., 2014). Accordingly, on-field behaviors center on helping the team accomplish its objectives (i.e., task leadership) and inspiring teammates in accordance with their performance (i.e., motivational leadership), while off-field behaviors focus on satisfying teammates' social and emotional needs (i.e., social leadership) and representing the team at engagements beyond the internal team environment (i.e., external leadership).

Athlete Leadership as a Shared Process

An underexplored line of enquiry that the current dissertation seeks to advance relates to athlete leadership as a shared process. Researchers have focused much attention on advancing our understanding of the distribution of athlete leaders in teams (e.g., Crozier, Loughead, & Munroe-Chandler, 2013; Fransen et al., 2014; Loughead & Hardy, 2005; Loughead et al., 2006). The accumulation of this literature has led researchers to reason that athlete leadership reflects a shared process where influence stems from many

team members. For instance, Loughhead and Hardy (2005) demonstrated that, on average, athletes perceived 27% of their teammates as athlete leaders. Furthermore, 65.1% of athletes reported that both formal athlete leaders and informal athlete leaders provided leadership in their teams. Extending this research, Fransen et al. (2014) demonstrated that the same player, regardless of the formality of their leadership position, fulfilled all four leadership roles in *only* 2% of the teams sampled in their study. Furthermore, only 6.4% to 18.8% of athletes were found to have fulfilled two leadership roles on the same team. Taken together, athletes reported that several athletes were involved in the leadership process.

Despite these findings, early athlete leadership researchers typically operationalized athlete leader dispersion as the ratio of the number of athlete leaders divided by the team size (i.e., all players on the roster; Neubert, 1999). Such aggregated approaches failed to account for the relational nature of shared influence that has been shown to characterize athlete leadership. Researchers have only begun to move beyond these aggregated approaches in favor of more comprehensive methods such as social network analysis (SNA) (e.g., Duguay, Hoffmann, Guerrero, & Loughhead, 2019; Fransen et al., 2015a; Loughhead et al., 2016). As a result, researchers can examine factors that may influence the emergence of shared athlete leadership in teams such as the qualities of the relation between two athletes. Additionally, recent researchers suggest that coaches may play a pivotal role in developing shared leadership among their athletes (Fransen, Mertens, Cotterill, Vande Broek, & Boen, 2019); however scant research is available on how this process may be facilitated. Attaining a more comprehensive understanding of the emergence and deliberate development of shared athlete leadership in teams is

particularly important considering recent recommendations that coaches adopt a structure of shared leadership (Fransen et al., 2019; Leo, García-Calvo, González-Ponce, Pulido, & Fransen, 2019).

Athlete Leaders' Emotional Competence

Another underexplored line of enquiry that the current dissertation seeks to advance relates to the study of athlete leaders' attributes. Much of the early research on athlete leadership focused on identifying traits, qualities, or characteristics of athlete leaders. Overall, these studies demonstrated that athlete leaders tend to be skilled and veteran players (Loughead et al., 2006; Yukelson, Weinberg, Richardson, and Jackson, 1983) who occupy central playing positions (Fransen et al., 2016; Glenn & Horn, 1993; Lee, Coburn, & Partridge, 1983) and have strong interpersonal connections with their teammates (Fransen et al., 2015b; Moran & Weiss, 2006). However, unlike the general leadership literature, how athlete leaders deal with intrapersonal and interpersonal emotional information (i.e., emotional competence) has yet to be examined. This is surprising considering emotional competence “has potential to help scholars better understand leadership emergence, specific leadership behaviors, and leader effectiveness” (Walter, Cole, & Humphrey, 2011, p. 55), all of which have been central topics of investigation in athlete leadership research.

Emotional competence is based on three premises: emotions play an important role in life; individuals may differ in their ability to identify, express, understand, regulate, and use emotions; and these variances may impact individual adaptation in a variety of contexts (Cherniss, 2010; Mikolajczak, Quoidbach, Kotsou, & Nélis, 2009). Accordingly, athletes may differ in their ability to deal with intrapersonal and

interpersonal emotional information and these variances may impact their behaviors, emergence, and effectiveness as athlete leaders. To our knowledge, no research has explicitly examined emotional competence in relation to athlete leadership; however, several studies have alluded to this relationship. For instance, in their examination of athlete leadership, Dupuis, Bloom, and Loughhead (2006) interviewed six former ice hockey team captains. Participants reported that controlling their emotions was a central component of their leadership. Similarly, in a qualitative investigation with female high-performance curlers, the team's Skip (i.e., leader) noted the importance of not expressing her anger in a way that would be detrimental to the team (Tamminen & Crocker, 2013). Given the emotion-laden context of sport, explicit examination of emotional competence in relation to athlete leadership can further our understanding of athlete leader behaviors, emergence, and effectiveness.

Overview of the Current Research Studies

The objective of this dissertation was to extend our knowledge of athlete leadership by contributing to two underexplored lines of enquiry: athlete leadership as a shared process and athlete leaders' emotional competence. This objective is accomplished through three separate studies. In Chapter 2, SNA is used to examine athlete leadership across multiple levels (i.e., individual, dyadic, and network) within four competitive youth soccer teams. Specifically, the shared nature (i.e., degree of sharedness) and various dyadic predictors (i.e., qualities of the relation between two individuals) of athlete leadership are explored. In Chapter 3, the Profile of Emotional Competence (PEC; Brasseur, Grégoire, Bourdu, & Mikolajczak, 2013) is assessed with a sample of intercollegiate athletes. The PEC is a trait emotional competence measure that

conceptually aligns with leadership development theory and current recommendations for athlete leadership development efforts (i.e., includes intrapersonal and interpersonal competencies; Day, 2000; Duguay, Loughhead, & Munroe-Chandler, 2016). Finally, in Chapter 4 the practices of intercollegiate coaches for deliberately facilitating the development of shared athlete leadership in their teams are examined using individual semi-structured interviews.

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CHAPTER 2

ATHLETE LEADERSHIP AS A SHARED PROCESS: USING A SOCIAL NETWORK APPROACH TO EXAMINE ATHLETE LEADERSHIP IN COMPETITIVE FEMALE YOUTH SOCCER TEAMS¹

The study of athlete leadership has gained momentum over the past decade and is now recognized as a vital component of sport teams (Loughead, 2017). This increased attention has not only provided insight into the important associations between athlete leadership and a range of individual and team factors (e.g., athlete satisfaction, cohesion, collective efficacy), but has also shed light on the distribution of leadership within teams (Cotterill & Fransen, 2016). Several studies have drawn attention to the shared nature of athlete leadership in different kinds of team relationships (e.g., Fransen et al., 2015a; Loughead, Hardy, & Eys, 2006). As such, it is important to examine athlete leadership using theoretical and methodological approaches that account for this relational nature.

Athletes can be called athlete leaders when they influence their teammates to achieve common goals (Loughead et al., 2006). For over a decade, researchers have shown that multiple team members partake in a team's leadership processes through both formal and informal athlete leadership positions (e.g., Fransen, Vanbeselaere, De Cuyper, Vande Broek, & Boen, 2014; Loughead & Hardy, 2005; Loughead et al., 2006). Formal athlete leaders (e.g., team captains) are typically chosen by the coaching staff or by team selection, while informal athlete leaders emerge through their interactions with teammates. These findings have led many authors to suggest that athlete leadership is a shared process (Cotterill & Fransen, 2016; Loughead, 2017). Shared leadership is relational in nature and is described as “a simultaneous, ongoing, mutual influence

¹ As accepted for publication in *The Sport Psychologist*, © Human Kinetics doi:10.1123/tsp.2018-0019

process within a team that is characterized by ‘serial emergence’ of official as well as unofficial leaders” (Pearce, 2004, p. 48). Within the organizational literature, Pearce (2004) suggested that task characteristics for shared leadership include a high degree of interdependence, creativity, and complexity. These types of task characteristics are highly applicable to team sports. Notably, as sport teams include various playing positions that warrant task specific knowledge and skills, it is unlikely that a single leader will exhibit all necessary leadership behaviors, skills, knowledge, and abilities (Duguay, Loughhead, & Munroe-Chandler, 2016). These layers of structural complexity coupled with on-field tactics and the high degree of interdependence of most team sports seem to reflect the task characteristics for shared leadership.

If the process of sports depends upon the development and deployment of successful relationships, then the way we model sports processes should be focused on those relationships. Social network analysis (SNA) comprises “a set of methodological techniques that aim to describe and explore the patterns apparent in the social relationships that individuals and groups form with each other” (Scott, 2017, p. 2). The potential of SNA to understand sport has been highlighted in recent work describing sequences of interaction during on-field sports play (e.g., team coordination, shared awareness, offensive/attacking play; Bourbousson, R’Kiouak, & Eccles 2015; Pina, Paulo, & Araújo 2017; Ramos, Lopes, & Araújo 2017). But interactions in sport extend beyond match analysis (e.g., ball-passing networks) to encompass, for example, social cohesion and external out-group relations (Fransen et al., 2014). Our study takes the social network perspective beyond match analysis to capture the relational patterns of athlete leadership in these plural domains (Denis, Langley, & Sergi, 2012; Lusher,

Robins, & Kremer 2010).

Early athlete leader dispersion studies relied primarily on aggregated self or team members' assessments of who fulfilled leadership roles (e.g., Eys, Loughhead, & Hardy, 2007; Loughhead & Hardy, 2005). Researchers typically measured athlete leader dispersion by dividing the number of reported athlete leaders by the number of team members. This approach failed to account for the relational nature of shared influence within teams (Carson, Tesluk, & Marrone, 2007). In contrast, social network approaches to leadership accompanied relational conceptualizations of the construct (Carter, DeChurch, Braun, & Contractor, 2015) and has allowed researchers to gather information about the patterns of leadership distribution within teams (Mehra, Smith, Dixon, & Robertson, 2006). In fact, a major strength of SNA is its appropriateness for examining relational data whereas techniques developed for use with other types of data, such as attribute data (i.e., data that describe the individual rather than the relationship), may be limited in their ability to explain social networks (Scott, 2017). Using relational data allow researchers to gain a more complete understanding of the interdependencies and complexities of social systems from all levels: actor level, dyad and triad level, subgroup level, and/or network level (Lusher et al., 2010; Prell, 2012). Accordingly, network approaches are particularly well suited for examining athlete leadership as researchers have traditionally focused on examining individuals as leaders, while largely ignoring the larger context (i.e., team) within which leadership occurs.

Recognizing the strengths offered by SNA, Fransen and colleagues undertook several studies using this approach to examine athlete leadership. Fransen et al. (2015a) used SNA to examine the shared nature of athlete leadership within sport teams. Both

formal and informal athlete leaders shared leadership roles in relation to the four athlete leadership functions (i.e., task, social, external, and motivational). Of interest to the present study, these authors endorsed SNA as a valuable tool for the study of leadership within team sports. Fransen et al. (2015b) sought to identify high-quality leadership at the individual and team level. Overall, it was found that athletes' perceptions of their leader's quality on each leadership role (i.e., task, social, external, and motivational) were strongly related to the extent to which athletes felt connected with their leader. Loughhead et al. (2016) used SNA to examine the relationship between athlete leadership and cohesion. Positive associations between four athlete leadership networks (i.e., task, social, external, and motivational) and task and social cohesion were found. The relationship between athlete leadership and playing position in sport has also been examined using SNA. In line with previous research (e.g., Glenn & Horn, 1993; Lee, Coburn, & Partridge, 1983), central playing positions (i.e., positions that provide players the opportunity to interact frequently with their teammates) were advantageous to providing leadership (Fransen et al., 2016). Finally, Fransen et al. (2017) showed that high-quality athlete leadership was positively related to performance (i.e., player-reported, coach-reported, and objective performance measure) and indicators of team functioning in three professional football teams. Specifically, athletes who were members of the team with the highest-quality athlete leadership reported significantly higher levels of shared purpose, goal commitment, team confidence, and task-involving climate, along with lower levels of ego-involving climate.

The present study sought to build on the existing athlete leadership research by addressing two limitations. First, previous athlete leadership research using SNA

predominantly used aggregated data (see Fransen et al., 2017, for an exception). This approach has limited our ability to analyze the social networks of the teams involved. In particular, two broad approaches for analyzing and interpreting network data include visualization and quantification (Quatman & Chelladurai, 2008). By aggregating data from many teams, researchers are unable to take advantage of visually searching each team's data for meaningful relational patterns using network diagrams (i.e., sociograms) or analyzing the quantitative data of each team. Searching the data in this way may help researchers further quantify the shared nature of athlete leadership by examining the degree to which it is shared within teams (e.g., does every team member provide leadership or only an active few?). Furthermore, this information could help identify the strengths (e.g., a dense leadership network with few cliques) and disruptions (e.g., team members do not identify their team captains as a source of leadership) in a team's leadership networks and provide empirical evidence to more accurately direct athlete leadership development efforts (Hoppe & Reinelt, 2010).

The second concern the current study targeted was the limited research examining the qualities of the relation between two individuals (e.g., teammates) as predictors of athlete leadership. Prior to the introduction of SNA to the study of athlete leadership, researchers typically examined individualistic characteristics without considering the impact of the athlete leader's social environment. Such studies assessed the impact of factors such as an individual's age, team tenure, or starting status (e.g., Loughhead et al., 2006; Tropp & Landers, 1979). By using SNA to study athlete leadership, researchers have also examined monadic network qualities that are characteristics of the individual in her social environment. For instance, Fransen et al. (2016) examined the centrality of

player position on the field as a predictor of athlete leadership, while Fransen et al. (2015a) assessed indegree centrality as a measure of leadership quality.

Researchers who have examined individualistic characteristics and monadic network qualities as predictors of athlete leadership have highlighted several important findings. For instance, researchers have demonstrated that athlete leaders tend to be veteran athletes (e.g., Fransen et al., 2015b; Yukelson, Weinberg, & Richardson, 1983). Indeed, Fransen et al. (2015b) identified age as an important characteristic for high-quality motivational and social leaders, reasoning “older players may have acquired more control over their own emotions, which could make it easier to focus on others’ emotions and on the interpersonal relations within the team” (p. 285). Within grade level cohorts, relatively older students are more likely to display physical maturity, and greater initial athletic skill and, therefore, be targeted for more intensive coaching and leadership development in sport, an investment that further accentuates within-cohort differences by age over time (Dhuey & Lipscomb, 2008; Dixon, Horton, & Weir 2011). In addition to being veteran athletes, athlete leaders tend to be skilled players (e.g., Lee et al., 1983; Loughhead et al., 2006; Yukelson et al., 1983). Strong players set high standards for team performance, project confidence, and demonstrate a path toward better performance for teammates (Price & Weiss, 2011). Empirically, Yukelson et al. (1983) found a positive relationship between on-field leadership status and performance ability. Furthermore, in their examination of the nature of athlete leadership, Loughhead et al. (2006) found that most team (95%) and peer (81%) leaders were starters. Researchers have also demonstrated that athlete leaders typically occupy central playing positions (e.g., Fransen et al., 2016; Glenn & Horn, 1993; Lee et al., 1983) and hold formal leadership status

(Fransen et al., 2015b; Loughhead et al., 2006). Interactionally central positions may provide athletes greater opportunities to both provide leadership and be seen providing leadership (Fransen et al., 2016).

Few researchers have examined dyadic variables (i.e., qualities of the relation between two individuals) in relation to athlete leadership (e.g., Fransen et al., 2015b; Loughhead et al., 2016). For instance, Fransen et al. (2015b) sought to determine which leadership quality ties (i.e., task, motivational, social, or external) were most predictive of social connectedness ties. Social leadership ties were found to be the strongest predictor of social connectedness in the team. Given the established relational nature of athlete leadership, it is crucial to progress research by examining relational characteristics as predictors of athlete leadership. In this way, athlete leadership research can move beyond solely describing the characteristics of athlete leaders to studying the dyadic relationships between team members and their athlete leaders.

Therefore, the purpose of the current study was to employ SNA to visually and quantitatively examine athlete leadership across multiple levels (i.e., individual, dyadic, network) within four competitive female youth soccer teams. In line with the two gaps discussed in the athlete leadership literature above, two hypotheses were forwarded. First, while we expected each team's athlete leadership network to reflect a shared process, we hypothesized that their degree of sharedness would differ (i.e., not all teams would share athlete leadership to the same degree). To address the second gap, we sought to test age, skill, playing position, and leadership status (i.e., formal and informal) as dyadic variables. It was hypothesized that these dyadic variables would positively predict athlete leadership nominations.

Method

Participants

The sample comprised four competitive female youth soccer teams ($n_{T1} = 16$; $n_{T2} = 17$; $n_{T3} = 18$; $n_{T4} = 17$) that competed in the female U18 division of a league located in Southwestern Ontario. This league is affiliated with the Ontario Soccer Association (OSA) and provides a competitive environment to over 180 youth and senior teams from 15 local soccer clubs. Within the female U18 division, there were six teams. All members from each of the four teams included in the current study consented to participate in the study and completed the questionnaire in full. Participants ranged in age from 14 to 18 years ($M_{T1} = 16.50$, $SD_{T1} = 0.63$; $M_{T2} = 16.53$, $SD_{T2} = 0.62$; $M_{T3} = 16.67$, $SD_{T3} = 0.49$; $M_{T4} = 15.24$, $SD_{T4} = 0.66$). Additional information in relation to participants' leadership status is presented in Table 1.

Measures

To assess the distribution of leadership influence within each of the four soccer teams, a roster method was used. A roster refers to a list of all individuals in the network (Prell, 2012). A roster-based questionnaire (see Appendix A) was used in the current study because there was a clear network boundary (i.e., a standard set by the researchers that outlines which individuals are included in or excluded from a network). This network boundary was each team's list of team members. Each participant was asked to rate the frequency with which they look to *each* of their teammates for leadership. In this way, a complete *leadership nominations* network was obtained.

It should be noted that an established leadership questionnaire was not used in the current study. Rather, participants responded to the question, *I look to (teammate's name)*

for leadership on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*frequently, if not always*). As such, data were directed (e.g., Player A reports looking to Player B for leadership, but that relationship may or may not be reciprocated) and valued (i.e., denotes the frequency or strength of the relationship). Broadly asking participants the extent to which they look to their teammates for “leadership” is consistent with previous SNA research (e.g., Carson et al., 2007; Mehra et al., 2006). At the end of the questionnaire, rather than providing players with a definition of athlete leadership, we asked them to write down what makes an effective leader. By asking the question in this way it was our intention to meet the players where they were in their understanding of athlete leadership rather than imposing our views of the construct. Sample responses from the athletes included: “someone who helps and encourages teammates to become better players,” “someone who is approachable and you feel comfortable asking them questions,” “helps out others on the field,” “sets standards,” and “gives helpful instruction.” The responses were carefully considered to ensure there was a general understanding of athlete leadership. Limitations of this approach are included in the Discussion. Participants were also asked to provide information such as their age, playing position, leadership status (i.e., formal leaders, informal leader, or no leadership status), and to nominate the most skilled player(s) on their team. As it relates to leadership status, participants who fulfilled a formal leadership status were selected to this position (e.g., by their respective team’s coach or through a team selection), while participants fulfilling informal leadership positions or holding no leadership status self-reported these data.

Procedure

Once permission to conduct the research was granted from the soccer association

and ethical clearance from the lead author's institution was obtained, the league administrator sent an email (on behalf of the lead author) to the six head coaches who had a team participating in the female U18 division (see Appendix B). Of the six coaches, four expressed interest in allowing their teams to participate in the study. Next, a time was scheduled for the lead author to attend a practice and meet with each team to explain the nature of the study. Informed consent (see Appendix C) was obtained after the participants were given time to read a letter of information (see Appendix D) and ask any questions they had. Once athletes provided their informed consent, they completed the leadership questionnaire. Data were collected mid- to late season to provide time for athlete leadership relationships to form.

Data Analysis

As illustrated in Figures 1-4, social networks are defined as a set of network members (also known as nodes or actors) that are connected by one or more relations (also known as ties) (Wasserman & Faust, 1994). Athlete leadership networks were examined in terms of their structure and properties by using both visualization and quantitative methods. Visual analyses were carried out using NodeXL, while quantitative analyses were conducted through UCINET software (Borgatti, Everett, & Freeman, 2002).

The data analyses were divided into three stages (i.e., the first two stages were used to examine the first hypothesis, while stage three was used to evaluate the second hypothesis). First, sociograms for each team were created and visually examined. A sociogram is a graphical representation of the ties between actors in a network (see Figures 1-4). To generate the sociograms, the directed and valued data for each team

were inputted into separate case-by-case adjacency matrices in which the (ij) cell referred to the frequency with which actor i (e.g., Player A) looked to actor j (Player B) for leadership. From these matrices, NodeXL was used to create each team's sociogram using the Fruchterman-Reingold drawing algorithm for force-directed placement (Fruchterman & Reingold, 1991). Using this spring embedded layout, clusters of actors that have more ties among themselves tend to appear closer together.

Within the sociograms, the circles represent the members of each team, while the lines denote the presence of a leadership tie. The opacity of each tie reflects the frequency of the leadership relationship (i.e., a darker tie indicates that a player looks more frequently to a teammate for leadership than where a lighter tie is present). Given the directed nature of the data, the arrows at the end of each tie signify the direction of the leadership relationship. Further, select attribute data for participants were also included. Attribute data describe the individual rather than the relationship between actors. As illustrated in Figures 1-4, the colour of the nodes in the sociograms reflect the leadership status of each player, while the size of each node denotes that player's dichotomized (see next section for more detail) in-degree centrality score. The inclusion of attribute data allowed the research team to combine individual data with relational data to gain a more complete understanding of the network.

The second stage of data analysis involved quantitatively assessing each team's leadership network to determine the extent to which they reflected shared leadership. It has been suggested that degree centrality (individual level), density (network level), and degree centralization (network level) are the most relevant measures to study shared leadership in social network research (Gockel & Werth, 2010). While a complete review

of studies that have used these three metrics in leadership literature is beyond the scope of the current study, the reader is referred to Carter et al. (2015) for an integrative conceptual review of social network approaches to leadership. Within athlete leadership literature, degree centrality, density, and degree centralization have been used alone or in combination to examine the shared nature of athlete leadership within teams (Fransen et al., 2014a), evaluate the quality of athlete leadership (Fransen et al., 2015b), and identify team leaders (Fransen et al., 2017). The combination of these three measures not only provides information about the athlete leadership relationships at both the individual and team level but also allow researchers to draw conclusions about the overall amount and distribution of leadership within teams.

Degree centrality is a measure of immediate connections an actor has in a network (Prell, 2012). In directed networks, degree centrality is measured using indegree and outdegree centrality. Indegree centrality involves the number of ties received by an actor, while outdegree centrality involves the number of ties given by an actor (Prell, 2012). In relation to leadership, actors with high indegree centrality hold more influence in the network than actors with low indegree centrality, while actors with high outdegree centrality are influenced by many of their team members (Gockel & Werth, 2010).

Density is a measure of the overall level of connectedness among actors in a network (Scott, 2017). In a binary network, it is operationalized as the number of ties in the network divided by the number of all possible ties and is calculated as follows (Wasserman & Faust, 1994, p. 129):

$$D = \frac{\text{ties}}{n(n - 1)}$$

Within this equation, ties refer to the actual number of ties present in the network, while n

reflects the number of actors. The denominator of this equation is the number of all possible ties for a directed network. Density can range from 0-1, where 0 reflects the lowest possible density (no ties are present) and 1 reflects the highest possible density (all possible ties are present). Shared leadership is reflected in networks with high density (i.e., a high proportion of leadership ties between teammates). It is important to note that although density measures the total amount of influence within the network (i.e., the number of ties that are present), it does not express whether this influence is distributed among actors or is centralized around one actor (Prell, 2012). Therefore, degree centralization was also calculated.

Degree centralization describes the extent to which network ties are organized around focal actors (Scott, 2017). In the present study, degree centralization was operationalized as the variation in the *indegree* centrality of the actors divided by the maximum possible *indegree* centrality variation and was calculated as follows (Freeman, 1979, p.228):

$$C_x = \frac{\sum_{i=1}^n [\max C_x(p) - C_x(p_i)]}{\max \sum_{i=1}^n [\max C_x(p) - C_x(p_i)]}$$

Within this equation, $\max C_x(p)$ denotes the largest indegree centrality score across the set of actors, while $C_x(p_i)$ is the indegree centrality of actor i . Finally, the denominator reflects the maximum possible sum of differences in actor indegree centrality. In relation to leadership, degree centralization is a measure of the variability of individuals' influence (Gockel & Werth, 2010). Degree centralization can range from 0 to 1, where 0 indicates that team members are equal in their influence over each other and 1 indicates that influence is unequally distributed among team members. Therefore, a low degree of shared leadership is observed when influence stems from one player (high network

centralization), whereas a high degree of shared leadership is observed when influence is distributed more equally (low network centralization). It should be noted that two very different network structures could result in a low degree centralization score, namely if all actors influence each other or if there is no influence in the network (Gockel & Werth, 2010). Therefore, it is important to consider the network's density score (as described above) in combination with degree centralization.

Data were dichotomized to carry out the analyses in this second stage as using valued data changes how degree centrality, density, and degree centralization are operationalized, which hinders the ability to accurately measure shared leadership. For instance, when accounting for the strength of relationships, degree centrality will bias towards stronger or more frequent ties (Prell, 2012). As discussed by Prell (2012),

Actor i might have a higher degree centrality score than actor j , but this would not necessarily be reflective of how many ties are directly tied to actor i . Actor i might have fewer ties, but each are of a higher value, thus inflating actor i 's score. (p. 98)

Similarly, the density measure for valued data is incomparable with a measure of density for binary data (Scott, 2017). With valued data, density is computed as the sum of the ties divided by the total possible sum of ties (Carson et al., 2007; Sparrowe, Linden, Wayne, & Kraimer, 2001). As such, density is an average of the strength or frequency of ties in the network versus an average of the distribution of ties. Finally, when valued data are used to calculate degree centralization, it is impossible to discern between the number of the ties and the strength of the ties, therefore it has been recommended that degree centralization be ignored when using valued data (Borgatti et al., 2002). Accordingly, data were dichotomized so that ratings of 4 (*frequently, if not always*), 3 (*fairly often*),

and 2 (*sometimes*) were assigned a value of 1, while values of 1 (*once in a while*) and 0 (*not at all*) were assigned a value of 0. This process resulted in a directed binary matrix for each team's leadership nominations network (i.e., a total of 4 matrices), where 1 denoted the presence of a leadership relationship and 0 denoted the absence of a leadership relationship. The data were dichotomized this way to align with characterizations of shared leadership (e.g., Pearce, 2004; Carson et al., 2007). In particular, within shared conceptualizations of leadership, team members may provide leadership simultaneously or at different times throughout a team's life cycle (D'Innocenzo, Mathieu, & Kukenberger, 2016). As individuals may move in and out of leadership positions, we felt it was appropriate to include a mid-scale score, which reflected a rating of *Sometimes*, as a leadership tie. In this way, we were able to capture leadership ties among dyads that may not have occurred often but rather in particular situations (e.g., when a challenge is faced and a team member steps up to provide direction, if a player who typically holds a leadership position is injured and unable to fill their leadership responsibilities, if a player is looked to for leadership by their teammates only when social conflict arises). Therefore, ratings of 4, 3, and 2 were viewed in the present study as strong leadership ties, while ratings of 1 and 0 were viewed as weak or non-existence leadership ties.

In the third stage, multiple regression quadratic assignment procedures (MR-QAP) was used to test the associations between the leadership nominations network and dyadic attribute data for each team separately. MR-QAP allows researchers to model the values of a dyadic dependent variable (e.g., leadership nominations) using multiple dyadic independent variables (e.g., age difference, skill nominations) (Borgatti, Everett,

& Johnson, 2013). The MR-QAP analytic approach is particularly useful because it addresses the problem of network autocorrelation in two ways. First, rather than assuming that variable values are independent from case to case, it estimates parameters that measure the extent to which observed values are associated through various forms of network connection between cases. Second, because standard statistical tests of significance have been shown to lead to biased results when autocorrelation exists, the semi-partialling MR-QAP method adopts a different significance test, in which rows and columns of regression matrices are repeatedly permuted and ordinary least squares (OLS) regression coefficients are obtained for the permuted matrices. The accepted significance test for a coefficient is the proportion of regression coefficients obtained from permuted matrices in which the estimated coefficient is as extremely large (or extremely small, depending on the sign of the coefficient) as the estimated coefficient obtained from the original non-permuted matrices, with a proportion of .05 or less being the commonly adopted standard for significance in MR-QAP regression results (Dekker, Krackhardt, & Snijders, 2007; Krackhardt, 1988).

As it relates to the present study, the dependent variable, leadership nominations, reflected a dyadic variable where the (*ij*) cell referred to the frequency with which actor *i* looked to actor *j* for leadership (ties were valued and directed). However, the independent variables of age, skill, playing position, and leadership status (i.e., formal and informal) were monadic (i.e., individual attributes). These monadic variables were first converted into dyadic variables prior to running the MR-QAP regressions. In relation to age, UCINET (Borgatti et al. 2002) was used to create a valued difference matrix and an absolute difference matrix. For the valued age difference matrix, the (*ij*) cell was formed

by subtracting actor j 's age from actor i 's age. For the absolute age difference matrix, the (ij) cell reflected the absolute value after subtracting actor j 's age from actor i 's age. A skill nomination matrix was created where the (ij) cell represented whether actor i nominated actor j as one of the most skilled players on the team. For playing position, an interactional centrality matrix was created where the (ij) cell represented whether actor j played a central playing position. In line with previous research, central playing positions were operationalized as midfielders (left, central, and right) or central defenders (Fransen et al., 2016; Lee et al., 1983). Finally, two separate matrices were created to reflect the participants' leadership status. A formal leadership matrix was created where the (ij) cell represented whether actor j was a formal athlete leader within her team and an informal leadership matrix was created where the (ij) cell represented whether actor j self-reported that she was an informal athlete leader within her team.

Results

Each sociogram (Figures 1-4) was visually inspected for meaningful patterns. Visual observations demonstrated that there were no social isolates in any network (athletes who have no leadership ties to any team members). That is, *all* team members were nominated as a leader by at least one teammate, which suggests the occurrence of shared athlete leadership. However, it is evident that there were varying levels of influence as illustrated by the distribution and opacity of the ties. Team 2 and Team 3 appear to have denser networks (more ties) with more distributed influence (multiple large nodes) than Team 1 and Team 4. Furthermore, Team 1 seems to have more players on the periphery of the network that have lower levels of influence.

Table 2 provides the dichotomized indegree (i.e., the number of incoming ties)

and outdegree (i.e., the number of outgoing ties) centrality scores that comprise the overall leadership networks. Athletes who hold the most and least leadership influence within each team are clearly identifiable (i.e., higher and lower indegree centrality scores respectively). These scores align with the size of each node in the sociograms. It is apparent that Team 2 and Team 3 have higher indegree and outdegree centrality scores than Team 1 and Team 4. That is, players on Team 2 and Team 3 are not only being looked to by their teammates more frequently for leadership but are also looking to more of their teammates for leadership.

Table 3 depicts how the four teams differ in terms of their density and degree centralization scores. Combined, these tables (computed from dichotomized data) support many of the observations acquired from visually inspecting the sociograms (i.e., created using the valued data). Team 2 and Team 3 have the highest degree of shared athlete leadership in the current study, denoted by a high-density score (i.e., 0.81) and low degree centralization (i.e., 0.20). Conversely, while Team 1 and Team 4 do have multiple players who appear to hold a level of influence, their leadership networks are more centralized (i.e., 0.60 and 0.43 respectively).

The MR-QAP results are depicted in Table 4. As demonstrated, skill nomination was a significant predictor of athlete leadership frequency nominations for all four teams. Furthermore, formal leader status was a significant predictor of athlete leadership frequency nominations for Team 1 and Team 2. Examined as dyadic variables, age, playing position, and informal leadership status did not predict athlete leadership nominations.

Discussion

The purpose of the present study was to employ SNA to visually and quantitatively examine athlete leadership across multiple levels (i.e., individual, dyadic, network) within four competitive female youth soccer teams. Two hypotheses were forwarded. First, while we expected each team's athlete leadership network to reflect a shared process, it was hypothesized that their degree of sharedness would differ (i.e., not all teams would share athlete leadership to the same degree). Findings from the current study supported this hypothesis. Second, it was hypothesized that, examined as dyadic variables, age, skill, playing position, and leadership status (i.e., formal and informal) would positively predict athlete leadership nominations. This hypothesis was partially supported.

The Degree of Sharedness

As expected, visual (i.e., inspection of sociograms) and quantitative (i.e., degree centrality, density, and degree centralization) analyses demonstrated that each team's leadership network reflected a shared process. Within organizational literature, it has been suggested that, "shared leadership is a more useful predictor of team effectiveness than vertical leadership" (Pearce & Sims, 2002, p. 183). While the examination of the specific relationships between shared athlete leadership and various indicators of effective team functioning is limited, there is research to support the benefits of shared leadership in sport. For instance, Fransen et al. (2014) demonstrated that shared leadership was positively associated with higher levels of collective efficacy and team identification among players and coaches. Shared leadership has also been identified as a resilient characteristic of elite sports teams (Morgan, Fletcher, & Sarkar, 2013) and as a

psychological process underpinning team resilience in elite sport (Morgan, Fletcher, & Sharkar, 2015). Taken together, the present findings add to the mounting evidence that athlete leadership is a shared practice.

While each team's athlete leadership network reflected a shared process, their degree of sharedness differed. This finding extends the existing shared athlete leadership research and offers important insight into the dynamic nature of the construct. As discussed by Wang, Han, Fisher, and Pan (2017), "all teams can be assessed on the degree to which they share leadership; some teams consolidate leadership narrowly in one or two individuals, while others share it broadly among all members" (p. 166). In fact, recent research with senior engineering design teams focused on identifying the optimal levels of various internal and external environmental conditions (i.e., shared purpose, social support, voice, and external coaching) in an attempt to optimize the degree of shared leadership (Galli, Santos-Arteaga, Kaviani, & Mohebbi, 2017). To date, the predominant focus on aggregated data when studying athlete leadership has limited our ability to examine this degree of sharedness.

In fact, to our knowledge, this is the first study to use SNA to show the complex differences within athlete leadership networks of individual teams (i.e., as opposed to the use of aggregated data). Overall, the athlete leadership networks of Team 2 and Team 3 were more shared than those of Team 1 and Team 4, which were more centralized. In addition to team-level analyses, SNA also provided insight at the individual level. For instance, it is evident that in Team 1, Player A and Player B were not looked too often for leadership by their teammates despite the fact that both players self-identified as informal leaders within their team. This information highlights a disconnect in the players'

perceptions and could be used to inform leadership developmental opportunities for the athletes (i.e., leadership training).

The ability to examine athlete leadership networks in teams through both visual (i.e., graphical depictions) and quantitative (i.e., individual scores and group measures) analyses is an advantage of SNA. It allows coaches and/or sport psychology consultants to gain more detailed insights into the collective leadership interactions within their teams than is available with aggregated approaches. The intricate differences between the athlete leadership networks of the four teams sampled, despite each team competing at the same level and in the same sport, underlines the need for more case study approaches to understanding athlete leadership. In-depth analyses on a team-by-team basis will not only help advance our knowledge of the dynamic nature of athlete leadership but will also provide actionable information in applied settings. Future research is encouraged to build from the present findings by, for example, determining if an optimal degree of shared athlete leadership exists, examining possible antecedent conditions that may impact the optimal degree of shared athlete leadership, and exploring how varying degrees of shared athlete leadership effect individual- and team-level outcomes.

The Predictive Value of Dyadic Attributes

As it pertains to the second hypothesis, the present study examined the predictive value of dyadic attributes (i.e., qualities of the relation between two individuals) modeled through MR-QAP. The forwarded hypothesis that, examined as dyadic variables, age, skill, playing position, and leadership status (i.e., formal and informal) would positively predict athlete leadership nominations was only partially supported. Specifically, participants reported looking to teammates who they identified as being the most skilled

players on their team more frequently for leadership. This finding aligns with previous research, which has indicated that athlete's skill level is an integral component of leader emergence (Lee et al., 1983; Loughhead et al., 2006; Yukelson et al., 1983). Most recently, Fransen et al. (2015b) identified playing time (i.e., a reflection of sport competence) as a significant attribute of leadership quality. As suggested by Loughhead et al. (2006), earning the respect of teammates which is an important part of being a leader, may be difficult in the absence of ability.

Participants on Team 1 and Team 2 also reported looking more frequently to teammates holding a formal leadership status for leadership. This finding also aligns with previous research. Using aggregated data, Loughhead et al. (2006) demonstrated that formal leaders were more likely to be identified as team leaders (i.e., team leaders were identified as athletes who influenced a large number of teammates and thus held a prominent leadership role within their team). Similarly, Fransen et al. (2015b) demonstrated that captaincy was a significant predictor for perceived leadership quality. As the current study was cross-sectional in nature, the direction of this relationship could not be determined. That is, it is unknown whether formal leadership status preceded teammates looking for leadership from such individuals or if certain individuals were recognized for their leadership abilities and therefore more likely to be formally named as captains. Also, it is important to reiterate that this finding was only significant for two of the four teams.

Nonetheless, formal leaders undertake important leadership responsibilities within their teams (Cotterill & Cheetham, 2017). As demonstrated in previous research, these responsibilities may include, but are not limited to, logistical duties (e.g., leading warm-

ups, organizing team events), motivating and encouraging teammates, facilitating team member relationships, enforcing team standards, resolving conflicts, and being a liaison between the coaching staff and players (e.g., Bucci, Bloom, Loughhead, & Caron, 2012; Cotterill & Cheetham, 2017; Gould, Voelker, & Griffes, 2013). Given the important role formal leaders hold within their teams, coaches should carefully consider whom they designate as team captains, keeping in mind that simply assigning an athlete as a formal leader does not ensure that the leadership they provide will be effective (Glenn & Horn, 1993). Moreover, it is important for coaches to provide their formal athlete leaders with support and leadership development opportunities as team captains have reported feeling a lack of initial support and unprepared to fill their leadership responsibilities (Cotterill & Cheetham, 2017; Voelker, Gould, & Crawford, 2011).

Contrary to previous research, age and interactional centrality were not identified as predictors of athlete leadership frequency nominations. There may be several reasons for these differing findings. Primarily, age and interactional centrality have been traditionally conceptualized as monadic variables (i.e., node attributes). As such, social network MR-QAP regressions were not used. For instance, in their analysis of the attributes that determine athletes' leadership quality, Fransen et al. (2015b) used normal linear regressions to examine age, among other attributes, and the node-specific social network measures of degree centrality. As an example of interactional centrality, Fransen et al. (2016) compared the percentage of leaders in a central position to a reference percentage (i.e., the statistical probability of the leader occupying a central position). However, the present study transformed the monadic variables to dyadic variables. In this way, the variables reflected characteristics of the relationship between players rather than

of each individual (see the Data Analysis section of the present study for a detailed discussion of this process). The non-significant findings in relation to age may also be attributed to the current sample, which ranged from 14 to 18 years old. While this appears to be a relatively sizable range, the standard deviation for each team was small. Therefore, there may not have been a large enough age gap to detect any statistically significant differences.

It was also found that informal athlete leaders were not looked to more frequently for leadership by their teammates than formal athlete leaders and athletes who self-reported as not holding a leadership position. This finding seems to contradict previous research, which has highlighted the importance of informal athlete leadership, especially within a shared leadership framework (e.g., Fransen et al, 2014; Loughhead & Hardy, 2005). Rather, in combination with our finding that participants on Team 1 and Team 2 reported looking more frequently to teammates holding a formal leadership status for leadership, the captaincy roles are reinforced. As with age and interactional centrality, informal athlete leadership was measured as a dyadic variable in the present study, whereas traditionally this construct has been measured as an attribute of each athlete (i.e., monadic variable). Consequently, when considered as a dyadic variable, athletes may not look to informal athlete leaders more frequently than formal athlete leaders or athletes who report not holding a leadership status. Further research in relation to informal athlete leadership as a dyadic variable is encouraged.

Alternatively, this finding may reflect a problem with informant accuracy as informal leadership status was self-reported by the participants (Bernard, Killworth, Kronenfeld, & Sailer, 1984). That is, participants may have inaccurately recalled social

interactions with their teammates (e.g., overestimated their leadership contributions within the team). Indeed, there are several examples where athletes reported being an informal leader but few of their teammates reported looking to them for leadership and vice versa (e.g., see Team 1, Player A). This is an important consideration as it not only challenges the self-reporting of informal athlete leadership status but may also impact research concerning role ambiguity/clarity and consequently role conflict. Future research is encouraged to examine the congruence between self-reported informal athlete leadership roles and team members' ratings of their teammates' informal leadership influence as well as the impact that congruence/incongruence has on various individual (e.g., athlete satisfaction) and team (e.g., communication) factors.

As detailed above, the current study extended our understanding of athlete leadership by examining dyadic predictors of the construct. Our findings suggest that a promising future direction with important theoretical implications is to continue supplementing our understanding of individual predictors of athlete leadership by examining dyadic predictors. Such information may help us determine why pairs of individuals are more or less likely to perceive one another as fulfilling leadership roles (Contractor, DeChurch, Carson, Carter, & Keegan, 2012). Researchers are also encouraged to investigate athlete leadership at other levels of analysis such as the triadic and group level. For instance, at the group level, researchers could examine how cohesive subunits (e.g., forwards, midfielders, defenders, and goalies in a soccer team) influence perceptions of leadership (Contractor et al., 2012). An additional avenue for researchers is to examine athlete leadership through the lens of complex systems. Specifically, one or more team members can simultaneously influence one or more team members. This is

known as n -ary relationships in network science. Adopting a complex systems approach, researchers can employ hypernetworks to examine these n -ary relationships. Specifically, while networks allow relationships between pairs of individuals (e.g., athletes) to be represented, hypernetworks allow researchers to generalise this to relationships between many individuals (Johnson & Iravani, 2007). As such, hypernetworks allow multilevel systems to be represented with the objective of integrating their micro-, meso-, and macro-level dynamics (Johnson, 2013). For an example of research using hypernetworks in sport, the reader is encouraged to see Ramos, Lopes, Marques, and Araújo (2017) who used hypernetworks to capture cooperative and competitive interactions in a soccer match at micro (interactions between players), meso (dynamics of a given critical event such as score changes), and macro (interactions between sets of players) levels.

Extending these implications further is the potential to use SNA approaches to examine a range of factors that influence a team's group dynamics (e.g., leadership, cohesion, roles, team norms). Using SNA to specifically test hypotheses or more generally examine the relationships between various group dynamic variables will allow researchers, coaches, and sport psychology consultants the ability to more aptly identify areas that may require intervention at various levels of analysis (e.g., individual, dyadic, network). For instance, Warner, Bowers, and Dixon (2012) used a social network approach to examine the structural cohesiveness (i.e., through efficacy, trust, friendship, and advice networks) of two women's collegiate basketball teams. These authors used SNA to uncover the patterns of interactions among individuals in the networks and suggested that this information may be used for the betterment of the team. Moving the analysis to the field of play, Bourbousson et al. (2015) used a social network approach to

examine the dynamics of team coordination and shared awareness within two U18 male basketball teams during real play. These authors suggested that this type of analysis could be used during performance to predict coordination breakdowns.

Limitations

The present study is not without limitations. Primarily, supplementary data (e.g., objective or subjective individual and team performance data, first-hand accounts from players and coaches, group dynamics data) were not collected. As such, no assertions can be made as to which team's athlete leadership network was most or least effective. Future research should consider collecting additional data either through traditional methods (e.g., individual interviews, focus groups, self-report questionnaires) or SNA methodologies to further examine the antecedents and consequences of shared athlete leadership. For instance, yet to be examined are the conditions under which shared or vertical (i.e., a single leader) athlete leadership is most required. That is, what is the relationship between athlete leadership (i.e., shared or centralized), situational characteristics (e.g., team size, time of season, level of competition [elite or recreational]), individual characteristics (e.g., age, gender, motivation for competing in sport), and group dynamics factors (e.g., cohesion, efficacy, trust)? Pursuing such questions is critical for the advancement of athlete leadership research.

The cross-sectional nature of the present study is also a limitation. Although such a design allowed the research team to demonstrate the degree of shared athlete leadership within each team and test a number of hypotheses, it did not allow for the analysis of athlete leadership over time. As such, it is unclear whether the leadership influence of each athlete remained stable or changed throughout the season. For instance, one of the

findings of the current study was the shared nature of athlete leadership. However, it is unknown if this would hold true across the team's life cycle. Moreover, data were collected mid- to late season to allow time for athlete leadership relationships to form. While time is an underexplored component of leadership, it has been suggested that shared leadership requires time to develop and is more likely to occur in mature teams (Perry, Pearce, & Sims Jr., 1999). As such, the decision to collect data at this time may have impacted the results. Using longitudinal designs in addition to the collection of supplementary data would allow researchers to investigate the temporal nature of athlete leadership. Such information would allow researchers to offer more informed athlete leadership support as well as to determine casual relationships between athlete leadership and a number of important individual, situational, and team factors.

Lastly, the question *I look to (teammate's name) for leadership* was used in the current study to determine the leadership ties among the players of each team. This approach is consistent with previous leadership research using SNA (e.g., Carson et al., 2007; Mehra et al., 2006). By asking the question in this way, it was our intention to meet the players where they were in their understanding of athlete leadership rather than imposing our views of the construct. As previously discussed, athletes were provided an opportunity to detail what they believed makes an effective leader. Despite this, athlete leadership as an amorphous term may have resulted in players focusing on different aspects of athlete leadership when answering the questionnaire (i.e., task, motivational, external, or social). This may have impacted the results and could have contributed to the non-significant/contradictory findings in relation to age, interactional centrality, and informal athlete leadership status.

Conclusion

Overall, the present findings demonstrated differences in the degree to which athlete leadership was shared within each team. Unique insights were gained through evaluating athlete leadership networks at multiple levels (i.e., individual, dyadic, network) using both visual and quantitative SNA methods. In addition, athletes reported looking to teammates who were formal leaders and skilled players more frequently for leadership. This information not only demonstrates the need to further examine the degree of shared athlete leadership in teams but also highlights the importance of considering the attributes of relationships when examining the construct. Such data may be used to more accurately address athlete leadership development efforts and inform our theoretical understandings of athlete leadership.

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CHAPTER 3

PSYCHOMETRIC PROPERTIES OF THE PROFILE OF EMOTIONAL COMPETENCE (PEC) WITH INTERCOLLEGAITE ATHLETES: IMPLICATIONS FOR ATHLETE LEADERSHIP RESEARCH

One result of the new attitudes is that captains are under more pressure. They have to make decisions quickly, in response to rapidly changing situations. They have to deal with players, including themselves, who are at a generally higher pitch of excitement, anxiety, elation or dejection. It is not surprising if traditional courtesies are eroded in such an atmosphere, or if the captain's own temper is liable to become flustered. Indeed, a certain amount of heat is required of a captain; aloofness at any rate is not a quality that goes down well with the average cricket team. (Brearley, 2015, p. 269)

In his book, *The Art of Captaincy*, former England cricket captain Mike Brearley discusses what it takes to be a leader on and off the field. One of the topics Brearley discusses is the expression of emotion among team members. While he contends that overt expressions of positive emotions (e.g., celebrating on the pitch, an exceptional performance by a teammate) can be a source of energy and cohesion for the collective, emotions can also prove challenging for athlete leaders to manage especially if these emotions are negative (e.g., dejection or disappointment). In the quotation above, Brearley comments on a generation of players who overtly express emotion noting that it can be difficult for athlete leaders to “deal with” the emotions of teammates, while also handling their own emotions. Brearley also confers that the emotions of athlete leaders

can directly impact the team. The term *emotional competence*², also labeled *emotional intelligence* or *emotional skills*, provides a scientific framework for these ideas.

Emotional competence refers to how individuals deal with intrapersonal and interpersonal emotional information (Mikolajczak, Quoidbach, Kotsou, & Nélis, 2009). Emotional competence “has potential to help scholars better understand leadership emergence, specific leadership behaviors, and leader effectiveness” (Walter, Cole, & Humphrey, 2011, p. 55). The investigation of emotional competence in relation to sport leadership, albeit scant, has centered on the coach (e.g., Chan & Mallett, 2011; Thelwell, Lane, Weston, & Greenlees, 2008) despite the prominent leadership role athletes play in sport teams (Cotterill & Fransen, 2016; Loughhead, 2017). Therefore, the purpose of the present study was to assess the construct validity of a self-report emotional competence questionnaire (i.e., Profile of Emotional Competence [PEC]; Brasseur, Grégoire, Bourdu, & Mikolajczak, 2013) with intercollegiate athletes. The PEC conceptually aligns with current directions in leadership development theory and may offer exciting implications for future athlete leadership research related to emotional competence.

Emotional Competence

While emotional competence has received increased attention from both mainstream media and the academic community over the past decade, its conceptualization has a fractured past dominated by two distinct theoretical approaches. The first perspective conceives emotional competence as a set of abilities that represent an intelligence operating on emotional information (Mayer, Salovey, & Caruso, 2004).

² Although the term emotional intelligence has been more commonly used in the sport and exercise literature, the term emotional competence was used in the present study because it is more consistent with findings (Kotsou, Nélis, Grégoire, & Mikolajczak, 2011; Nélis et al., 2011) showing these competences can be learned.

Ability emotional competence is often measured by a maximum performance test (i.e., performance tasks evaluated against expert or consensus scoring). The second perspective conceptualizes emotional competence using a trait framework. As such, emotional competence is placed within the domain of personality and based on behavioral dispositions (Petrides & Furnham, 2001). Trait emotional competence is often assessed through self-report measures that capture emotion-related self-perceptions. However, a tripartite model (Mikolajczak, 2009) offering a unifying view of emotional competence has also been forwarded that integrates both ability and trait perspectives by postulating three levels of emotional competence: knowledge (i.e., what people know about emotions), ability (i.e., the degree to which individuals can perform emotion regulation strategies), and trait (i.e., what individuals typically do during emotional situations; Mikolajczak, 2009). A major strength of viewing emotional competence through the lens of the tripartite model is that it does not dismiss either the ability or trait perspectives, but rather recognizes the important role that both play in how individuals deal with intrapersonal and interpersonal emotional information (Mikolajczak, 2009). Regardless of the perspective, Mikolajczak et al. (2009) note that there is a relative consensus that emotional competence refers to how individuals *identify* (i.e., being able to identify an emotion when it appears), *express* (i.e., being able to express emotions in a socially accepted manner), *understand* (i.e., being able to understand the causes and consequences of emotions), *regulate* (i.e., being able to manage emotions when they are contextually inappropriate), and *use* (i.e., being able to use emotions to facilitate reflection, decisions, and actions) intrapersonal and interpersonal emotional information.

Emotional Competence and Sport

Emotions are an inherent element of sport performance (i.e., individual and team performance) and influence a range of other performance components such as perceptions, cognitions, and actions (Hanin, 2007; Jones, 2003; Lazarus, 2000). Therefore, it is perhaps not surprising that a growing body of literature suggests that an individual's (e.g., athlete or coach) emotional competence may be an important consideration in the sport domain (Laborde, Dosseville, & Allen, 2016; Laborde, Mosley, Ackermann, Mrsic, & Dosseville, 2018; Meyer & Fletcher, 2017). In fact, in athlete samples, research has demonstrated associations between higher levels of emotional competence and pleasant emotions (Lane et al., 2010; Lane & Wilson, 2011; Lu, Li, Hsu, & Williams, 2010), enhanced neurophysiological stress responses (Laborde, Brüll, Weber, & Anders, 2011; Laborde, Lautenbach, & Allen, 2015; Laborde, Lautenbach, Allen, Herbert, & Achtzehn, 2014), more frequent psychological skill usage (Lane, Thelwell, Lowther, & Davonport, 2009), quality decision making (Vaughan, Laborde, & McConville, 2019), motivation to participate in sport (Sukys, Tilindienė, Cesnaitienė, & Kreivytė, 2019), and successful athletic performance (Kopp & Jekauc, 2018).

While most research related to emotional competence in sport has centered on its association with athletic performance, another avenue of inquiry has been the examination of emotional competence and leadership in sport teams, in particular coaching. Researchers have demonstrated a positive association between coaching efficacy and emotional competence (Hwang, Feltz, & Lee, 2013; Thelwell et al., 2008), and shown that coaches' emotional competence supported athletes' need satisfaction (Watson & Kleinert, 2018) and played a role in decreasing coach burnout and turnover intention, while increasing job satisfaction (Lee & Chelladurai, 2018). Further, Barlow

and Banks (2014) found that coaching using emotional competence decreased athletes' anxiety and increased athletes' general self-efficacy.

In addition to the coach, researchers have demonstrated the important role athletes have in providing team leadership (for reviews, see Cotterill & Fransen, 2016; Loughhead, 2017). Specifically, athletes provide leadership when they influence their teammates to achieve common objectives (Loughhead, Hardy, & Eys, 2006). To our knowledge, no research has explicitly examined emotional competence in relation to athlete leadership; however, several studies have alluded to this relationship. For instance, some researchers have identified athletes' ability to control their emotions when assuming leadership roles (i.e., *regulation* of emotions), such as Dupuis, Bloom, and Loughhead (2006), who interviewed six former ice hockey team captains about their leadership experiences. Similarly, in a qualitative investigation with female high-performance curlers, the team's Skip (i.e., leader) spoke to her role as a team leader and her awareness about her emotional self-regulation:

I control my own emotions for the sake of the team ... There's a lot of self-control where I can be madder than a hornet about something and I cannot show it because it's upsetting to the rest of the team. (Tamminen & Crocker, 2013, p. 741)

The importance of how athlete leaders *express* their emotions has also been identified in the literature. For instance, returning to the study by Tamminen and Crocker (2013), the Skip also noted the importance of being aware of her facial expressions and not shaking her head but rather remaining focused on the present play so as not to express her anger in a way that would be detrimental to the team. As discussed by Hanin (2007), the

emotional states of key players such as leaders may impact the emotional dynamics of the entire team. In addition, Voelker, Gould, and Crawford (2011) emphasized the importance of athlete leaders' *interpersonal* emotional competence. In their examination of the experiences of high school sport captains, participants noted that a challenging aspect of their captainship was managing and dealing with others (e.g., making sure their teammates were managing pre-competition stressors). This importance was echoed by South African cricket captain Graeme Smith who, reflecting on players coming to him to discuss personal issues, noted that a key to being a good team leader is having "an understanding of emotional intelligence, and knowing your players from the inside as well as the outside" (Smith & Manthorp, 2009, p. 152).

At this point, it should be noted that a growing body of literature supports the shared nature of athlete leadership where influence stems from many team members (for reviews, see Cotterill & Fransen, 2016; Loughhead, 2017). Several researchers have demonstrated that athlete leadership extends well beyond what is provided by the team captain (e.g., Fransen, Vanbeselaere, De Cuyper, Vande Broek, & Boen, 2014; Fransen et al., 2015; Duguay, Hoffmann, Guerrero, & Loughhead, 2019). For instance, in their examination of athlete leadership in four competitive female youth soccer teams, Duguay, Loughhead, and Cook (2019) asked athletes to rate how frequently they looked to each of their teammates for leadership. Consistent with shared leadership theory, *all* athletes from each team, regardless of their self-reported leadership status (i.e., formal leader, informal leader, no leadership status) were looked to by at least one of their teammates for leadership. As such, when investigating emotional competence in relation to athlete leadership, we believe it is important to consider all team members.

The Current Study

As illustrated in the opening quotation from Brearley and supported by the evidence of emotional competence related topics in athlete leadership research, how athlete leaders deal with intrapersonal and interpersonal emotional information appears to warrant further attention. As no known published study has explicitly examined the relationship between athlete leadership and emotional competence, an important first step is to consider possible measurement tools (e.g., emotional competence conceptualization, psychometric properties). As noted by Laborde et al. (2016) in their systematic review of emotional competence in sport and exercise, “researchers should reflect carefully about the scale (and corresponding EI [emotional intelligence] conceptualization) they adopt, as this decision will no doubt inform subsequent decisions and current practices” (p. 864).

Accordingly, the purpose of the present study was to examine the psychometric properties of the PEC (Brasseur et al., 2013) with a sample of intercollegiate athletes. The PEC was used in the current study for three reasons. First, the PEC is the only questionnaire to measure each of the five core emotional competencies (i.e., identification, expression, understanding, regulation, and utilization) separately for one’s own and others’ emotions (Brasseur et al., 2013; Laborde et al., 2018). As such, information gleaned from the PEC offers valuable theoretical (e.g., offers an encompassing view of trait emotional competence) and practical (e.g., interventions can be targeted) information. Second, distinguishing between intrapersonal and interpersonal aspects of each competency aligns with current directions in leadership development theory. Specifically, researchers have argued that both intrapersonal (i.e., leader development) and interpersonal (i.e., leadership development) competencies should be

targeted in athlete leadership development efforts (Duguay, Loughhead, & Munroe-Chandler, 2016). Third, while Brasseur et al. (2013) demonstrated promising psychometric properties related to the PEC's internal consistency, factorial structure, and concurrent/discriminant validity, it has not yet been validated in a sport context. Despite this, the PEC's five dimensions have been used to direct training of emotional competence through sport (e.g., Laborde et al., 2018). As it cannot be assumed that the validity of a measure will remain across different samples (Lane, 2012), it is important to examine the construct validity of the PEC with a sample of athletes.

Method

Participants

A convenience sample of 310 intercollegiate athletes (186 females, 121 males, 1 non-binary, 1 undecided, 1 no response; $M_{\text{age}} = 19.84$, $SD = 1.66$) were recruited from four universities competing in either Atlantic University Sport (AUS; $n = 243$) or the Atlantic Collegiate Athletic Association (ACAA; $n = 67$). The AUS is a member of U Sports, Canada's governing body for university athletics and the ACAA is a member of the Canadian Collegiate Athletic Association (CCAA), Canada's governing body for collegiate athletics. These two associations represent the highest level of intercollegiate sport in Canada. Participants competed in either football ($n = 73$, 23.5%), soccer ($n = 69$, 22.3%), hockey ($n = 62$, 20.0%), volleyball ($n = 35$, 11.3%), basketball ($n = 30$, 9.7%), rugby ($n = 18$, 5.8%), track and field ($n = 13$, 4.2%), or wrestling ($n = 10$, 3.2%). At the time of data collection, participants had been members of their intercollegiate teams for, on average, 2.22 years ($SD = 1.22$) and involved in their sports for, on average, 10.62 years ($SD = 4.31$).

Measures

Emotional competence was assessed using the PEC (Brasseur et al. 2013; see Appendix E), which was developed in alignment with the tripartite model to measure emotional competence at the trait level (see Appendix E). The 50-item questionnaire measures five competencies (i.e., lower-order factors) on both an intrapersonal and interpersonal level (i.e., higher-order factors): intrapersonal identification (e.g., “I am aware of my emotions as soon as they arise”), interpersonal identification (e.g., “I am good at sensing what others are feeling”), intrapersonal expression (e.g., “I am good at describing my feelings”), interpersonal expression (e.g., “Other people tend to confide in me about personal issues”), intrapersonal understanding (e.g., “I don’t always understand why I respond the way I do”), interpersonal understanding (e.g., “Most of the time I understand why people feel the way they do”), intrapersonal regulation (e.g., “When I am sad, I find it easy to cheer myself up”), interpersonal regulation (e.g., “I am good at lifting other people’s spirits”), intrapersonal utilization (e.g., “I try to learn from difficult situations or emotions”), and interpersonal utilization (e.g., “I know what to do to motivate people”). Brasseur et al. (2013) have also suggested that the PEC can be used to acquire a global EC score (i.e., combination of all competencies). Of the 50 items, 21 are reversed scored. All items are scored on a 5-point Likert scale anchored at 1 (*the statement does not describe you at all or you never respond like this*) and 5 (*the statement describes you very well or that you experience this particular response very often*).

Procedure

Once clearance was received from the university’s research ethics board, emails describing the nature of the study were sent to 51 university head coaches from four

institutions with teams competing in either U Sports or the CCAA (see Appendix F). Nineteen coaches agreed to allow the lead researcher to meet with their teams to invite their athletes to participate in the current study. The lead researcher worked with each coach to schedule a time and location (i.e., practice facility or classroom on campus) that was convenient for their team to meet. At each meeting, the lead researcher began by explaining the nature of the study and the rights of the participant to the athletes (see Appendix G). Questionnaires were then handed out in envelopes and athletes were informed that their completion of the questionnaires would indicate informed consent. Once completed, athletes were instructed to seal their questionnaires in the envelopes and place them in a box at the front of the room upon exiting. If athletes did not want to participate, they were instructed to simply leave their questionnaires blank and return them in the envelope provided.

Data Analysis

Model fit for the PEC was evaluated using confirmatory factor analysis (CFA) and exploratory structural equation modeling (ESEM) in the *Mplus* 8 software program (Muthén & Muthén, 1998-2017). Since a hypothesized structure representing PEC items existed, a CFA was first conducted to test the a priori structure against the data. Within CFA, each item can load on one specified factor (i.e., target loadings), while item cross-loadings (i.e., nontarget loadings) are constrained to zero (Asparouhov & Muthén, 2009; Marsh, Morin, Parker, & Kaur, 2014). Despite the popularity of testing a priori factorial structures using CFA, particularly in sport and exercise psychology (Perry, Nicholls, Clough, & Crust, 2015), its restrictive nature has been criticized by researchers (Asparouhov & Muthén, 2009; Marsh et al., 2014). Specifically, constraining cross-

loadings to zero may prove problematic especially when examining multidimensional personality instruments such as trait emotional competence questionnaires (e.g., the PEC) where items are intended to reflect conceptually related, but distinct, constructs (Perera, 2015). ESEM, which allows for the integration of exploratory factor analysis (EFA) and CFA methods, permits all items to load on all non-intended factors (Asparouhov & Muthén, 2009). By allowing all target and nontarget loadings to be freely estimated, ESEM provides a less restrictive framework than is possible through CFA (Marsh et al., 2014). Accordingly, ESEM may be particularly relevant for examining the latent structure of the multidimensional PEC. As recommended by Marsh et al. (2014), if the ESEM model presents improved fit statistics and interpretability compared to the CFA solution, the ESEM model should be retained for subsequent analyses. However, if the model fit statistics do not differ significantly between the CFA and ESEM solutions, the CFA model should be retained based on parsimony (Marsh et al., 2014).

We initially sought to examine the inventory through first-order CFA and ESEM approaches.³ A robust maximum likelihood estimator (MLR) was used for both the CFA and ESEM analyses. MLR produces standard errors and model fit statistics that are robust to nonnormality (Muthén & Muthén, 1998-2017). The ESEM solution was carried out using oblique target rotation where non-intended factor loadings were ‘targeted’ to be close to zero. We used the chi-square statistic (χ^2), comparative fit index (CFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA) to evaluate model fit of the CFA and ESEM models. Evidence

³ If the first-order factor structure had demonstrated acceptable model fit, it was our intention to subsequently explore the hierarchical (i.e., higher-order) structure of the PEC (i.e., intrapersonal emotional competence and interpersonal emotional competence). However, the first-order factor structure was not supported (see the Results section for details).

of acceptable model fit included a CFI $\geq .90$, SRMR $\leq .08$, and RMSEA $\leq .08$ (Browne & Cudeck, 1992; Marsh, 2007), while evidence of good model fit included a CFI $\geq .95$, SRMR $\leq .08$, and RMSEA $\leq .06$ (Hu & Bentler, 1999). With respect to the ESEM model, each item was required to have a primary factor loading of .32 or greater, while no item could have cross-loadings of .32 or greater (Hoffmann & Loughhead, 2019; Rathwell & Young, 2016; Tabachnick & Fidell, 2013). Finally, we used Cronbach's alpha to estimate the reliability of the latent factors.

Results

Preliminary Data Screening

Inspection of the data revealed 33 missing data points (representing 0.003% of the data), which were handled with the MLR estimator. Multivariate outliers were evaluated in the context of the CFA and ESEM models using Mahalanobis Distance. Nineteen outliers were identified and removed from the CFA model, while 17 outliers were identified and removed from the ESEM model. Most of the outlier cases (i.e., 14) were identified in both models. Assessment of normality for the PEC scores showed that the univariate skewness and kurtosis values of all items were within the acceptable limits of ± 2 and ± 7 , respectively (In'nami & Koizumi, 2013)

Main Analyses

We tested the 50-item, 10-factor PEC (i.e., intrapersonal identification, interpersonal identification, intrapersonal expression, interpersonal expression, intrapersonal understanding, interpersonal understanding, intrapersonal regulation, interpersonal regulation, intrapersonal utilization, interpersonal utilization) using both CFA and ESEM approaches. The 10-factor CFA model could not be estimated due to a

covariance matrix that was not positive definite, which was most likely the result of correlations that approached 1 between the factors of intrapersonal identification and intrapersonal understanding (i.e., $r = .94$), as well as interpersonal identification and interpersonal understanding (i.e., $r = .93$). Summary statistics for the 10-factor ESEM model demonstrated acceptable-to-good fit: $\chi^2(770) = 1021.51, p < .001$, CFI = .938, SRMR = .028, RMSEA = .033 (95% confidence interval [.028, .039]). However, examination of the data showed that the a priori factor structure of the ESEM model was not supported. For instance, as demonstrated in Table 5, the items relating to intrapersonal identification did not converge in an interpretable way on their intended factor. Instead, three of the five items demonstrated significant cross-loadings (i.e., .31 – .43, $ps < .01$) on the intrapersonal understanding factor. In total, 36 items had significant cross-loadings (range_{negative standardized loading} [–.33, –.13]; range_{positive standardized loading} [.12, .53], $ps < .05$), and 19 items did not significantly load onto their targeted factor (range_{negative standardized loading} [–.19, –.07]; range_{positive standardized loading} [.00, .46], $ps > .05$). Cronbach’s alpha scores for the latent factors ranged from .52 to .80 (intrapersonal regulation $\alpha = .80$; intrapersonal understanding $\alpha = .74$; interpersonal identification $\alpha = .71$; interpersonal utilization $\alpha = .70$; interpersonal understanding $\alpha = .68$; interpersonal regulation $\alpha = .68$; intrapersonal expression $\alpha = .68$; interpersonal expression $\alpha = .65$; intrapersonal identification $\alpha = .54$; intrapersonal utilization $\alpha = .52$). Overall, findings indicated the need for a more parsimonious model.

Accordingly, ESEM post-hoc modifications were undertaken through an iterative process of item-deletion (Hoffmann & Loughhead, 2019; Rathwell & Young, 2016). Our aim through this process was to obtain a factor structure that aligned as close as possible

with Brasseur et al. (2013) (i.e., preserve the original 10-factor model), while maximizing the number of items retained. Despite these efforts, post-hoc modifications substantially altered the measure to the extent that the underlying constructs did not match the theorized factor structure of the PEC in a discernible way. As the aim of the present study was to test whether the original factor structure of the PEC could be supported with a sample of intercollegiate athletes, we saw little value in introducing a substantially revised model with no strong theoretical basis and that contained only a subset of the original 10 factors assessed by the PEC.

Discussion

Sport is an emotion-laden context that continually challenges athletes to deal with one's own and others' emotions. Drawing on existing athlete leadership literature, we believe identifying, expressing, understanding, regulating, and using intrapersonal and interpersonal emotional information are key competencies related to athlete leadership. In fact, it is evident that athletes have spoken of emotional competence related topics as being important to successfully providing team leadership (e.g., Dupuis et al., 2006; Tamminen & Crocker, 2013; Voelker et al., 2011). Despite this, researchers examining athletes' contributions to team leadership have yet to explicitly consider the role of emotional competence. To advance research in this area, the present study sought to examine the psychometric properties of the PEC with a sample of intercollegiate athletes as an important first step towards determining a measurement tool that can be used to further study the relationship between emotional competence and athlete leadership.

The findings of the present study did not support the 10-factor PEC with a sample of intercollegiate athletes. These findings seem to align with previous validity studies of

trait-based emotional competence measures in sport. Specifically, attempts to validate the Emotional Intelligence Scale (i.e., Lane, Meyer, et al., 2009) and the Bar-On Emotional Quotient Inventory (i.e., Stanimirovic & Hanrahan, 2012) with athletes have also failed to support the a priori theoretical factor structures of the measures. Furthermore, a preliminary validation of an Arabic version of the PEC with a combined sample of athletes and non-athletes also highlighted potential problems with this questionnaire (Aouani, Slimani, Bragazzi, Hamrouni, & Elloumi, 2019). Specifically, the factor structure of the PEC was tested using EFA with the two-factor solution (i.e., intrapersonal and interpersonal) accounting for 62.1% of variance; however, intrapersonal understanding and interpersonal regulation did not yield satisfactory loadings on their expected factors and could not be retained. Taken together, these trait-based emotional competence inventories appear to suffer from less than ideal psychometric properties with athlete samples.

As it relates to the present study, we offer two observations in relation to our findings. First, many items significantly loaded on non-intended factors and/or did not significantly load onto their intended factors in the ESEM analysis. These findings suggest that a more parsimonious model is required for an athlete population. However, significant changes to the factor structure would negate a proposed strength of the PEC; namely, that it is the only questionnaire to specifically differentiate for each of the five core emotional competencies, separately for one's own and others' emotions (Brasseur et al., 2013). Alternatively, researchers may need to revisit and revise the items of the PEC to ensure that they appropriately load onto the 10 distinct factors with athlete samples.

On this note, our second observation relates to the use of negatively worded items

in the PEC. Negatively worded items are most often reverse oriented (i.e., negated items; involves adding negative particles) but may also be reverse worded (i.e., polar opposite items; using words with the opposite meaning) (van Sonderen, Sanderman, & Coyne, 2013; Zhang, Noor, & Savalei, 2016). Using a combination of positively worded and negatively worded items in self-report measures is a common strategy purported to reduce response bias (e.g., acquiescence and inattention; van Sonderen et al., 2013). However, researchers have questioned the effectiveness of this strategy, contending that respondent inattention/carelessness (i.e., missing subtle item reversals) and confusion (i.e., difficulties interpreting item reversal) may negatively impact a measure's psychometric properties (e.g., unexpected factor structure and reduced scale reliabilities) (DiStefano & Motl, 2006; Woods, 2006; van Sonderen et al., 2013; Zhang et al., 2016). The PEC includes 21 items that are negatively worded, and reverse scored. As shown in Table 5, many of these items demonstrated weak loadings on their target factors. In fact, in the ESEM analysis, only eight of the 31 items that significantly loaded on their target factors were negatively worded. It is possible that these weak factor loadings were the result of respondent inattention or confusion. It should be noted that Lane, Meyer, et al. (2009) raised similar concerns in their attempt to validate a trait emotional competence questionnaire (i.e., the Emotional Intelligence Scale) with an athlete sample. Indeed, athletic samples may magnify the limitations of negatively worded items (Lane, Meyer, et al., 2009).

Taken together, further validation work on the PEC is required with athlete samples. To highlight the importance of undertaking such work, we would like to draw on the established body of research beyond the context of sport that has taken a vested

interest in the associations between emotional competence and leadership, with the aim of demonstrating possible areas of future study. In particular, we would like to emphasize two lines of inquiry that relate to current topics in athlete leadership research. First, in their review of athlete leadership literature, Cotterill and Fransen (2016) recommended that researchers build on the idea of shared athlete leadership by examining the role of *informal* athlete leaders (i.e., emergent athlete leaders), rather than focusing solely on team captainship (i.e., formal leadership). Informal athlete leaders are not formally appointed to a leadership position (i.e., team captain) but emerge through their interactions and communications with teammates (Loughead et al., 2006). Drawing primarily from literature related to organizational studies (e.g., Côté, Lopes, Salovey, & Miners, 2010; Hong, Catano, & Liao, 2011; Wolff, Pescosolido, & Druskat, 2002), there is support for the idea that emotionally competent individuals are more likely to emerge as leaders. As covered in detail by Côté et al. (2010), emotional competence may relate to leadership emergence through several complementary mechanisms including accurate social perception (e.g., emotionally competent individuals are able to identify, understand, and subsequently use others' emotions to guide their own behavior and influence others), the direct influence of emotions on cognitive thinking (e.g., emotionally competent individuals are able to use their understanding of the causes and consequences of emotions to process information related to team tasks), and the effective regulation of emotions in self and others (e.g., emotionally competent individuals are able to regulate team members' excitement or frustration to facilitate individual and team performance). Accordingly, we encourage researchers to consider the possible relationship between emotional competence and the emergence of athlete leaders in sport

teams, especially in relation to shared athlete leadership.

A second topic in athlete leadership research that has received considerable attention is the examination of athlete leadership behaviors, which has been in part studied through the lens of transformational leadership. Transformational athlete leadership is expressed when formal or informal athlete leaders seek to build relationships with teammates (i.e., followers) based on personal, emotional, and inspirational exchanges with the aim of developing their teammates (Callow, Smith, Hardy, Arthur, & Hardy, 2009). Positive associations have been demonstrated between transformational athlete leadership and various indicators of effective team functioning including task and social cohesion (Callow et al., 2009; Price & Weiss, 2011; Price & Weiss, 2013), collective efficacy (Price & Weiss, 2011), intrateam communication (Smith, Arthur, Hardy, Callow, & Williams, 2013), and motivation (i.e., ability beliefs, motivational orientations, and social orientations; Vidic & Burton, 2011).

Transformational leadership has received much focus in the emotional competence literature (Walter et al., 2011). In a review of 20 empirical studies, Kim and Kim (2017) reported that most studies (i.e., $n = 15$) provided empirical support for the relationship between emotional competence and transformational leadership. Considering the dimensions most often associated with this style of leadership (i.e., idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation), it is easy to understand the interest in studying its relationship with emotional competence. For instance, transformational leaders may use emotional appeals (e.g., the ability to understand and use others' emotions) to provide inspirational motivation to their followers (George, 2000) or seek to understand and regulate others' emotions when

providing individual consideration (Harms & Credé, 2010). Given the theoretical and empirical links between higher levels of emotional competence and transformational leadership, as well as the positive associations between transformational athlete leadership and indicators of effective team functioning (e.g., task and social cohesion, communication, collective efficacy), we encourage researchers to consider possible associations between emotional competence and transformational leadership among athletes.

Despite these exciting opportunities for future research, it is important to note that while emotional competence has been touted as the “sine qua non of leadership” (Goleman, 1998, p. 93), others have voiced concerns regarding emotional competence’s potential relevance to the field (e.g., Antonakis, 2003; Zaccaro & Horn, 2003). In fact, some researchers are quite divisive on the topic (Antonakis, Ashkanasy, & Dasborough, 2009). Overall, the existing research seems to temper extreme claims of emotional competence as *the* indispensable component of leadership but support a link between the two constructs (Walter et al., 2011). Nevertheless, a contention of scholars who express reservations regarding the relationship between emotional competence and leadership relates to the measurement of the construct (Antonakis et al., 2009; Kim & Kim, 2017). Returning to the review conducted by Kim and Kim (2017), the remaining five of 20 studies were found to be skeptical of the relationship between emotional competence and transformational leadership, “commonly pointing out the problem with EI [emotional intelligence] measures and emphasizing the need for more valid and reliable assessment tools” (p. 377).

As it relates to the present study and future athlete leadership/emotional

competence research, we encourage continued psychometric testing of the PEC and other measures of emotional competence (ability or trait) that are built on strong theoretical and empirical grounds. We believe that including experts in emotional competence and athletes in the assessment of content validity might help determine if the factor structure of the PEC is relevant to an athlete population (Lane, Meyer, et al., 2009). Researchers are encouraged to scrutinize the intended meaning of the PEC items and latent factors with athlete samples. An alternative option is to start fresh using qualitative approaches to examine emotional competence with athlete samples. Readers are directed to Hoffmann and Loughhead (2019) and Benson and Eys (2017) for examples of questionnaire development studies that entailed including their target population in multiphase item development processes (i.e., item development based on qualitative work with the target population and think-aloud interviews to assess the content validity of the items with the target population). It is also important to consider that establishing the construct validity of a measure, especially across different contexts, is an ongoing process (Lane, 2012). As the present study included only intercollegiate athletes, researchers are encouraged to test the factor structure of the PEC with athletes representing a broader assortment of ages and levels of competition. In this way, a more complete understanding of the appropriateness and potential utility of the PEC in sport can be obtained.

Conclusion

Although no research, to our knowledge, has specifically examined emotional competence in relation to athlete leadership, anecdotal and empirical evidence suggests that how athlete leaders deal with intrapersonal and interpersonal emotional information is an important consideration. To further examine this relationship, it is important to have

a psychometrically sound measure of emotional competence that can be used with athletes. Accordingly, we chose to examine the psychometric properties of the PEC because we believed its theoretical foundation and factorial structure (i.e., measure each of the five core emotional competencies separately for one's own and others' emotions) held promise for future athlete leadership research. The failure to demonstrate adequate psychometric properties with an intercollegiate athlete sample means that the interpretation of PEC scores and constructs may be inaccurate in this context. The validation of any measure is certainly an ongoing process and we encourage researchers to further examine the PEC with other athlete samples to build a comprehensive understanding of its psychometric properties. However, based on the findings of the present study, we strongly caution the use of the PEC in athlete leadership research and applied settings without such validation efforts.

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CHAPTER 4

FACILITATING THE DEVELOPMENT OF SHARED ATHLETE LEADERSHIP: INSIGHTS FROM INTERCOLLEGIATE COACHES

A number of indicators of effective team functioning such as team resilience, collective efficacy, and cohesion have been associated with shared athlete leadership (e.g., Fransen, Vanbeselaere, De Cuyper, Vande Broek, & Boen, 2014; Loughhead et al., 2016; Morgan, Fletcher, & Sarkar, 2015), a team-level phenomenon where athletes engage in a collaborative leadership process. Researchers have suggested that coaches play a pivotal role in developing shared leadership among their athletes (Bucci, Bloom, Loughhead, & Caron, 2012; Fransen, Mertens, Cotterill, Vande Broek, & Boen, 2019); however, scant information is available on *how* coaches facilitate this process. Therefore, the present study sought to gain insight into how intercollegiate coaches facilitate the development of shared athlete leadership in their teams.

Shared leadership has received considerable attention in recent years, with academic interest in the concept gaining momentum since the publication of Pearce and Conger's influential book in 2003 (Barnett & Weidenfeller, 2016). In this text, Pearce and Conger described shared leadership 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" (p. 1). While this is an oft-cited definition of shared leadership, the construct has been conceptualized in several different ways (for a review, see Zhu, Liao, Yam, & Johnson, 2018). For example, Carson, Tesluk, and Marrone (2007) described shared leadership as "an emergent team property that results from the distribution of leadership influence across multiple team members" (p.

1218), while Lord, Day, Zaccaro, Avolio, and Eagly (2017) described it “in terms of how different individuals enact leader and follower roles at different points in time” (p. 444). As such, Carson et al.’s definition highlights the lateral influence among peers, while Lord et al.’s focuses on how leader and follower roles shift among individuals over time. Regardless of how shared leadership is conceptualized, Zhu et al. (2018) noted three commonalities: (1) shared leadership involves lateral influence, (2) shared leadership is an emergent team phenomenon, and (3) leadership roles and influence are dispersed across team members. Characterized in this way, shared leadership challenges traditional views of leadership that rely heavily on a leader-centric approach (i.e., vertical leadership). However, scholars have emphasized that both structures of team leadership are important and act in supplementary ways (Carson et al., 2007; Fausing, Joensson, Lewandowski, & Bligh, 2015). In fact, Pearce (2004) suggested that “without ongoing support and maintenance from the vertical leader, shared leadership is likely to fail.” (p. 54).

Drawing primarily from research in business contexts, the vertical team leader (also described as the formal team leader) may facilitate the development of shared leadership through formal team leader factors (e.g., leadership style, characteristics, and behaviors). For instance, researchers have suggested that certain leadership styles such as empowering leadership (Fausing et al., 2015; Hoch, 2013; Margolis & Ziegert, 2016; Pearce, 2004), transformational leadership (Hoch, 2013; Pearce, 2004), and servant leadership (Wang, Jiang, Liu, & Ma, 2017) may create conditions under which shared leadership is likely to develop. Behaviors related to these specific leadership styles are primarily person-focused (e.g., empathy, motivation, participation, support, role

modeling) and concerned with the well-being and development of team members (Burke et al., 2006; Ceri-Booms, Curçeu, & Oerlemans, 2017). Vertical leaders may also influence team characteristics (e.g., team collectivism, trust, cohesion, and personality) that may facilitate the emergence of shared leadership (for reviews, see Wu, Cormican, & Chen, 2018; Zhu et al., 2018). For example, to develop a climate supportive of shared leadership, vertical leaders have been encouraged to set collective goals, allow team members to participate in decision-making, model shared leadership behaviors, and select team members whose leadership philosophies align with that of the team (Carson et al., 2007; Pearce, 2004). In fact, an internal team environment characterized by shared purpose, social support, and voice has been positively associated with shared leadership emergence (Carson et al., 2007; Wu et al., 2018). Collectively, these team characteristics are believed to create a context where team members are encouraged to both offer leadership and accept the leadership of their teammates (Carson et al., 2007).

Researchers have supported the value of developing shared leadership in teams (for a detailed review, see Zhu et al., 2018). In a recent meta-analysis on shared leadership, Wu et al. (2018) found a positive association between shared leadership and positive team outcomes related to group behavioral processes (e.g., networking and problem-solving behaviors), attitudinal outcomes (e.g., team satisfaction, social integration, and trust), team cognition (e.g., team efficacy, potency, and creativity), and team performance (e.g., subjective ratings and objective indicators). Similarly, in their meta-analysis on shared leadership and team effectiveness, Wang, Waldman, and Zhang (2014) found shared leadership to be positively related to team effectiveness, operationalized as behavioral processes and emergent states (e.g., team cohesion,

coordination, and helping), attitudinal outcomes (e.g., team satisfaction, commitment, and identification), subjective ratings of performance (e.g., from team leaders or team members), and objective performance indicators (e.g., actual sales and productivity). Taken together, researchers have provided evidence for the value of developing shared leadership in teams, a process which may be supported and maintained by a team's vertical leader.

In sport, the primary role of the coach (i.e., traditionally characterized as the vertical leader) is to facilitate athlete and/or team performance; however, this process encompasses much more than providing athletes with technical and tactical support. That is, coaches also often work to foster intrapersonal and interpersonal skills that benefit their athletes in and beyond the sporting context (e.g., resilience, teamwork, character, confidence, and leadership; Cruickshank & Collins, 2015). As it pertains to the present study, a growing body of literature supports the shared nature of athlete leadership where influence extends beyond what is provided traditionally by the team captain (e.g., Fransen et al., 2014; Duguay, Hoffmann, Guerrero, & Loughead, 2019; Duguay, Loughead, & Cook, 2019). In this way, athletes work together through the fulfillment of formal (i.e., appointed by the coaching staff or selected through a team vote) and informal (i.e., not officially appointed or selected) leadership roles to provide team leadership over the course of a team's lifespan (Duguay, Hoffmann, et al., 2019). To date, researchers have identified several positive outcomes associated with shared athlete leadership including team resilience, task and social cohesion, and collective efficacy (Fransen et al., 2014; Loughead et al., 2016; Morgan, et al., 2015). Furthermore, researchers have suggested that coaches play an important role in developing shared

leadership among their athletes (Bucci et al., 2012; Fransen et al., 2019); however, little research has examined how coaches facilitate this process.

The insight available related to the development of shared athlete leadership has generally come from qualitative studies involving coaches. In their study examining elite male ice hockey coaches' perceptions of athlete leadership, Bucci et al. (2012) reported that most coaches discussed collective or team leadership, which varied from a leadership group involving several athletes to coaches asking every player to lead within their personal strengths. Coaches also discussed developing leadership throughout their entire team by providing all athletes with opportunities to lead and make decisions. Similarly, Cotterill, Cheetham, and Fransen (2019) noted the use of athlete leadership groups among elite male rugby coaches. In their interviews examining coaches' perceptions of the role of the team captain in professional rugby, Cotterill et al. reported that coaches discussed the use of leadership groups to provide greater leadership to the team (i.e., share the leadership responsibilities), develop future leaders, and provide support for the team captain. Athletes have also echoed the importance of leadership groups. For instance, in interviews with professional rugby captains regarding their captaincy experiences, Cotterill and Cheetham (2017) noted that the captains discussed leadership groups as being a key component of effective captaincy, allowing them to share the leadership workload.

These insights from Bucci et al. (2012) and Cotterill and colleagues (Cotterill et al., 2019; Cotterill & Cheetham, 2017) provide initial evidence that coaches are facilitating the development of shared athlete leadership in their teams. Nonetheless, there remains a gap in the literature in terms of understanding how coaches undertake this

process. For instance, little is known about the characteristics of athlete leadership groups (e.g., size, selection, or roles) or how coaches intentionally implement leadership development efforts at the team level. Furthermore, it is unknown the ways in which coaches create an environment that is conducive to shared athlete leadership. To our knowledge, researchers have yet to query coaches specifically about the strategies they use to target the development of shared athlete leadership. Therefore, the purpose of the current study was to gain insight into intercollegiate coaches' practices for facilitating the development of shared athlete leadership in their teams.

Method

Philosophical Assumptions

A researcher's or research team's philosophical assumptions directly inform all decisions in connection with each stage of research (Smith & Caddick, 2012). As such, we would like to acknowledge the philosophical assumptions underpinning this study to provide a foundation from which our subsequent processes and interpretations can be considered, understood, and evaluated. The present study is situated in an interpretive paradigm; the philosophical assumptions underpinning this study were ontological relativism (i.e., social reality is humanly constructed, multiple, and subjective) and epistemological constructivism (i.e., the relationship between the researchers and that being studied was viewed as interrelated, not independent; Smith & Caddick, 2012; Sparkes & Smith, 2014).

We would also like to acknowledge that the lead author (A.D.) competed as an athlete in the U Sports conference for five years, held a formal leadership position for multiple years with her team (i.e., assistant captain and then captain), and was an assistant

coach in the U Sports conference for one year. While drawing on these experiences helped A.D. build rapport with the participants, she was also aware that they influenced how she subsequently understood and interpreted the data. Furthermore, A.D. was very familiar with the literature related to athlete leadership and shared leadership as she had published works on these topics (e.g., Duguay, Loughead, & Munroe-Chandler, 2016; Duguay, Hoffmann, et al., 2019; Duguay, Loughead, et al., 2019). As such, critical friend discussions were particularly valuable (see the Quality Criteria section for additional information related to critical friend discussions).

Participants

Maximum variation sampling (Sparkes & Smith, 2014) was used to recruit 15 current U Sports ($n = 10$) and Canadian Collegiate Athletics Association (CCAA; $n = 5$)⁴ head coaches from a variety of interdependent sport teams. Accordingly, both female and male coaches were recruited and a total of 11 academic institutions are represented in the current sample with no more than two coaches recruited from any one institution. A criterion-based sampling approach (Patton, 2002) was also adopted whereby head coaches had to have a minimum of five years of head coaching experience with their current U Sports or CCAA teams. Additionally, participants needed to report having a history of intentionally facilitating the development of shared athlete leadership in their teams. At the time of the interviews, the coaches ranged in age from 33 to 61 years ($M = 46.20$ years, $SD = 9.22$) and had, on average, 21.33 ($SD = 9.68$) years of head coaching experience in their sport, 12.27 ($SD = 5.68$) of which were spent with their current team. Information concerning the coaches' characteristics is summarized in Table 6.

⁴ These two associations represent the highest level of intercollegiate sport in Canada.

Procedure and Data Generation

Upon obtaining ethical clearance to conduct the present study from the lead author's university, 50 coaches were contacted via email (see Appendix H) and invited to participate in the present study. The recruitment email included a letter of information (see Appendix I), description of the purpose and nature of the study, the inclusion criteria, and a description of shared athlete leadership that read: "Athlete leadership is shared when *multiple* team members (i.e., athletes) provide leadership to the team." This definition is comparable to the definitions of shared leadership presented by Carson et al. (2007) and Pearce & Conger (2003). If a coach indicated that they were interested in participating in the study, a screening phone call was scheduled between the coach and the lead author to ensure that the candidate was eligible. An interview time was subsequently scheduled if a candidate met the inclusion criteria (i.e., had a minimum of five years of head coaching experience with their current U Sports or CCAA team and intentionally facilitated the development of shared athlete leadership). Prior to each interview, the coaches ($N = 15$) read and signed a consent form for audio taping (see Appendix J) and completed a short demographic survey (see Appendix K). Further, each coach's general consent was documented on audio recording.

The lead author conducted individual semi-structured, open-ended interviews. We selected this type of interview for its flexibility in allowing researchers to engage in a conversation with the participant regarding the specific subject area (Smith & Sparkes, 2016). The semi-structured approach provided a guide for the lead author, while also allowing her and the participant to explore related topics as they arose. Open-ended questions within the semi-structured interview encouraged thick and rich descriptions

(Smith & Caddick, 2012). As participants were recruited across Canada, telecommunication was the primary source of data collection (i.e., phone, $n = 7$; FaceTime or Skype, $n = 6$; face-to-face, $n = 2$). Interviews lasted between 42 and 77 minutes ($M = 59.33$, $SD = 12.75$). All interviews were audio recorded and transcribed verbatim by the lead author totalling 378 pages (single-spaced) of transcribed text. Transcripts were subsequently stored and analyzed in the NVivo 12 computer software program (QSR International Pty Ltd).

Interview Guide

To gain insight into head coaches' practices for facilitating the development of shared athlete leadership in their teams, we developed an interview guide comprised of three sections (see Appendix L). The first section contained opening questions designed to build initial rapport with the participants and learn about their career progression in coaching (e.g., "Can you describe your coaching experiences and progression for me?" and "How would you describe your coaching philosophy?"). The second section consisted of key questions that were more specific to the study's purpose (e.g., "How do you go about intentionally facilitating the development of shared athlete leadership among the athletes on your team?" and "How has shared athlete leadership impacted your teams?"). These questions explored coaches' experiences related to shared athlete leadership and how they have gone about purposefully developing shared athlete leadership in their teams. Coaches were asked to reflect on their experiences within U Sports or the CCAA context only. Lastly, the third section contained concluding questions which afforded participants the opportunity to provide any additional information (i.e., "Is there anything else about shared athlete leadership in general or

specific to the strategies you use to facilitate the development of shared athlete leadership that I should know?” and “Is there anything else you would like to add that I didn’t ask?”).

Data Analysis

We used inductive reflexive thematic analysis to identify, interpret, and describe patterns in our data set (see Braun & Clark, 2006; Braun & Clarke, 2019). As a theoretically flexible qualitative analytic method, reflexive thematic analysis allowed us to align our analytical approach with the philosophical assumptions that underpinned the present study (Braun & Clarke, 2006). Furthermore, reflexive thematic analysis is suitable for examining varied types of research questions including, as it pertains to the present study, those concerning participant’s experiences and reported practices or behaviors related to a certain topic (Braun, Clarke, & Weate, 2016). Adopting an inductive approach allowed the content itself to guide the developing analysis rather than imposing theoretical concepts beyond the data (Braun et al., 2016).

The thematic analysis in the present study was characterized by the six flexible stages outlined by Braun and Clarke (2006). After the original transcription of the data, A.D. listened to each audio recording while simultaneously reading the associated transcript to check that all transcripts represented a verbatim account. Listening to the audio recordings a second time and reading the transcripts also helped A.D. become familiar with the data. Next, A.D. began generating initial codes across the data. Once the data were initially coded, A.D. began sorting these codes into potential themes and created a thematic map, which visually organized themes and associated sub-themes. Candidate themes and sub-themes along with their associated data extracts were then

reviewed and refined until a coherent pattern across the data was evident. To conclude this phase of data analysis, A.D. and the co-authors engaged in critical discussions regarding the themes and sub-themes to consider the overall story related to the data and the topic. A final thematic map was also produced. Finally, four themes were labeled and defined after which our report was produced.

Quality Criteria

We conceptualized rigor through a relativist (i.e., non-foundational) rather than criteriological approach (see Smith & McGannon, 2018). Specifically, when adopting a relativist approach the criteria for judging the quality of qualitative research are drawn from open-ended lists rather than pre-established and absolute universal criteria (Smith & Caddick, 2012; Smith & McGannon, 2018). As such, researchers adopting a relativist approach have the flexibility to use criteria that are contextually appropriate (e.g., reflects their philosophical assumptions and analytical approach; Burke, 2016). We encourage readers to assess the quality of this study using the following criteria: worthiness of the topic, sincerity, and coherence.

First, we feel that this research reflects a *worthy and timely topic*. The study of athlete leadership has gained momentum over the past decade with much of the research highlighting its shared nature and associated contributions to effective team functioning (for reviews, see Cotterill & Fransen, 2016; Loughhead, 2017). Despite this, we are not aware of any study that has specifically examined coaches' practices related to the facilitation of *shared* athlete leadership in teams. Researchers, however, have recommended that coaches should adopt shared leadership and examine how best to implement shared leadership structures (Fransen et al., 2019; Leo, García-Calvo,

González-Ponce, Pulido, & Fransen, 2019). Second, we sought *sincerity* in our research through reflexivity, which primary involved the research team functioning together as critical friends (Sparkes & Smith, 2014). Specifically, since A.D. took the lead on data generation and analysis, she met regularly with T.L., M.H., and J.C. (i.e., who vary in their expertise with athlete leadership research) either individually or collectively to discuss the details of these processes and prompt self-reflexivity related to her subjective values, biases, and inclinations (Sparkes & Smith, 2014). Finally, we sought to achieve *coherence* by aligning our philosophical assumptions with our procedures and methods to specifically address our research question. We also attempted to draw strong and informed connections between our interpretations of the data and existing literature to create a meaningful contribution to athlete leadership literature.

Results

We generated four themes from the data. The first theme relates to the importance that coaches in the current study placed on empowering their athletes. This theme is presented as a pre-cursor for the subsequent themes that focus on coaches' practices for facilitating the development of shared athlete leadership in their teams. That is, the desire to empower athletes appeared to directly influence coaches' adoption of shared athlete leadership frameworks. The second theme depicts coaches' use of leadership groups and alternative leadership structures (e.g., rotating captain, defined leadership roles, and 'captainless' teams) as opposed to the traditional assignment of a team captain. Coaches' creation of a positive team environment is subsequently presented as a third theme. Finally, a fourth theme entails athlete leadership development efforts. Key features of themes will be demonstrated using quotations from the participants. All quotations are

accompanied by a participant identification code (i.e., C1 – C15).

Increased Athlete Empowerment

Coaches often spoke passionately about empowering athletes, especially in reference to their coaching philosophies and leadership styles: “[I] really like to empower the athletes. It is the new kind of approach to teaching and coaching; the student-centered, athlete-centered [approach]. They just get so much more from problem solving themselves.” (C8) In practice, this took the form of, for example, involving athletes in decision-making, providing athletes with encouragement and the space to take initiatives related to team activities (e.g., team-building, community events, technical and tactical problem-solving), and using questioning methods to facilitate athlete learning and engagement. With little variation, athlete empowerment was often expressed as a means of developing individuals as both athletes *and* people within *and* beyond sport: “Overall, sport is a tool to impact and shape young leaders’ lives and so [my] philosophy is all about investing in people and helping them become the best that they can be, not just in their particular sport.” (C15)

Discussions related to athlete empowerment continued to arise when coaches described their implementation of shared approaches to athlete leadership. For instance, in describing her adoption of shared athlete leadership in the form of a leadership committee, C1 noted:

The desire for athletes to feel like they had a voice and a say in the decisions that were being made it just kind of occurred to me that I’d like to get in a room with people that the athletes respect that the athletes want to have in the room as kind of a voice and an echo and so I decided to give that power to the team so that

they felt more engaged in the process of basically building our program. Likewise, C7 described his experience moving to a more shared athlete leadership structure (i.e., ‘captainless’ team) as being driven by his struggle to: “... empower these girls to feel that they are the leaders that they may not know they are yet.”

Coaches went on to speak of athlete empowerment as a perceived benefit of shared athlete leadership. To us, this reinforced its perceived value as an objective of their coaching:

I think when you give multiple voices to the team, everybody’s close to at least one voice; everybody’s got a connection to at least someone who is in the leadership group ... when you’ve got more people coming together and talking about the issues and the challenges and coming up with solutions, there’s just more ownership. (C10)

We believe the current theme builds a foundation from which coaches’ practices for facilitating the development of shared athlete leadership can subsequently be presented and discussed as it provides a context for understanding the unique experiences of the intercollegiate coaches in the current sample. That is, we interpreted coaches’ desires to increase athlete empowerment as a driving force for their adoption of shared approaches to athlete leadership.

Use of Leadership Groups and Alternative Leadership Structures

Several coaches expressed the belief that team leadership is too much responsibility for one person, especially in the context of intercollegiate sport: “I think the role of a captain has gotten so big, it’s gotten so robust that I don’t think any one person can do it while being a full-time student. I think it has to be shared.” (C10)

Accordingly, this theme expresses the various structures that coaches used to encourage shared athlete leadership.

Most coaches described the use of leadership groups (i.e., leadership committees or leadership teams) to facilitate the development of shared athlete leadership in their teams. However, the logistics (e.g., number and selection of group members) of these groups tended to vary between coaches. For instance, C15 noted that his team typically functions with a leadership team that includes anywhere from “... three to probably five or six [athletes], depending on the size of our roster and on the make-up of what years are represented.” C15 continued:

For instance, currently we have a captain ... but it would be foolish for us to think that [athlete’s name] can do that all by herself so we have put together you can call them assistant captains or associate captains, I call them a leadership team. Currently, there are two others on the leadership team and then there are three others that are part of apprenticing of being on the leadership team.

C11 also described the use of a leadership team, but membership included two captains and seven additional team members. Similar to C15, C11: “... was looking to build a leadership team around the captains to support the captains in their job and to work together closely with the captains.” Instead of personally selecting the support team, C11 decided to seek volunteers. For her, the volunteer aspect was important as it: “... kind of shows some commitment from certain people that I might not have invited to be on that [leadership] team.”

While the examples of leadership groups presented thus far have all included team captains, other coaches have moved away from this role as it is traditionally understood

(i.e., one team captain). For instance, in describing her leadership committee that typically includes four athletes and is voted on by the athletes, C1 expressed:

I've found that there's this very strange connotation around the captain ... I didn't like when I did just have one captain how people kind of got fixated on that position and that person and to me it kind of watered down this idea of shared leadership.

To remedy this challenge, C1 rotated the captainship position between the members of her leadership committee so that a different captain was selected each game. In this way, no single athlete was designated as the team captain for the entire season. C10 also described rotating captainship between the members of his senior leadership committee, which is typically selected by the coaching staff with input from his athletes and includes between four and nine players depending on factors such as the tenure of the athletes (i.e., the distribution of rookies, sophomores, juniors, and seniors):

The referees sometimes want an arm band on somebody so that they know who to talk to, so in that case we have a rotating arm band. So, one game [Athlete 1] is a captain and the next game [Athlete 2] is a captain.

Moving beyond the traditional role of the team captain altogether, C7 described that his athlete leadership structure has evolved over the years from including two team captains to now being 'captainless,' further stressing: "... we are captainless but we are definitely not leaderless." C7 noted that athlete leadership is now about: "... who sees a problem and who sees a solution?" To illustrate, C7 described that some of his team were struggling to understand their offense early in the season, so one of his athletes took the initiative to hold a team meeting prior to a practice:

I went up [to the classroom], opened the door and they're all sitting around in a big semi-circle and one of the girls is up there and they had three of our plays just drawn up on the board saying 'Are we sure we all understand this?'

Several coaches also discussed facilitating the development of shared athlete leadership using defined leadership roles. For instance, within his senior leadership group, C10 noted that they usually have field captains, dressing room captains, weight room captains, social captains, community captains, and academic captains. At times, these roles are fulfilled by a single athlete, while other times they are shared between multiple members of the senior leadership group. C10 described the field captain as: "... what you might consider to be the traditional role of the captain. They're on the field, they represent the team, maybe they are the one that goes and picks up the trophy if there is one." Further, C10 noted that one of the jobs of the academic captain: "... is to make sure we have a leader that's supervising team study hall," while the community captain is someone who, for example, "... organizes a trip to a local school."

Expanding on the use of defined leadership roles, C6 moved to a shared athlete leadership structure that included every member on her team. Specifically, before formalizing their team captains (i.e., typically two to three captains) athletes sit together and allocate 12 team roles:

As a team, they [athletes] collectively decide who they think would be the best fit for certain roles. A lot of the roles have to do with what's important to our team, so we have academic leaders who are in charge of study hall and keeping people up to our standards academically, we have spiritual leaders who lead our bible studies, we have performance leaders, we have team event leaders. A new one

that we brought in this year was team care leaders ... their responsibility is just to make sure that they're checking in with their teammates on an emotional level to see how people are doing.

Like C10, C6 noted that "... depending on the depth of the task at hand" several athletes may share a leadership role:

Our academic leaders have to be a little bit more on top of it. Anyone under 3.0 is in study hall in our program so you could have between four to eight teammates that you're running after ... so we have two people doing that role.

Finally, to varying degrees all coaches discussed encouraging or providing space for informal athlete leadership. In particular, coaches provided numerous examples of athletes who did not have official leadership responsibilities but have taken up important leadership roles either through their behaviors, seniority, or by virtue of the positions that they play:

We have a player on our team this year, he's just not a vocal guy at all so his leadership takes a much different role in that he's an off the court he'll grab a guy and have a conversation with him. (C2)

We have some older players on the bench sometimes, they're experienced but they're skill level isn't quite high enough to be on the court on a regular basis but they're our leaders on the bench by virtue of the fact that they are older players; they have character, I trust them and they are kind of by example leading the way on what our expectations are on the bench and kind of holding, probably for the most part, younger players accountable to learning the culture of what we expect on the bench. (C3)

C9 also discussed informal leadership while noting its dynamic nature: “Not everyone’s leading at all times, so you probably have a couple more [informal leaders], two maybe three depending on the year.”

An additional pattern in the data was challenges related to using shared athlete leadership structures. Primarily, coaches noted the potential for conflicting athlete personalities or attitudes:

We have the one person that just wants to go go go go and she doesn’t think about the consequences, then we have the other one that’s more cautious and says ‘oh okay we have to be more careful because there’s a consequence to this action,’ and then you have the other one that doesn’t want to make any mistakes so they tend to drag their feet on any decision and so often times the challenge of shared leadership is helping them learn how to come to one conclusion even though they might have three perspectives. (C6)

Similarly, C5 described this challenge related to a dual captaincy approach:

One definitely tried to portray that they were the top role and wouldn’t include the other one, so when it came to like team bonding and team building it was her idea and this is what we’re going to do instead of the two of them deciding things together and then it created, there was a bit of a divide that started on the team of who do I listen to because they were saying two different things.

Another challenge that several coaches discussed was related to the added time it takes to organize a group of athlete leaders versus a single athlete leader: “The bigger the group is, the challenge is to find the time to meet when everyone’s available because they’re always stretched so thin.” (C11)

Creation of a Positive Team Environment

A compelling pattern interpreted from the data was the way in which coaches aimed to create a positive team environment to facilitate the development of shared athlete leadership in their teams. This was often described as moving away from an environment where divisions between athlete tenures (i.e., rookies, sophomores, juniors, and seniors) were demarcated by certain practices like hazing or having specific rookie-only responsibilities, "... you know there's none of this stuff in our team like hazing or you know rookies have to do this or just to me that's all just bull shit that takes away from the chemistry of the team." (C13)

C15 described a similar team environment:

The typical culture would say you know rookies get it pretty tough and then the longer you're on a team the more you have entitlement or rights. When I took over coaching at [name of university], I completely changed that and said my seniors will be the servants to our program and they will model that to the incoming rookies. So, my rookies are every year floored that when we go to our first meal the rookies always eat first.

As C15 continued, he described how this servant approach to shared athlete leadership (i.e., seniors serving the program) has helped establish a team climate akin to a healthy family:

When we have team responsibilities we're a little bit like I think a healthy family, whether it's uniforms that need to get to the laundry, the training kit that needs to be brought from the laundry room, cleaning up the changing room, making sure the balls are pumped up with adequate air like you can name a thousand things all

of those are divvied up not by coaches but by [athlete] leaders and they're not mandated by [athlete] leaders they're owned by [athlete] leaders who invite others to participate with them.

Coaches also sought to create a positive team climate by giving athletes a voice, developing a shared purpose, providing support, having open lines of communication, developing trust, and engaging in team building activities. Furthermore, many coaches felt that this process started with the athletes they recruit:

We need to recruit the right athletes into the program and that requires vetting them and making sure that we're bringing in the right kinds of personalities that would maybe lean towards this kind of philosophy more than others. I think that's a very important starting point as a factor to maintaining the growth of shared leadership through our team. (C12)

Deliberate Athlete Leadership Development

In the final theme interpreted from the data, coaches expressed a focus on deliberate athlete leadership development efforts to facilitate the development of shared athlete leadership in their teams. While these efforts took many different forms, popular practices included experiential learning, using leadership material (e.g., books and articles) to facilitate small and large group discussions, providing specific leadership support (e.g., routine leadership meetings), and modeling shared leadership as a coaching staff. For instance, C3 described position practices and meetings as opportunities to develop leadership:

So, my first line setter, when I have a one-on-one with her, I'm trying to teach her how to be a leader in terms of: 'You're the center of attention, everybody's

looking at you for the signal and what the play is going to be so they're looking at your face and if your face is showing that you're worried about whether we're going to win this game or not now they're going to be worried. Your body language, your facial expression has to exude confidence and positivity even if that's not what you're feeling at the moment.'

C6 described leadership development that started in the off-season with four to five athletes:

We talked about how to communicate with your teammates, how to deal with conflicts, how to handle struggling teammates, how to communicate with authority figures, what and how do we figure out what other people's skill sets are ... so we balance it out to be between six and eight weeks of following some type of leadership handbook but we just use that as a platform to create conversation.

These athletes are then tasked with applying what they have learned by each leading a small group of three to four of their teammates (i.e., also in the off-season), which served to develop leadership, grow accountability, and build community. Furthermore, as discussed earlier, every athlete in C6's team has a defined leadership role. In discussing her adoption of this practice, she noted its importance to leadership development:

I had younger athletes sitting around for three years waiting to be named the captain but then were not developing in any way as a leader and it was becoming more of a title issue than it was an actual responsibility. Now, if an athlete's in our program for five years, they'll be assigned a certain type of leadership role for five years; it could be the same one it could be different based on skill set or based on their development in our program.

In this way, C6 described how athletes are both provided the opportunity to be a voice in the team and listen to the voices of their teammates:

They're finding their voices in front of their peers from a leadership perspective. I find that then when they become a voice as they get older it's not like the team all of a sudden, we've never heard you speak in front of the whole group and now you're a captain, but they've slowly been hearing the voices of their leaders throughout their career and so then it's a smoother transition going from a small scale leader to a larger scale leader.

C14 described how he targets leadership training with his team as part of team retreats at the beginning of the season and noted why he thinks its important to include all athletes:

For two reasons, one it's not just about the core guys it's about the whole team and the whole team needs to understand the culture of what it is we're doing and the second one is educationally we graduate guys so those team leaders aren't always going to be around and we need to continue to educate new ones.

Additionally, C13 described using a "wingman" whose job was to "... be an informal leader assisting the captains" who in turn "... mentor him to get him ready to be captain."

As discussed previously, C15 also included an apprenticing component to his leadership team to target leadership development. Likewise, C4 sometimes rotates an assistant captain, "...sometimes you've got a good player that you want to grow, and you say here I'm going to give you an opportunity to wear the A until Christmas." Finally, while C8 has also approached leadership development across her entire team, she described enlisting the help of a mental performance consultant who works directly with her leadership group, which typically includes one team captain and five team members:

“The leadership group has support from a mental performance coach they usually meet about communicating: How can we communicate better as leaders? How can we solicit more from one another as leaders?” In this way, C8 provided specific support intended to help facilitate the development of leadership skills among her leadership group.

Discussion

The purpose of the current study was to gain insight into intercollegiate coaches’ practices for facilitating the development of shared athlete leadership in their teams. Four themes were interpreted from data generated from individual interviews with intercollegiate coaches: increased athlete empowerment, use of leadership groups and alternative leadership structures, creation of a positive team environment, and deliberate athlete leadership development. Each of these four themes will be discussed.

Increased Athlete Empowerment

Coaches in the present study expressed a desire to empower athletes as a motive for facilitating the development of shared athlete leadership within their teams. Athlete empowerment has been positioned as a central component of athlete-centered coaching, which “is defined by a style of coaching that promotes athlete learning through athlete ownership, responsibility, initiative and awareness, guided by the coach” (Pill, 2018, p. 1). This contrasts with coach-centered approaches that stress authority and control, which predominately act to disempower athletes (Pill, 2018). Athlete empowerment has been discussed as being central to building championship cultures in sport (Vallée & Bloom, 2016) and, more recently, as being positively associated with shared leadership in teams (Fransen et al., 2019). Specifically, Fransen et al. (2019) investigated whether

empowering players by sharing leadership diminishes a coach's own leadership status. Findings did not support this perception. Rather, it was found that athletes competing on teams that were characterized by higher levels of shared leadership perceived their coach to be a higher quality leader. In the present study, athlete empowerment was a central motive that influenced intercollegiate coaches' adoption of shared athlete leadership in their teams. In turn, coaches expressed facilitating the development of shared athlete leadership by using leadership groups and alternative leadership structures, creating a positive team environment, and undertaking deliberate athlete leadership development efforts.

Use of Leadership Groups and Alternative Leadership Structures

Coaches in the present study discussed using leadership groups and alternative leadership structures to facilitate the development of shared athlete leadership in their teams. However, beyond the fact that most coaches used leadership groups, there was little consensus on the implementation of these alternative approaches to structuring athlete leadership. We believe that these different leadership structures reflect a disconnect between the current practices of coaches and the current state of athlete leadership research. That is, researchers have only begun to explore specific structural differences related to shared athlete leadership (i.e., beyond establishing that multiple athlete leaders participate in team leadership). For instance, in their examination of athlete leadership in four competitive female youth soccer teams, Duguay, Loughhead, et al. (2019) found that, while each team's athlete leadership reflected a shared process, their degree of sharedness differed. Further, these authors were able to demonstrate, through the use of social network analysis, specific team- and individual-level

differences. Indeed, coaches in the present study discussed factors such as the distribution of athlete tenures, team dynamics, and the number of athletes with leadership experience as contributing to their use of various athlete leadership structures from season to season. It should also be noted that variations in athlete leadership structures is likely not restricted to between-team differences. In fact, Duguay, Hoffmann, et al. (2019) demonstrated the dynamic nature of athlete leadership over the course of a single season within a competitive youth male ice hockey team. Specifically, their findings demonstrated significant increases in the amount of task (i.e., goal-oriented, focused on the accomplishment of team objectives) and social athlete leadership (i.e., group-oriented, focused on interpersonal relationships), as well as the degree to which social leadership was shared among team members as the season progressed.

Creation of a Positive Team Environment

Coaches sought to create a positive team climate to facilitate the development of shared athlete leadership in their teams. Coaches' descriptions of a positive team climate were often described as moving away from an environment where divisions between athlete tenures (i.e., rookies, sophomores, juniors, and seniors) were demarcated by certain practices like hazing or having specific rookie-only responsibilities (e.g., carrying the team bags). Inherent in hazing are power differentials, most notably between senior members and rookies (i.e., new members of a team). As coaches in the present study appeared to adopt shared athlete leadership, in part, to empower their athletes, they may have perceived activities that set apart or alienate any teammate based on class, number of years on the team, or athletic ability as an abuse of power and, in fact, disempowering to the athletes who are being targeted by the activities. Such power struggles and power

inequalities may disrupt team processes and performance (e.g., cause tension, conflict, and anger) and challenge the sharing of leadership (Nicolaidis et al., 2014).

In addition, while athletes often suggest that hazing develops team chemistry, researchers have demonstrated this notion to be untrue (Lafferty, Wakefield, & Brown, 2017). This may be particularly important to the development of shared athlete leadership in teams, as athlete leadership (i.e., measured as the quality of athlete leadership across the entire team) has been shown to be positively related to task and social cohesion (Loughead et al., 2016). In sum, findings from the current study suggest that intercollegiate coaches appeared to be very aware of the impact that the team environment can have on the nature of athlete leadership and deliberately sought to influence team characteristics as a way to facilitate the development of shared athlete leadership in their teams.

Deliberate Athlete Leadership Development

Finally, coaches discussed deliberate athlete leadership development as a practice for facilitating the development of shared athlete leadership in their teams. Deliberate athlete leadership development efforts have been an important focus in sport literature in recent years (Cotterill & Fransen, 2016). In fact, several researchers have been intentional in their efforts to extend these leadership development opportunities beyond the team captains. For instance, Duguay et al. (2016) developed and implemented a season-long athlete leadership development program with athletes (i.e., the entire team) from two varsity female teams (i.e., basketball and volleyball). The program focused on developing leadership capacity at both the individual (i.e., intrapersonal development) and team level (i.e., interpersonal development). Similarly, to enable the development of a shared

approach to leadership among 16 male professional cricketers, Cotterill (2017) targeted specific captaincy development with a select group of individuals (i.e., 7 players) as well as leadership skill development with the broader team (i.e., all 16 players).

Beyond sport-specific literature, researchers have also supported the importance of providing all team members with leadership education, training, and development to facilitate the development of shared leadership. Barnett and Weidenfeller (2016) noted that in shared leadership frameworks, leadership roles may be carried out by team leaders (i.e., formal leaders) or team members (i.e., informal leaders) and, as such, developing leadership skills, knowledge, and abilities should be relevant to both. Furthermore, Day and Harrison (2007) discussed that, in addition to developing individual leaders, there needs to be a focus on developing connections between individuals to bring about shared leadership. That is, individuals need to learn how to collectively participate in leadership processes (Day & Harrison, 2007).

Limitations and Future Directions

We would like to acknowledge several limitations of the present study that we hope will inform and inspire future research. First, as the objective of the present study was to gain insight into intercollegiate coaches' practices for facilitating the development of shared athlete leadership in their teams, only coaches were interviewed. However, it is vital to acquire the accounts of athletes related to shared athlete leadership, including their perceptions of the role of the coach in facilitating its development. Further, complex social relations exist within teams that may be complicated by various power dynamics (e.g., coach and athlete). Future research aimed at understanding these complex social processes in relation to sharing leadership is encouraged.

Second, the present sample reflects coaches who, at the time this study, favored a shared approach to athlete leadership. However, there are undoubtedly coaches who do not deliberately enact practices to facilitate the development of shared athlete leadership or have apprehensions about empowering athletes and sharing their leadership (Jones & Standage, 2006). It is important that future research seeks to better understand their perspectives.

Finally, coaches in the current study were drawn from intercollegiate sport in Canada. Accordingly, researchers are encouraged to undertake similar investigations with coaches from other contexts. For instance, a similar study with coaches of youth teams would provide further insight into coaches' practices related to the facilitation of athlete leadership at this level, which could then be used to develop targeted interventions based on appropriate age-based recommendations. Researchers have also suggested that cultural and societal factors (e.g., civil liberties, learning orientation, and power distance) may impact the degree to which leadership is shared (Muethel & Hoegl, 2010). We encourage researchers to explore the influences of such factors on coaches' practices for facilitating shared athlete leadership.

Conclusions

Accumulating research has demonstrated the shared nature of athlete leadership (for reviews, see Cotterill & Fransen, 2016; Loughhead, 2017). However, we are not aware of any studies that have specifically examined coaches' practices for facilitating the development of *shared* athlete leadership in teams. In line with recommendations that coaches should adopt a structure of shared leadership (Fransen et al., 2019; Leo et al., 2019), the current study examined intercollegiate coaches' practices for facilitating the

development of shared athlete leadership in their teams. We believe the present study has made novel contributions to research and practice, and hope that the findings will encourage future research into the development of athlete leadership in teams.

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CHAPTER 5

DISCUSSION AND CONCLUSIONS

While research pertaining to team-level leadership in sport has traditionally centered on the coach as principal leader, the study of athletes' contributions to team leadership has been gaining increased attention in the sport literature (Loughead, 2017). With this increased attention has come growing evidence that athlete leadership contributes to effective team functioning and is complementary to the leadership provided by coaches (for reviews, see Cotterill & Fransen, 2016; Loughead, 2017). However, as a relatively young field of research, there remain many gaps in the literature. Therefore, the objective of this dissertation was to extend our knowledge of athlete leadership by contributing to two underexplored lines of enquiry: athlete leadership as a shared process and athlete leaders' emotional competence. This objective was accomplished through three studies (i.e., chapters).

In Chapter 2, athlete leadership as a shared process was explored using social network analysis (SNA) with two main aims: (1) to move beyond aggregated approaches to studying athlete leadership in favor of a multi-level approach (i.e., individual, dyadic, and network) and (2) to examine various qualities of the relation between two athletes (i.e., valued age difference, absolute age difference, skill nomination, interactional centrality, formal leadership status, and informal leadership status) as predictors of athlete leadership. Four competitive female youth soccer teams ($N = 68$) completed roster-based surveys where each athlete was asked to rate the frequency with which they look to *each* of their teammates for leadership. Each team's data were searched for meaningful relational patterns related to athlete leadership at the individual, dyadic, and

team level. Furthermore, multiple regression quadratic assignment procedures (MR-QAP) were used to examine the qualities of the relation between two athletes as predictors of athlete leadership. Differences in the degree to which athlete leadership was shared within each team were found. In addition, skill nomination and formal leadership status were shown to be significant predictors of how often participants reported looking to their teammates for leadership. Taken together, the results of Chapter 2 offer important information regarding the *dynamic* nature of athlete leadership. In particular, the findings shed light on the collective, complex, and unique leadership interactions that are occurring within sport teams at the athlete level. Further, the examination of relational predictors of athlete leadership provided insight into factors that may be influencing the leadership interactions between pairs of athletes.

The purpose of Chapter 3 was to assess the construct validity of the Profile of Emotional Competence (PEC; Brasseur, Grégoire, Bourdu, & Mikolajczak, 2013) with a sample of intercollegiate athletes ($N = 310$). The PEC is a trait emotional competence measure and was chosen for the current study because it conceptually aligns with leadership development theory and current recommendations for athlete leadership development efforts (i.e., includes intrapersonal and interpersonal competencies; Day, 2000; Duguay, Loughhead, & Munroe-Chandler, 2016). That is, it is the only questionnaire to measure each of the five core emotional competencies (i.e., identification, expression, understanding, regulation, and utilization) separately for one's own (intrapersonal) and others' (interpersonal) emotions (Brasseur et al., 2013; Laborde, Mosley, Ackermann, Mrsic, & Dosseville, 2018). The findings of the present study did not support the 10-factor PEC with a sample of athletes, suggesting the need for further

validation work. These results and the associated recommendations for future research are particularly timely as the PEC's five dimensions have been used to direct training of emotional competence through sport (e.g., Laborde et al., 2018).

Finally, the purpose of Chapter 4 was to examine intercollegiate coaches' practices for facilitating the development of shared athlete leadership in their teams. Semi-structured interviews were conducted with 15 intercollegiate head coaches and analyzed using inductive reflexive thematic analysis. The coaches discussed their desire to empower athletes, which appeared to directly influence their adoption of shared athlete leadership frameworks. To facilitate the development of shared athlete leadership in their teams, coaches described various practices. First, coaches described using leadership groups and alternative leadership structures (e.g., rotating captain, defined leadership roles, and 'captainless' teams) to extend athlete leadership beyond the role of the team captain. Second, coaches aimed to create a positive team environment characterized by strong interpersonal relationships that would allow the space for shared athlete leadership to grow. Finally, coaches described deliberate athlete leadership development efforts such as experiential learning opportunities, using leadership material to facilitate small and large group discussions, providing specific leadership support, and modeling shared leadership as a coaching staff. Considering recent recommendations that coaches adopt a structure of shared leadership (Fransen, Mertens, Cotterill, Vande Broek, & Boen, 2019; Leo, García-Calvo, González-Ponce, Pulido, & Fransen, 2019), these findings provide insight into *how* coaches are facilitating the development of shared leadership among their athletes.

New Directions for Research and Practice

The culmination of this dissertation offers new directions for research and practice related to athlete leadership. First, the general study of leadership and specific study of athlete leadership has been largely limited to a single level of analysis, such as the study of the team captain as athlete leader (Fransen et al., 2015; Welty Peachey, Damon, Zhou, & Burton, 2015). However, by definition, leadership occurs within groups, thus involving leader-follower interactive dynamics (Northouse, 2019; cf. self-leadership; Stewart, Courtright, & Manz, 2019). Adopting a shared leadership framework further complicates this process as leader-follower dynamics may emerge or shift over time and across task demands (Zhu, Liao, Yam, & Johnson, 2018). As such, multi-level approaches to studying leadership are necessary to supplement insights gained through single level analyses. As demonstrated in Chapter 2 of this dissertation, multi-level approaches such as those available through SNA allow researchers to gain insight into the complex processes of athlete leadership across teams. Implications for future research include the continued examination of dyadic predictors (i.e., the qualities of the relation between two athletes), which may help us better understand if and why certain pairs of athletes are likely to perceive one another as leaders (Contractor, DeChurch, Carson, Carter, & Keegan, 2012). For instance, the influence of shared cognition on the emergence of shared athlete leadership warrants attention. In particular, researchers suggest that there are four cognitive drivers (i.e., mental models, situation assessment, metacognition, and attitudes) that play a key role in the development of shared team leadership (Burke, Fiore, & Salas, 2003). That is, through an iterative process, these drivers may enable team members to recognize when leadership roles need to change,

identify who should take-up leadership roles dependent on situational and task demands, and accept the fluidity of leadership roles in teams (Burke et al., 2003). Such research opportunities extend well beyond the study of athlete dyads to include additional levels of analyses such as athlete leadership within tri-captaincy frameworks, leadership groups, positional groups (e.g., forwards or defenders), the team as a unit, and the influence of the collective sport organization (e.g., governance structure; Welty Peachey et al., 2015). This line of enquiry holds important theoretical implications and may help researchers gain a deeper understanding of the *process* of athlete leadership including the development of shared athlete leadership.

In practice, multi-level analyses (e.g., SNA) allow coaches and/or sport psychology consultants to explore the interactive dynamics of athlete leadership in their teams. As shown in Chapter 2 of this dissertation, athlete leadership structures vary on a team-by-team basis in unique and intricate ways. Furthermore, Duguay, Hoffmann, Guerrero, and Loughhead (2019) demonstrated that athlete leadership structures may also vary within the same team over the course of a season. As such, using SNA to explore athlete leadership in applied settings provides coaches and/or sport psychology consultants with actionable information on a team-by-team basis. For instance, Naraine, Kerwin, and Parent (2016) demonstrated how SNA can be used to select team captains in a case study that details a women's development team chosen to represent Canada Basketball at an international tournament. In particular, SNA is used in this case study to acquire a detailed understanding of how athletes view each of their teammates in terms of their leadership abilities, either in general or in relation to their task, social, external, and motivational leadership roles. This information, in combination with coaches'

assessments of players, may lead to a more effective process for selecting formal athlete leaders or identifying opportunities for shared leadership within and across leadership roles. SNA may also help coaches and/or sport psychology consultants identify shifts in athlete leadership (e.g., team members no longer identify with the team captain as a source of leadership) over the course of a season. Accordingly, athlete leadership development efforts can be more accurately targeted (Hoppe & Reinelt, 2010).

Another direction for future research and practice relates to how athlete leaders deal with intrapersonal and interpersonal emotional information (i.e., emotional competence). Anecdotal and empirical evidence suggests that emotional competence should be an important consideration as athlete leadership research advances. In fact, following a review of leadership research in physical activities contexts (i.e., including athlete leadership research), Beauchamp, Jackson, and Loughhead (2019) identified emotional competence as an individual difference factor that might act as an important determinant of leadership and, as such, recommended future research in this area. Building from Chapter 2 of this dissertation, emotional competence could also be examined as a dyadic predictor of athlete leadership (i.e., the qualities of the relation between two athletes), especially given the importance of *interpersonal* emotional competencies.

To advance research in this area, Chapter 3 of this dissertation examined the psychometric properties of the PEC (Brasseur et al., 2013) with a sample of intercollegiate athletes as an important first step towards identifying a measurement tool that can be used to further study the relationship between emotional competence and athlete leadership. As findings did not support the 10-factor PEC with a sample of

athletes, further validation work with athlete samples is required. Continued psychometric testing of the PEC and other measures of emotional competence (ability or trait) that are built on strong theoretical and empirical grounds is an important direction for future athlete leadership research. Identifying a measurement tool that can be used to comprehensively study the relationship between emotional competence and athlete leadership will not only contribute to our theoretical understandings of the interplay between these two constructs but will also provide important direction for athlete leadership development efforts.

The role of the coach in facilitating the development of shared athlete leadership is another future direction for research and practice that warrants attention. As demonstrated in Chapter 4 of this dissertation, coaches reported deliberate practices aimed at developing shared athlete leadership in their teams. Such practices related to the development of leadership groups and alternative leadership structures (e.g., rotating captain, defined leadership roles, and ‘captainless’ teams), the creation of a positive team environment, and deliberate athlete leadership development efforts. However, more research is needed to better understand the effectiveness of these practices. For instance, athletes’ perceptions regarding the role of the coach in the development of shared athlete leadership should be sought and coach-directed interventions aimed at developing shared athlete leadership should be evaluated. Such investigations will not only provide researchers with insight into coaching practices related to athlete leadership but will also result in practical strategies for coaches who seek to adopt a shared athlete leadership framework.

Furthermore, the unproblematic acceptance of shared athlete leadership warrants

further attention. That is, most athlete leadership research has focused on the associated benefits and advantages of sharing influence with little attention given to the potential challenges of implementation. For instance, complex social relations exist within teams that may be complicated by various power dynamics. As discussed in Chapter 4 of this dissertation, the desire to empower athletes appeared to directly influence coaches' adoption of shared athlete leadership frameworks. However, researchers suggest that some coaches may only give athletes an illusion of empowerment to ensure their 'buy in' to the coach's pre-set agenda (Jones & Standage, 2006). Additional power dynamics that should be considered related to the process of shared athlete leadership include those between more senior athletes and less senior athletes as well as athletes with formal leadership status and those without such an appointment. Finally, attention should be given to athletes' motives for taking up leadership roles, especially in shared contexts (Jones & Standage, 2006).

Conclusion

The current dissertation sought to extend our knowledge of athlete leadership by contributing to two underexplored lines of enquiry: athlete leadership as a shared process and athlete leaders' emotional competence. These contributions have, in turn, highlighted important new directions for athlete leadership research and practice. It is hoped that the information presented herein not only advances our understanding of athlete leadership as a complex process, but also helps direct athlete leadership development efforts.

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TABLES

Table 1

Participants' Leadership Status

Team	Formal Leader	Informal Leader	No Leadership Status
Team 1	2 (12.5%)	7 (43.8%)	7 (43.8%)
Team 2	3 (17.6 %)	10 (58.8%)	4 (23.5%)
Team 3	2 (11.1%)	13 (72.2%)	3 (16.7%)
Team 4	2 (11.8%)	12 (70.6%)	3 (17.6%)

Note. $n_{T1} = 16$; $n_{T2} = 17$; $n_{T3} = 18$; $n_{T4} = 17$. Participants who fulfilled a formal leadership status were selected to this position (e.g., by their respective team's coach or through a team selection), while participants fulfilling informal leadership positions or holding no leadership status self-reported these data.

Table 2

Degree Centrality for Leadership Networks

	Team 1		Team 2		Team 3		Team 4	
Athlete	Indegree	Outdegree	Indegree	Outdegree	Indegree	Outdegree	Indegree	Outdegree
Player A	1	3	13	10	16	15	5	16
Player B	2	7	15	13	9	16	11	4
Player C	9	11	14	12	17	10	10	9
Player D	11	6	13	13	11	14	15	13
Player E	4	3	8	16	16	12	5	8
Player F	7	6	13	15	15	10	14	13
Player G	15	4	16	16	5	14	7	16
Player H	13	5	13	16	17	7	5	12
Player I	7	9	16	8	14	16	11	13
Player J	4	2	16	15	14	17	14	5
Player K	4	7	10	13	11	11	13	4
Player L	3	7	16	15	16	17	11	8
Player M	5	5	11	11	14	16	16	6
Player N	8	12	14	12	17	17	9	8
Player O	5	9	14	16	12	16	6	7
Player P	7	9	9	8	15	17	7	10
Player Q	-	-	10	12	13	5	4	11
Player R	-	-	-	-	15	17	-	-
<i>Mean</i>	6.56	6.56	13	13	13.72	13.72	9.59	9.59
<i>SD</i>	3.79	2.81	2.50	2.59	3.07	3.62	3.82	3.73

Note. $n_{T1} = 16$; $n_{T2} = 17$; $n_{T3} = 18$; $n_{T4} = 17$

Table 3

Density and Degree Centralization for Leadership Networks

Measure	Team 1	Team 2	Team 3	Team 4
Density (<i>SD</i>)	0.44 (0.50)	0.81 (0.39)	0.81 (0.40)	0.60 (0.49)
Degree Centralization	0.60	0.20	0.20	0.43

Note. $n_{T1} = 16$; $n_{T2} = 17$; $n_{T3} = 18$; $n_{T4} = 17$. Degree centralization is calculated using player indegree centrality scores.

Table 4

Predictors of Athlete Leadership Frequency Nominations (MR-QAP Linear Regressions)

Matrices	Roster-Based Athlete Leadership Frequency Nominations			
	Team 1 <i>B</i>	Team 2 <i>B</i>	Team 3 <i>B</i>	Team 4 <i>B</i>
Valued Age Difference	0.17	-0.00	-0.09	0.08
Absolute Age Difference	-0.16	-0.20	0.01	-0.12
Skill Nomination	1.10***	0.70***	1.17***	1.32***
Interactional Centrality	0.02	-0.10	0.00	0.05
Formal Leader	1.69***	1.00***	0.39	0.68
Informal Leader	0.14	0.19	0.61	-0.02
R^2	0.37***	0.30***	0.18***	0.31***

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5

ESEM Factor Structure for the 50-Item, 10-Factor Model

Items	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
F1 (Intra. Identification)										
6	-.13	-.02	.14	-.08	.06	-.09	-.12	.23**	.36**	.03
16	-.07	-.11	.09	.17	.03	-.01	.02	.16	.23*	.09
20 ^a	.14	-.01	.41**	.09	.10	.01	.15*	-.03	-.12	.13*
48	-.19	-.24	.31**	.15	.09	.09	-.09	.05	.21	-.03
49 ^a	-.11	.02	.43**	.05	.22**	-.01	-.02	-.02	-.06	.04
F2 (Inter. Identification)										
7	-.08	.27*	-.10	.26*	.03	.01	-.08	.09	.12	-.03
29 ^a	.15	.38	.08	.13	.09	.19	.02	.03	.10	-.05
30	.03	.31	-.11	.40**	-.00	.13	-.01	.14	.14	-.00
40 ^a	.05	.42**	.19*	.14	.00	.23**	-.19**	.04	-.10	-.02
44 ^a	.09	.31	.20*	.16	.15*	.07	-.01	.13	-.05	-.05
F3 (Intra. Understanding)										
1 ^a	.03	.12	.66**	.03	-.07	-.04	.18*	-.05	.09	.01
2 ^a	-.00	.22	.46**	-.02	.05	-.05	.29**	-.03	.06	-.05
10	-.05	-.17	.37*	.18	.11	-.01	-.04	.15	.04	-.05
26 ^a	.07	-.04	.47**	-.07	.17*	.07	.19**	-.21**	.02	.12*
43 ^a	-.13	-.07	.62**	.05	.18*	.04	.04	.04	-.14	-.03
F4 (Inter. Understanding)										
5 ^a	.10	.37	.09	.24	.07	.17	-.04	.10	-.09	-.06
13	-.06	.04	-.04	.73**	.11	.05	.10	-.01	-.04	.08
14	-.02	.26	.01	.57**	-.02	-.09	.14*	.12	.11	.09
18 ^a	-.06	.53**	.23*	.05	.05	-.12	-.04	.17*	.09	.03
34 ^a	.12	.25	.23*	.05	.03	.28**	-.10	-.14	-.01	.03
F5 (Intra. Expression)										
8	-.02	-.23	-.04	.24*	.65**	-.09	-.01	.02	.15	-.05
17	-.11	.04	.14	.00	-.13	.13	.41**	.09	.10	-.08
25 ^a	.04	-.15	.11	-.01	.75**	-.04	-.00	-.05	.12	.01
38 ^a	.09	.03	-.10	-.10	.71**	-.04	.05	.04	-.04	.01
42 ^a	-.37	.50	-.07	-.14	.46	.15	.21*	-.04	-.13	-.01
F6 (Inter. Expression)										
23	-.08	.03	.03	.11	-.03	.66**	-.06	.07	.14*	.05
28 ^a	.15	.17	.05	-.00	.02	.19	.12	-.10	.12	-.20**
31 ^a	.33	.24	.06	-.05	.04	.15	-.07	.27	.13	-.12
45	-.15	.04	-.08	.03	.01	.74**	-.03	.12	.09	.12**
46 ^a	.37	.11	.08	-.02	.13	.26	-.05	.24	-.06	-.11
F7 (Intra. Regulation)										
12	.02	-.02	-.02	.14*	.17**	-.03	.67**	-.03	.01	.09
15	-.02	-.22**	.12	.10	.05	-.08	.59**	.01	-.06	-.05
37 ^a	.07	.07	.36**	-.03	.06	-.02	.52**	.10	-.08	.01
39	.06	.02	-.02	.08	.03	-.05	.70**	.01	-.01	-.01
50	-.05	-.06	.11	-.07	-.06	.07	.57**	.08	.26**	-.05
F8 (Inter. Regulation)										
19	.03	-.04	-.07	.10	-.09	.40**	.03	.31**	.07	.01
27 ^a	.40**	.10	.06	-.01	.18*	.21	-.02	.11	.13	-.05
33	-.04	-.03	-.11	-.01	.11	.23**	.10	.60**	-.06	-.01
35	-.15	.11	.01	.03	.03	-.21	-.08	.76**	-.02	.23**
47	.07	-.04	-.03	.18*	-.11	.09	.24**	.33**	.08	.07
F9 (Intra. Utilization)										
9 ^a	.00	.05	.01	-.15	.03	.11	-.33**	-.05	.01	.14
21	.01	.09	-.02	.10	.11	-.08	.04	-.07	.51**	.10
22	.05	-.06	.03	.04	.04	.24**	.16*	.08	.30**	.08
24	-.06	.05	-.04	.11	.06	.16	-.12	-.13*	.53**	.05
41	-.15	.02	.01	-.20*	.05	.01	.09	.09	.64**	-.01
F10 (Inter. Utilization)										
3	.15	-.00	-.05	.02	-.02	.02	-.02	.06	-.03	.81**
4	.05	.05	-.07	-.07	.06	.08	.07	.05	.07	.80**
11	-.08	.04	.00	.05	.03	.06	.03	-.01	.03	.71**
32	-.06	-.12	-.09	.00	.10	.32**	.06	.45**	.00	.00
36	.02	-.14	.15	.08	-.13	-.15	-.07	.06	.01	.53**

Note. Factor loadings are standardized. Values loading on their intended factors are in bold. Item numbers correspond with those in the English version of the PEC questionnaire (see Appendix E or <https://doi.org/10.1371/journal.pone.0062635.s001>).

^aReverse-scored items.

* $p < .05$. ** $p < .01$.

Table 6

Canadian Intercollegiate Head Coaches' Characteristics

Coach	Age Range	Gender	Current Team	Years as Head Coach of Current Team	Conference	2018-2019 Roster Size ¹
C1	35-39	F	Volleyball (F)	8	U Sports	17
C2	30-34	M	Basketball (M)	6	CCAA	11
C3	50-54	F	Volleyball (F)	11	CCAA	18
C4	55-59	M	Ice Hockey (M)	19	U Sports	24
C5	30-34	F	Volleyball (F)	5	CCAA	11
C6	35-39	F	Basketball (F)	9	U Sports	15
C7	40-44	M	Basketball (F)	17	CCAA	12
C8	40-44	F	Rugby (F)	6	U Sports	41
C9	45-49	M	Ice Hockey (F)	17	U Sports	22
C10	50-54	M	Soccer (M and F)	10 and 6	U Sports	27 and 25
C11	55-59	F	Basketball (F)	10	U Sports	16
C12	45-49	M	Basketball (M)	19	U Sports	13
C13	60-64	M	Soccer (M)	20	U Sports	25
C14	40-44	M	Volleyball (M)	9	CCAA	13
C15	45-49	M	Soccer (F)	20	U Sports	31

Note. F = female; M = male. ¹This information is included to provide the reader with a general sense of roster sizes. However, please note that coaches reflected on their experiences over the course of their tenure with their current team (i.e., roster sizes could vary from year to year).

FIGURES

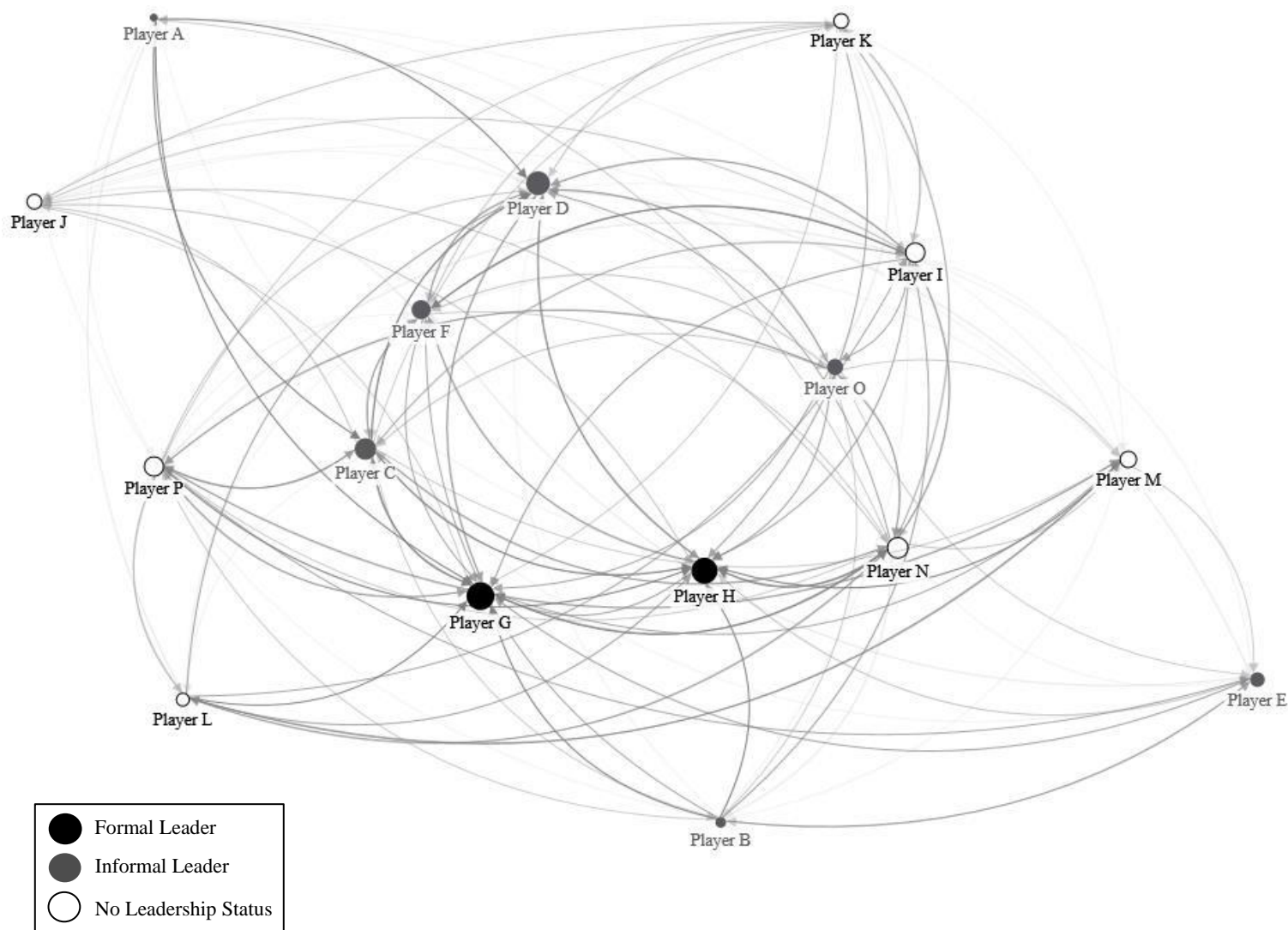


Figure 1. Leadership network for Team 1. Nodes are sized using each actor's dichotomized indegree centrality score. Athletes with larger nodes have more leadership influence within the network. Tie strength is reflected in the opacity of the ties where the lightest ties denote a value of 1 and the darkest ties denote a value of 4. Ties of 0 are not included in the sociogram.

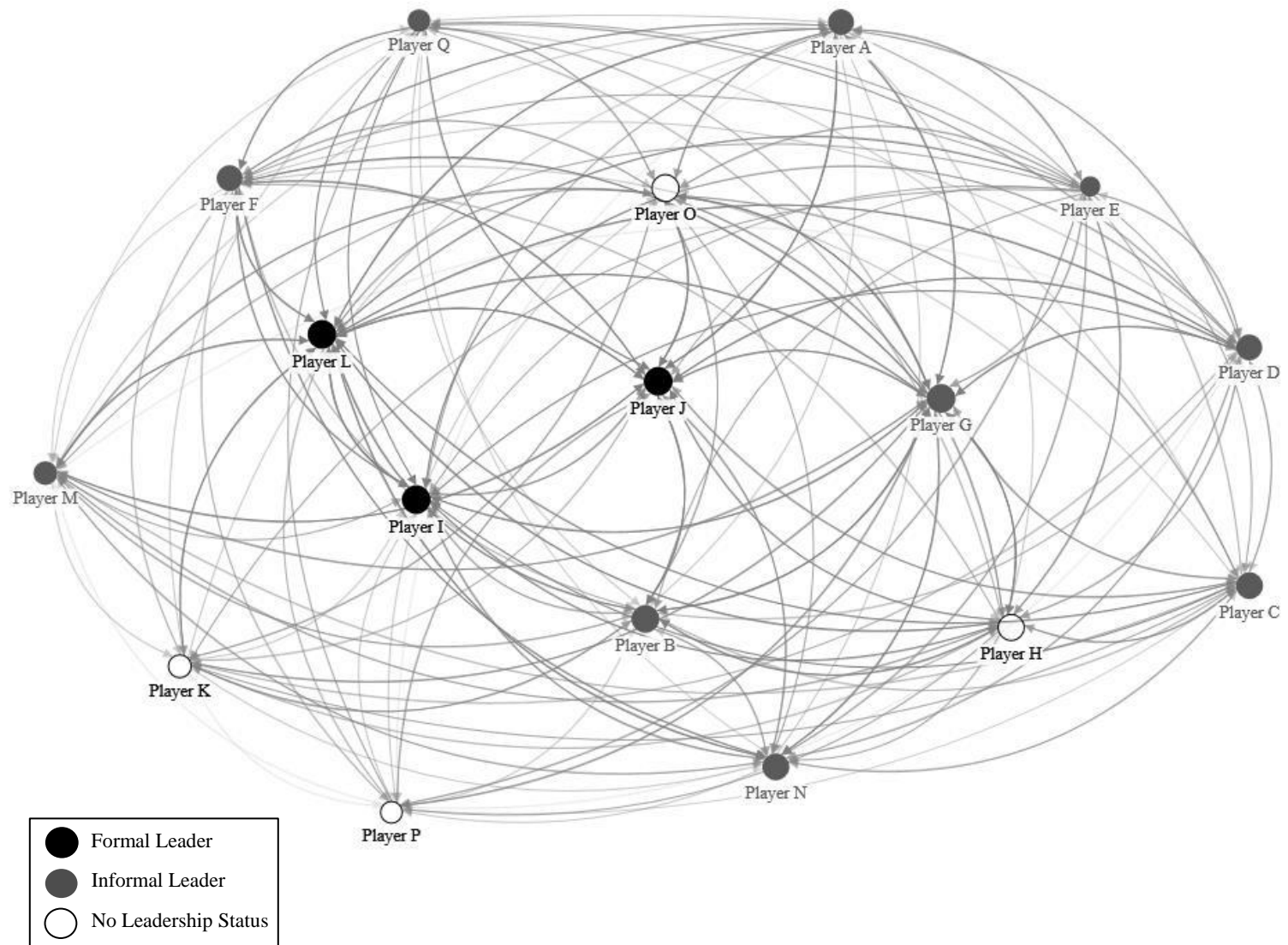


Figure 2. Leadership network for Team 2. Nodes are sized using each actor's dichotomized indegree centrality score. Athletes with larger nodes have more leadership influence within the network. Tie strength is reflected in the opacity of the ties where the lightest ties denote a value of 1 and the darkest ties denote a value of 4. Ties of 0 are not included in the sociogram.

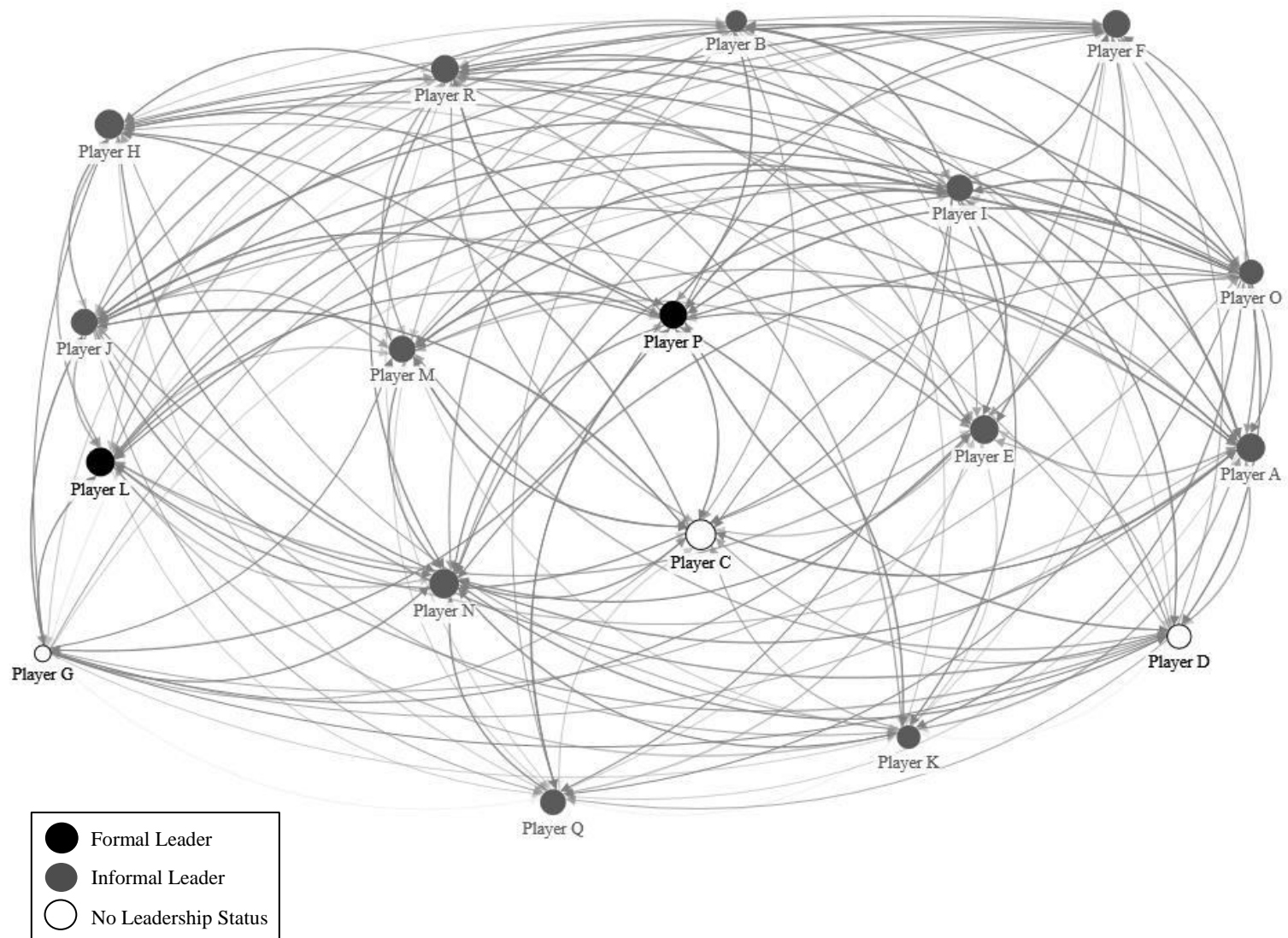


Figure 3. Leadership network for Team 3. Nodes are sized using each actor's dichotomized indegree centrality score. Athletes with larger nodes have more leadership influence within the network. Tie strength is reflected in the opacity of the ties where the lightest ties denote a value of 1 and the darkest ties denote a value of 4. Ties of 0 are not included in the sociogram.

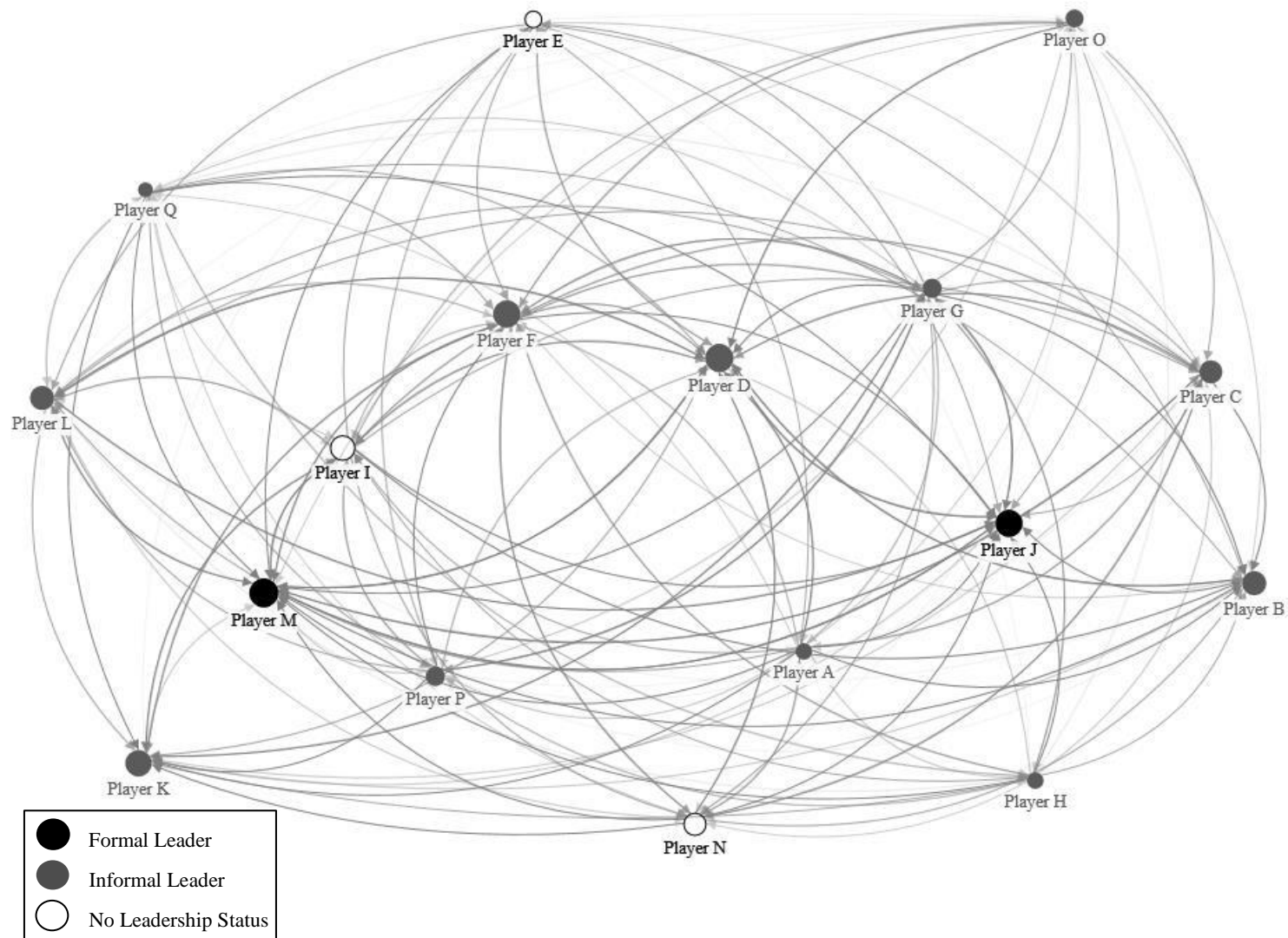


Figure 4. Leadership network for Team 4. Nodes are sized using each actor's dichotomized indegree centrality score. Athletes with larger nodes have more leadership influence within the network. Tie strength is reflected in the opacity of the ties where the lightest ties denote a value of 1 and the darkest ties denote a value of 4. Ties of 0 are not included in the sociogram.

APPENDICES

APPENDIX A

QUESTIONNAIRE (CHAPTER 2)

Part 1: General Information

This survey is designed to assess your perceptions of athlete leadership within your team. There are no right or wrong answers so please answer honestly. Your truthful responses are very important to us. Your responses will be kept in strict confidence. **Neither your coach nor anyone other than the researchers will see your responses.** Participation in this study is voluntary and you may withdraw your participation at any time (before the researcher leaves your facility with the surveys).

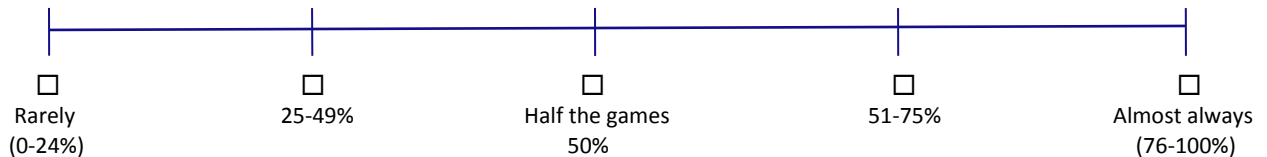
Name: _____ Age: _____ yrs. Gender: _____

1. How many years have you been playing soccer? _____ yrs.

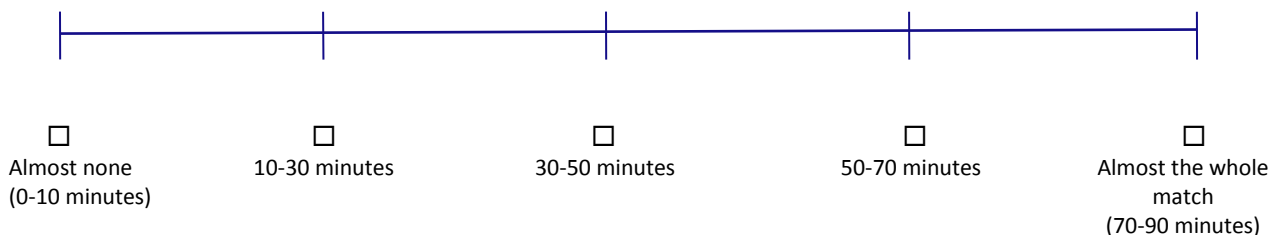
2. What position do you play on your team? (e.g., goalie, sweeper, center midfielder, etc.):

3. How long have you played on your current team? _____

4. How often have you started a soccer game this season?



5. So far this season, how much playing time have you typically received during your soccer games?



6. Please read the description below and check **THE BEST** answer as it applies to the type of leadership you provide to your current team:

☐ **Formal Athlete Leader** – An individual who has been appointed or elected to the position by the coach or team selection (i.e., team captains or assistant captains)

☐ **Informal Athlete Leader** – An individual who emerges as a leader through their interactions with teammates but holds no formal title

☐ **Neither of the above descriptions applies to me**

7. If you indicated that you are a *formal leader*, please select (check) one of the following:

☐ Captain ☐ Assistant Captain

Part 2: Survey

In this section, there are a total of 5 questions. You will first be asked to rate your teammates on two leadership questions and one performance question. You will then be asked two open-ended questions regarding leadership effectiveness. Please read the questions carefully before answering.

1.	Extremely ineffective	Worse than average	Average	Better than average	Extremely effective
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4
Is [Athlete's name] an effective leader?	0	1	2	3	4

Continued for each athlete on a given roster

2.	Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
I look to <i>[Athlete's name]</i> for leadership	0	1	2	3	4
<i>Please explain:</i>					
I look to <i>[Athlete's name]</i> for leadership	0	1	2	3	4
<i>Please explain:</i>					
I look to <i>[Athlete's name]</i> for leadership	0	1	2	3	4
<i>Please explain:</i>					
I look to <i>[Athlete's name]</i> for leadership	0	1	2	3	4
<i>Please explain:</i>					
I look to <i>[Athlete's name]</i> for leadership	0	1	2	3	4
<i>Please explain:</i>					

Continued for each athlete on a given roster

3. Please nominate the best player(s) on your team (please provide their first and last name):

4. In the space provided below, please describe what you believe makes an effective leader:

5. In the space provided below, please describe what you believe makes an ineffective leader:

APPENDIX B

RECRUITMENT EMAIL (CHAPTER 2)

Dear _____ (name of coach),

My name is Ashley Duguay and I am a doctoral student studying Sport Psychology in the Department of Kinesiology at the University of Windsor under the supervision of Dr. Todd Loughead (519-253-3000 ext. 2450 or loughead@uwindsor.ca). I am currently seeking participants (athletes) for a project, which will examine the structure of athlete leadership within sport teams.

I am emailing you to inquire if you would allow me to meet with your athletes to explain the nature of this study and seek their participation, which will include completing a short survey (15 minutes) on athlete leadership within their team. This research has been cleared by the University of Windsor Research Ethics Board. If you agree, we can arrange a day, time (e.g., before or following practice), and location (i.e., practice field) that is convenient for you and your athletes.

Your assistance and cooperation with this research is greatly appreciated. Please feel free to contact me via email (duguay7@uwindsor.ca) or telephone (519-253-3000 ext. 4058) with any questions. I look forward to hearing back from you.

Thank you for your time and consideration,

Ashley Duguay

APPENDIX C

CONSENT TO PARTICIPATE IN RESEARCH (CHAPTER 2)

Title of Study: How shared is shared leadership? A social network analysis of athlete leadership

You are asked to participate in a research study conducted by Ashley Duguay (Ph.D. Student) and Dr. Todd Loughhead (Ph.D., Faculty Supervisor), from the Department of Kinesiology at the University of Windsor. The results of this study will contribute to the completion of my dissertation. This study has received clearance from the University of Windsor Research Ethics Board.

If you have any questions or concerns about the research, please feel to contact Ms. Ashley Duguay at 519-253-3000 ext. 4058 or duguay7@uwindsor.ca, or Dr. Todd Loughhead at 519-253-3000 ext. 2450 or loughhead@uwindsor.ca.

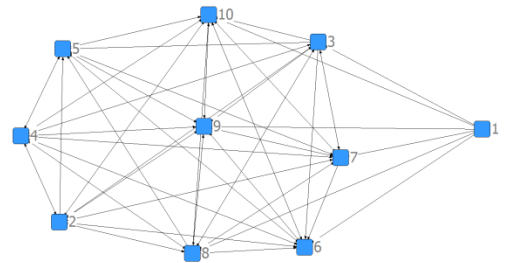
PURPOSE OF THE STUDY

The purpose of the current study is to examine the structural nature of athlete leadership within teams.

PROCEDURES

If you volunteer to participate in this study, you will be asked to complete a survey about athlete leadership within your team, along with general information about yourself. This survey should take approximately 15 minutes to complete and requires you to rate your teammates on several leadership questions. Likewise, your teammates will rate you on the same leadership questions. This process is completed through a roster-based survey where each athlete's name (including your name) will appear prior to the questions (e.g., *[teammate's name] is an effective leader*). In order to map out your team's athlete leadership structure, we will need you to give us your name when filling out the survey. Once the data have been collected, we will construct social network maps like this one:

** Please note: all information included in the map will be de-identified. For example, the names of athletes and teams will be replaced with*



POTENTIAL RISKS AND DISCOMFORTS

Every effort has and will be made to minimize any potential risks and discomforts; however there may be potential emotional or social discomforts associated with participation in this study. These include, (a) perceiving feelings of self-consciousness knowing that you are rating your teammates and they are rating you on questions pertaining to leadership, (b) loss of confidentiality, potentially resulting in feelings of self-consciousness or embarrassment. Additionally, there may be a disruption to team dynamics if answers are discussed among teammates following survey completion.

As previously mentioned, every effort has and will be made to minimize any potential risks and discomforts. This includes, the de-identification of all data (e.g., replacing the names of athletes and teams with pseudonyms or numbers) and the inclusion of multiple teams from the same sport. These precautionary measures will make it near impossible to link a network to a specific team and consequently an athlete to a specific network. Additionally, we ask that you *do not* discuss your responses with teammates, coaches, or others during or following the completion of your survey.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

Through the completion of the survey and the associated process of reflection that it will entail, you may gain insight into the leadership dynamics of your team. This may include what you look for in an effective leader and who you look to most for leadership. You may also develop a better understanding of the concept of

shared leadership within sport teams. Additionally, you may develop a better understanding of the process of social network analysis.

Results of the current study may help researchers, coaches, and athletes better understand the structure of athlete leadership within sport teams. From an applied perspective, this may help inform future athlete leadership development efforts and athlete leadership research in general. In addition, the use of social network analysis within sport is an emerging practice. Given the relational nature of sport, the current study may offer unique insight into team dynamics and may help encourage continued research using such methods.

COMPENSATION FOR PARTICIPATION

There will be no compensation for participation in this study.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. All data will be kept on a password protected computer in a locked office, only accessible by the research team. With permission from the research team one third party member (i.e., master's student) will also have access to the data in the beginning stage of data analysis in order to de-identify the data and remove any data associated with participants who did not provide consent. This is done so that the research team will not know who did or did not participate. Once this process is complete, only the research team will have access to the data.

In addition, all data will be properly de-identified prior to dissemination for academic presentations or publications.

PARTICIPATION AND WITHDRAWAL

Participation in this study is voluntary. You may withdraw your participation at any time without penalty prior to, during, or following (until the researcher leaves the facility with the completed surveys at which point data will be stripped of identifiers) the completion of your survey.

Additionally, you will be provided an envelope with your survey. If you decide you do not want to participate in the current study and you do not want any data associated with you to be used or you want to withdraw from the study but do not want the researchers, your teammates, or your coach to know, you can simply leave your survey blank and return it in the sealed envelope.

The investigator may withdraw you from this research if circumstances arise which warrant doing so.

- ☐ I agree to participate in the current study (i.e., I will rate my teammates and my teammates will rate me)

☐ I do not agree to participate in the current study but you can include my teammate's ratings of me

☐ I do not agree to participate in the current study and I do not want any of my data to be included

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

The results will be posted at the University of Windsor's Research Ethics Board website by February 1st, 2015 (<http://www.uwindsor.ca/reb>). If you have any additional concerns or questions, you can contact the investigators at the phone numbers or emails above.

SUBSEQUENT USE OF DATA

These data, properly de-identified, will form the basis of scholarly presentations and publications.

RIGHTS OF RESEARCH PARTICIPANTS

If you have questions regarding your rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCH PARTICIPANT/LEGAL REPRESENTATIVE

I understand the information provided for the study, *How shared is shared leadership? A social network analysis of athlete leadership* as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Name of Participant

Signature of Participant

Date

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

Signature of Investigator

Date

APPENDIX D

LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH

(CHAPTER 2)

Title of Study: How shared is shared leadership? A social network analysis of athlete leadership

You are asked to participate in a research study conducted by Ashley Duguay (Ph.D. Student) and Dr. Todd Loughhead (Ph.D., Faculty Supervisor), from the Department of Kinesiology at the University of Windsor. The results of this study will contribute to the completion of my dissertation. This study has received clearance from the University of Windsor Research Ethics Board.

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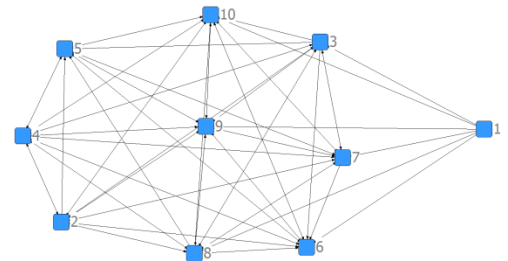
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COMPENSATION FOR PARTICIPATION

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Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. All data will be kept on a password protected computer in a locked office, only accessible by the research team. With permission from the research team one third party member (i.e., master's student) will also have access to the data in the beginning stage of data analysis in order to de-identify the data and remove any data associated with participants who did not provide consent. This is done so that the research team will not know who did or did not participate. Once this process is complete, only the research team will have access to the data.

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The investigator may withdraw you from this research if circumstances arise which warrant doing so.

- ☐ I agree to participate in the current study (i.e., I will rate my teammates and my teammates will rate me)
- ☐ I do not agree to participate in the current study but you can include my teammate's ratings of me
- ☐ I do not agree to participate in the current study and I do not want any of my data to be included

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SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

Signature of Investigator

Date

APPENDIX E

PROFILE OF EMOTIONAL COMPETENCE (PEC; Brasseur, Grégoire, Bourdu, &

Mikolajczak, 2013)

(CHAPTER 3)

Part 1: General Information (i.e., not part of the original PEC)

Age: _____ (years). Gender: _____

1. How many years have you been playing your sport? _____ (years)?
2. What year did you begin playing for your current team? _____

** Please read the descriptions below prior to answering the remaining questions **

Formal Athlete Leader – An individual who has been appointed or elected to the position by the coach or team selection (i.e., team captains or assistant captains)

Informal Athlete Leader – An individual who emerges as a leader through their interactions with teammates but holds no formal title

Please note that while some athletes are formal or informal leaders on their team, other athletes may not fulfill a leadership position. Rather, these athletes may be depended on to fulfill other responsibilities within their team. These responsibilities are equally valued and are essential to the success of teams.

3. I am a *formal athlete leader* on my team (please check your response): ☐ Yes ☐ No
4. If you answered *Yes* above, please indicate what formal leadership position you hold: ☐ Captain
☐ Assistant Captain
5. I am an *informal athlete leader* on my team: ☐ Yes ☐ No
6. If you indicated that you are a *formal OR informal leader*, please read the descriptions below and indicate the extent to which you feel you fulfill each leadership role.

Task Leadership: Task leaders have a leading role **on the field of play**. These leaders help the team focus on its goals and assist teammates in tactical decision-making. Task leaders also offer instruction and/or advice to teammates during games/practices if needed, which helps teammates better understand their responsibilities.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) On my current team, I fulfill a task leadership role.	1	2	3	4	5

Motivational Leadership: Motivational leaders have a leading role **on the field of play**. They encourage their teammates during competition to perform at their best. These leaders lift the spirits of players who are discouraged and align their teammates' emotions in the right direction so that the team can perform optimally.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
b) On my current team, I fulfill a motivational leadership role.	1	2	3	4	5

Social Leadership: Social leaders have a leading role **off the playing field**. They promote positive relations among team members, ensure teammates are included in team events, and contribute to a good team atmosphere (e.g., during social activities, in the dressing room). These leaders are trusted by teammates and have good listening skills. Finally, social leaders may also assist in resolving personal conflicts between team members.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
c) On my current team, I fulfill a social leadership role.	1	2	3	4	5

External Leadership: External leaders have a leading role **off the playing field**. These leaders represent the team at various events within the external team environment. For instance, external leaders would represent the team at community events, meetings with the coaching staff, or press conferences.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
d) On my current team, I fulfill an external leadership role.	1	2	3	4	5

SEE NEXT PAGE FOR PART 2

Part 2: The Profile of Emotional Competence

The questions below are designed to provide a better understanding of how you deal with your emotions in daily life. Please answer each question spontaneously, taking into account the way you would normally respond. There are no right or wrong answers as we are all different on this level.

For each question, you will have to give a score on a scale from 1 to 5, with *1 meaning that the statement does not describe you at all or you never respond like this*, and *5 meaning that the statement describes you very well or that you experience this particular response very often*.

1. As my emotions arise I don't understand where they come from.	1	2	3	4	5
2. I don't always understand why I respond in the way I do.	1	2	3	4	5
3. If I wanted, I could easily influence other people's emotions to achieve what I want.	1	2	3	4	5
4. I know what to do to win people over to my cause.	1	2	3	4	5
5. I am often a loss to understand other people's emotional responses.	1	2	3	4	5
6. When I feel good, I can easily tell whether it is due to being proud of myself, happy or relaxed.	1	2	3	4	5
7. I can tell whether a person is angry, sad or happy even if they don't talk to me.	1	2	3	4	5
8. I am good at describing my feelings.	1	2	3	4	5
9. I never base my personal life choices on my emotions.	1	2	3	4	5
10. When I am feeling low, I easily make a link between my feelings and a situation that affected me.	1	2	3	4	5
11. I can easily get what I want from others.	1	2	3	4	5
12. I easily manage to calm myself down after a difficult experience.	1	2	3	4	5
13. I can easily explain the emotional responses of the people around me.	1	2	3	4	5
14. Most of the time I understand why people feel the way they do.	1	2	3	4	5

15. When I am sad, I find it easy to cheer myself up.	1	2	3	4	5
16. When I am touched by something, I immediately know what I feel.	1	2	3	4	5
17. If I dislike something, I manage to say so in a calm manner.	1	2	3	4	5
18. I do not understand why the people around me respond the way they do.	1	2	3	4	5
19. When I see someone who is stressed or anxious, I can easily calm them down.	1	2	3	4	5
20. During an argument I do not know whether I am angry or sad.	1	2	3	4	5
21. I use my feelings to improve my choices in life.	1	2	3	4	5
22. I try to learn from difficult situations or emotions.	1	2	3	4	5
23. Other people tend to confide in me about personal issues.	1	2	3	4	5
24. My emotions inform me about changes I should make in my life.	1	2	3	4	5
25. I find it difficult to explain my feelings to others even if I want to.	1	2	3	4	5
26. I don't always understand why I am stressed.	1	2	3	4	5
27. If someone came to me in tears, I would not know what to do.	1	2	3	4	5
28. I find it difficult to listen to people who are complaining.	1	2	3	4	5
29. I often take the wrong attitude to people because I was not aware of their emotional state.	1	2	3	4	5
30. I am good at sensing what others are feeling.	1	2	3	4	5
31. I feel uncomfortable if people tell me about their problems, so I try to avoid it.	1	2	3	4	5
32. I know what to do to motivate people.	1	2	3	4	5

33. I am good at lifting other people's spirits.	1	2	3	4	5
34. I find it difficult to establish a link between a person's response and their personal circumstances.	1	2	3	4	5
35. I am usually able to influence the way other people feel.	1	2	3	4	5
36. If I wanted, I could easily make someone feel uneasy.	1	2	3	4	5
37. I find it difficult to handle my emotions.	1	2	3	4	5
38. The people around me tell me I don't express my feelings openly.	1	2	3	4	5
39. When I am angry, I find it easy to calm myself down.	1	2	3	4	5
40. I am often surprised by people's responses because I was not aware they were in a bad mood.	1	2	3	4	5
41. My feelings help me to focus on what is important to me.	1	2	3	4	5
42. Others don't accept the way I express my emotions.	1	2	3	4	5
43. When I am sad, I often don't know why.	1	2	3	4	5
44. Quite often I am not aware of people's emotional state.	1	2	3	4	5
45. Other people tell me I make a good confidant.	1	2	3	4	5
46. I feel uneasy when other people tell me about something that is difficult for them.	1	2	3	4	5
47. When I am confronted with an angry person, I can easily calm them down.	1	2	3	4	5
48. I am aware of my emotions as soon as they arise.	1	2	3	4	5
49. When I am feeling low, I find it difficult to know exactly what kind of emotion it is I am feeling.	1	2	3	4	5
50. In a stressful situation I usually think in a way that helps me stay calm.	1	2	3	4	5

APPENDIX F

RECRUITMENT EMAIL (CHAPTER 3)

Dear _____ (name of coach),

My name is Ashley Duguay and I am a third year doctoral candidate studying Sport and Exercise Psychology in the Department of Kinesiology at the University of Windsor under the supervision of Dr. Todd Loughead (519-253-3000 ext. 2450 or loughead@uwindsor.ca). I am currently seeking athletes for a project, which will examine how athlete leaders' (formal and informal leaders) deal with their emotions in daily life.

I am emailing you to inquire if you would allow me to meet with your athletes (all team members) to explain the nature of this study and seek their participation, which will include completing a short questionnaire (15 minutes) on how they deal with their emotions in daily life. This research has been cleared by the University of Windsor and the *(insert the university that the coach is associated with)* Research Ethics Boards. If you agree, we can arrange a day, time, and location that will be convenient for you and your athletes.

Your assistance and cooperation with this research is greatly appreciated. Please feel free to contact me via email (duguay7@uwindsor.ca) or telephone (519-253-3000 ext. 4058) with any questions. I look forward to hearing back from you.

Thank you for your time and consideration,

Ashley Duguay

APPENDIX G

LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH

(CHAPTER 3)

Title of Study: An examination of athlete leaders' emotional competence

You are asked to participate in a research study conducted by Ashley Duguay (Ph.D. Candidate) and Dr. Todd Loughhead (Ph.D., Faculty Supervisor), from the Department of Kinesiology at the University of Windsor. The results of this study will contribute to the completion of a dissertation. This study has received clearance from the University of Windsor Research Ethics Board.

If you have any questions or concerns about the research, please feel to contact Mrs. Ashley Duguay at 519-253-3000 ext. 4058 or duguay7@uwindsor.ca, or Dr. Todd Loughhead at 519-253-3000 ext. 2450 or loughhead@uwindsor.ca.

PURPOSE OF THE STUDY

The purpose of the current study is to examine athlete leaders' emotional competence defined as how individuals identify, express, understand, regulate, and use intrapersonal or interpersonal emotional information.

PROCEDURES

If you volunteer to participate in this study, you will be asked to complete a questionnaire regarding how you deal with your emotions in daily life. This questionnaire should take approximately 15 minutes to complete.

POTENTIAL RISKS AND DISCOMFORTS

Every effort has and will be made to minimize any potential risks and discomforts; however there may be potential emotional or social discomforts associated with participation in this study. These include, (a) feeling uncomfortable responding to questions regarding how you deal with your emotions in daily life and (b) feeling uneasy completing the questionnaire in a team setting.

As previously mentioned, every effort has and will be made to minimize any potential risks and discomforts. This includes, collecting anonymous data, providing an envelope for all documents to be returned in, and separating all teammates to provide privacy when completing questionnaires. Additionally, we ask that you *do not* discuss your responses with teammates, coaches, or others during or following the completion of your survey.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

Through the completion of the questionnaire and the associated process of reflection that it will entail, you may gain insight into how you deal with your emotions in daily life.

Results of the current study may help researchers, coaches, and athletes better understand how athlete leaders deal with their emotions in daily life. From a theoretical perspective, the construct validity of a questionnaire that measures emotional competence will be examined in a sport context with intercollegiate athletes. It is hoped that this information will encourage future research examining athlete leaders' emotional competence. From an applied perspective, it is hoped that a deeper understanding of the associations between athlete leadership and emotional competence will augment applied practitioners' work with athlete leaders.

COMPENSATION FOR PARTICIPATION

You will have the opportunity to enter a draw to win one of four \$50 gift cards for Sport Check.

CONFIDENTIALITY

Any information that is obtained in connection with this study will remain confidential. All data will be kept on a password-protected computer in a locked office, only accessible by the research team. Data will be kept indefinitely. In addition, all data will be aggregated when included in academic presentations or publications. This means that no individual data will be presented in isolation.

PARTICIPATION AND WITHDRAWAL

Participation in this study is voluntary. If you volunteer to participate in this study, you may withdraw your participation at any time (prior to or during completion of the questionnaire) without penalty of any kind. However, you will not be able to withdraw once you have handed in your questionnaire. You may also refuse to answer any questions and still remain in the study.

The investigator may withdraw you from this research if circumstances arise which warrant doing so.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

The results will be posted at the University of Windsor's Research Ethics Board website by February 1st, 2018 (<http://www.uwindsor.ca/reb>). If you have any additional concerns or questions, you can contact the investigators at the phone numbers or emails above.

SUBSEQUENT USE OF DATA

These data will form the basis of scholarly presentations and publications. Additionally, data may potentially be used for other purposes in the future (e.g., teaching, future analysis, publishing of dataset, archiving in an institutional repository, etc.).

RIGHTS OF RESEARCH PARTICIPANTS

If you have questions regarding your rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: ethics@uwindsor.ca

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

Signature of Investigator

Date

APPENDIX H

RECRUITMENT EMAIL (CHAPTER 4)

Dear _____ (name of coach),

My name is Ashley Duguay and I am a doctoral candidate studying sport psychology in the Department of Kinesiology at the University of Windsor. I accessed your contact information through your institution's website. I am currently seeking participants for a project that will examine how head coaches' facilitate the development of shared athlete leadership in their team. Athlete leadership is shared when *multiple* team members (i.e., athletes) provide leadership to the team.

Your participation includes completing an interview, which will take 45 to 75 minutes to complete. Participation in this study is completely voluntary. All information obtained will be confidential. If you agree to participate, a day and time will be arranged to conduct the interview. In an attempt to reduce participant burden, I (researcher) will conduct the interview at a time and location that is convenient for you. If this is not possible (e.g., for travel reasons), interviews will be done using FaceTime, Skype, or phone. You will receive a \$15 Tim Horton's gift certificate for your participation in this study.

Participation Criteria: We are looking to interview you if you *intentionally* use strategies to develop shared athlete leadership in your team. You must be a head or primary coach on your team and have coached a USport/CCAA team for a minimum of 5 years to be eligible to participate in this study.

Please note that my role as a researcher in the present study is separate from my role as a sport psychology consultant. Not participating in the present study will in no way impact any previous, current, or future sport psychology consulting relationships with myself or any of the research team.

Please contact me if you are interested in participating, if you have any questions, or if you need some clarification regarding aspects of the study. Please contact me at duguay7@uwindsor.ca, or 226-787-6846. I have also attached a document (i.e., Letter of Information), which contains more information about the nature of this study. This study has received University of Windsor Research Ethics Board clearance.

Also, if institutional or Research Ethics Board (REB) approval is required for you to participate in this study, please contact the principle investigator, Ashley Duguay, and advise them on the necessary permissions.

Thanks in advance for your participation,

Ashley Duguay (M.H.K., Ph.D. Candidate)

APPENDIX I

LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH

(CHAPTER 4)

Title of Study: Facilitating the Development of Shared Athlete Leadership: Insights from Intercollegiate Coaches

You are asked to participate in a research study conducted by Ashley Duguay (Ph.D. Candidate - Department of Kinesiology at the University of Windsor), Dr. Todd Loughhead (Ph.D., Faculty Supervisor), Dr. Matt Hoffmann, and Dr. Jeffrey Caron. The results of this study will contribute to the completion of a dissertation. This study has received clearance from the University of Windsor Research Ethics Board.

If you have any questions or concerns about the research, please feel to contact Mrs. Ashley Duguay at 226-787-6846 or duguay7@uwindsor.ca, or Dr. Todd Loughhead at 519-253-3000 ext. 2450 or loughhead@uwindsor.ca.

PURPOSE OF THE STUDY

The purpose of the current study is to explore head coaches' perceptions of and strategies used to develop shared athlete leadership. Athlete leadership is shared when *multiple* team members (i.e., athletes), as opposed to a *single* athlete, provide leadership to the team. Importantly, the shared nature of this leadership goes beyond the simple selection of multiple formal athlete leaders (i.e., team captains, co-captains, and assistant captains). Please note that the intentional use of strategies to facilitate the development of shared athlete leadership as well as five years experience coaching a USport or CCAA team is required for participation in this study. Participants must be current head coaches of varsity sport teams.

PROCEDURES

If you volunteer to participate in this study, you will be asked to complete a brief survey and an interview that may last between 45-75 minutes in duration.

If institutional or REB approval is required for you to participate in this study, please contact the principle investigator, Ashley Duguay, and advise them on the necessary permissions.

POTENTIAL RISKS AND DISCOMFORTS

Every effort has been and will be made to minimize any potential risks and discomforts; however there may be potential emotional or social discomforts associated with participation in this study. These include (a) the potential for individuals (e.g., assistant coaches or athletes) to recognize direct quotes and subsequently deduce your participation in the study and (b) feeling pressured to participate if a dual role exists with any of the researchers (i.e., researcher and consultant).

As previously mentioned, every effort has been and will be made to minimize any potential risks and discomforts. For instance, only the primary researcher, Ashley Duguay, will have access to the data. Furthermore, all information will be de-identified (e.g., name, university affiliation) prior to being shared with the research team. Only de-identified data will also be used for dissemination of results (e.g., journal article, conference abstracts).

Participation in the present study is completely voluntary and not participating in the present study will in no way impact any previous, current, or future sport and exercise psychology consulting relationships with any of the research team.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

Through the completion of the interview and the associated process of reflection that it will entail, you may gain insight into your current coaching practices as they relate to your experiences with shared athlete leadership.

Results of the current study may help researchers, coaches, and athletes better understand shared athlete leadership and how coaches facilitate its development. It is hoped that this information will encourage future research examining strategies used to develop shared athlete leadership in sport teams. From an applied perspective, it is hoped that a deeper understanding of shared athlete leadership will augment applied practitioners' work with athlete leaders.

COMPENSATION FOR PARTICIPATION

You will receive a \$15 gift card to Time Horton's for your participation in this study. If you withdraw your participation at any point during or after the interview, you will still receive a gift card.

CONFIDENTIALITY

Any information that is obtained in connection with this study will remain confidential. All data will be kept on a password-protected computer in a locked office, only accessible by the primary researcher.

In addition, participants' interviews will be audio recorded so that responses may be transcribed verbatim. The audio recordings will also be kept in a password protected file accessible only by the primary researcher. Audio recordings and transcripts of the interviews will be filed by number (i.e., not participant names). Audio recordings will be destroyed immediately after transcription, while the de-identified surveys and transcripts of interviews will be kept indefinitely.

It should be noted that although several researchers (individuals listed at top of form) are involved in this project, only the primary researcher (Ashley Duguay), who is the interviewer, will know the identity of the participants. All information will be de-identified (e.g., names of participants and institutions removed) before the information is shared with the research team and general public.

PARTICIPATION AND WITHDRAWAL

Participation in this study is voluntary and not participating in the present study will in no way impact any previous, current, or future sport and exercise psychology consulting relationships with any of the research team. If you volunteer to be in this study, you may withdraw at any time prior to, during, or after the interview (i.e., up to 72 hours after the end of your interview at which point data transcription and analyses will begin), without consequences of any kind. Please note that you will not be able to withdraw your participation beyond 72 hours after the end of your interview. You may also refuse to answer any questions and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

The results will be posted at the University of Windsor's Research Ethics Board website by October 1st, 2019 (<http://www.uwindsor.ca/reb>). If you have any additional concerns or questions, you can contact the investigators at the phone numbers or emails above.

SUBSEQUENT USE OF DATA

These data will form the basis of scholarly presentations and publications. Additionally, data may potentially be used for other purposes in the future (e.g., teaching, future analysis, publishing of dataset, archiving in an institutional repository, etc.).

RIGHTS OF RESEARCH PARTICIPANTS

If you have questions regarding your rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: ethics@uwindsor.ca

SIGNATURE OF INVESTIGATORS

These are the terms under which we will conduct research.

Signature of Investigators

Date

APPENDIX J

CONSENT FOR AUDIO TAPING (CHAPTER 4)

Participant Name: _____

Title of Study: Facilitating the Development of Shared Athlete Leadership:
Insights from Intercollegiate Coaches

I consent to the audio-taping of my interview. I understand that participation in this study is voluntary and that I am free to withdraw without consequence at any time prior to, during, or after my interview (i.e., up to 72 hours after the end of my interview) by requesting that the taping is stopped. I also understand that my name will not be revealed to anyone and that taping will be kept confidential. Audio recordings and transcripts of the interviews will be filed by number only and stored on the primary researcher's password-protected computer in her locked office.

The destruction of the audio recordings will be completed after transcription and verification.

I understand that confidentiality will be respected and that the audio recordings will be for professional use only.

This research has been cleared by the University of Windsor Research Ethics Board.

Name of Participant

Signature of Participant

Date

APPENDIX K
SURVEY (CHAPTER 4)

Name: _____

Please tell me a little about your background by answering the questions below.

1. Age: ____ yrs.
2. Gender: _____
3. What sport do you coach? _____
4. For how many years have you been the head coach of your current team?

5. How many years of head coaching experience do you have in this sport?

6. How many years of coaching experience (i.e., including assistant coach positions) do you have in this sport? _____

APPENDIX L

INTERVIEW GUIDE (CHAPTER 4)

Pre-interview routine:

- Introduction to the study
- Review Letter of Information
- Consent for Audio Recording / General Consent
- Demographic survey

Opening questions:

1. Can you describe your coaching experiences and progression for me?
2. How would you describe your coaching philosophy?
3. How would you describe your leadership style?

Main questions:

4. I am going to read you the definition of shared athlete leadership that was included in the recruitment email and Letter of Information. [Athlete leadership is shared when *multiple* team members (i.e., athletes) provide leadership to the team]. Having had some time to reflect, what are your thoughts on this definition?
 - Follow-up: How do you know when the leadership provided by your athletes is or is not being shared?
 - Follow-up: Could you describe what shared athlete leadership generally looked like within the USport/ACAA teams that you have coached (e.g., how shared was the leadership, what athletes were generally involved)?
 - Follow-up: Over the years, have you noticed any factors that caused athlete leadership to become more or less shared in your teams (e.g., team composition, time of year, success of the team)? If so, could you describe them?
5. How do you go about intentionally facilitating the development of shared leadership among the athletes on your team (i.e., what specific strategies have you used)?
 - Follow-up: I previously asked you if you had noticed any factors that caused athlete leadership to become more or less shared in your teams, similarly, have there been any factors that have influenced the strategies

you use (e.g., when you implement them, with whom you choose to implement them with, how you approach implementing the strategy)?

- Follow-up: What strategies have been particularly effective/ineffective?
6. Describe any challenges you have faced when trying to develop shared athlete leadership using your strategies.
 - Follow-up: How have you approached athletes who do not buy-into a shared athlete leadership approach?
 - Follow-up: How do you secure buy-in from the rest of your coaching staff?
 - Follow-up: Could you describe how your adoption of a shared approach to athlete leadership has developed over time?
 7. How has shared athlete leadership impacted your teams?
 - Follow-up: What are the benefits/drawbacks of shared athlete leadership?
 8. What advice would you give a coach who is trying to develop shared athlete leadership in their team?

Concluding questions:

9. Is there anything else about shared athlete leadership in general or specific to the strategies you use to facilitate the development of shared athlete leadership that I should know?
10. Is there anything else you would like to add that I didn't ask?

VITA AUCTORIS

NAME: Ashley M. Duguay

PLACE OF BIRTH: Saint John, NB

YEAR OF BIRTH: 1986

EDUCATION: Kennebecasis Valley High School, Saint John, NB,
2004

St. Thomas University, B.A., Fredericton, NB, 2008

St. Thomas University, B.Ed., Fredericton, NB, 2009

Virginia Commonwealth University, M.Ed.,
Richmond, VA, 2012

University of Windsor, M.H.K., Windsor, ON, 2014

University of Windsor, Ph.D., Windsor, ON, 2019