AN EXPLORATORY EXAMINATION OF THE SOCIAL NETWORKS OF SPORT COACHES

By

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PUBLIC ABSTRACT

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Sport participation can have a powerful influence on the physical, psychological, and social development of youth across the nation (Camiré & Trudel, 2014; Gould & Carson, 2008). Within the arena of sport, coaches are one of the most influential stakeholders in ensuring that positive developmental outcomes occur at all ages of participation (Gould, 2016). As with any profession, understanding how coaches learn their craft is vital in understanding how to produce more positive outcomes for athletes. Coaches have shown a clear preference for learning from other coaches, as they view their peers as a valuable source of context specific information. However, currently the literature reflects little insight as to what these informal coach social networks may look like in practice. As such, the purpose of this study was to identify the structure of two regional coaching networks, identify the type of knowledge shared within these networks, and understand who is considered a person of influence and why within each network. A mixed method study was designed to address the study purposes, utilizing social network analysis and qualitative semi-structured interviews. The results of the study reflected a clear structure to these coaching networks, including the identification of several individuals who were influential within the network due to their central role and/or their role in helping to connect otherwise disconnected coaches. In addition, these influential individuals served as a connection between coaches across geographic region and club. The quantitative analysis also reflected that coaches appear to prefer talking about a range of topics with other coaches to whom they go to for advice. In examining how these individuals of influence gained that influence, it appeared

that a few characteristics described influence within the network: a variety of coaching experiences, distinctive personal attributes (e.g., approachability, passion for the sport), and intentional, relationship oriented, actions. These results not only serve a theoretical purpose in providing a picture of what these informal coach social networks look like in reality, but they also offer a practical purpose in assisting national governing bodies of sport in understanding how knowledge may flow from coach-to-coach within a sport network.

ABSTRACT

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Coaching learning literature highlights several ways that sport coaches learn how to excel in their profession; however, one common finding among studies is that coaches show a distinct preference for, and frequently access, learning directly from other coaches. This desire to learn from other coaches is often rooted in finding this source of learning to be more contextually relevant. While studies have examined the idea of purposively building a social "network" to share coaching knowledge (e.g., communities of practice, mentoring), few studies have examined the structure of these knowledge sharing networks without an artificial structure imposed. Thus, the purposes of this study are to: identify the structure of two regional coaching networks, identify the type of information that flows through the coaching networks, and understand who is considered a person of influence within the identified network structure and why these individuals are influential. To address these purposes, a mixed method approach was used comparing two regional local swim committee (LSC) samples. First, a quantitative social network analysis survey was used to identify the structure of the network and the information shared within members of this network; second, qualitative semi-structured interviews were used to explore why certain members of this network were considered influential. The results, across both LSCs, showed the presence of multiple individuals of influence (i.e., central and bridging nodes); however, both samples were defined by one individual of primary influence who reflected high closeness and betweenness centrality. These individuals of primary influence exhibited connections across competitive club and across large geographic regions within the

LSC. The social network analysis data also reflected that coaches appear to prefer seeking advice from other coaches if they were a source with whom a variety of coaching topics could be discussed. The qualitative case study results reflected continuity between an influential individual's perception of his own influence and those who sought him for advice. Influential individuals within coaching networks appear to be characterized by several aspects that strengthen their position as an advice-giving source, including: (1) a variety of coaching experiences (e.g., sitting on local sport committees, experience with high performance, and longevity in the region); (2) personal characteristics (e.g., approachability, passion for the sport, knowledge base, communication skills, and work ethic); and (3) intentional actions as a coach (e.g., dynamically changing their programs, engaging in conversation willingly, hosting meets/clinics, and offering assistance to other teams). The themes regarding influence within a coaching network strongly reflect trends seen within the larger social network analysis and diffusion theory bodies of literature. Furthermore, they may provide useful tools for assisting national governing bodies of sport in identifying coaches of influence within a network at a grassroots level. NGBs may benefit in identifying these individuals due to the breadth of influence geographically and across club and the role these individuals may play in the knowledge dissemination process.

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CHAPTER I: INTRODUCTION

Sport participation can have a powerful influence on the physical, psychological, and social development of youth across the nation (Camiré & Trudel, 2014; Gould & Carson, 2008). Within the arena of sport, coaches are one of the most influential stakeholders in ensuring that positive developmental outcomes occur (Gould, 2016). That is, when young people take part in programs run by knowledgeable coaches, who form quality relationships with them, the likelihood of positive outcomes dramatically increases (Watson, Connole, & Kadushin, 2011). Given the substantial influence of coaches, a well-developed understanding of how coaches learn, and how this learning translates into behavior on the field, is necessary for the field of sport.

Twenty years of coach learning research has provided valuable insight into how coaches learn both in formal (e.g., certification courses) and informal (e.g., talking to co-coaches) settings. In this time, several researchers (Mallett, Trudel, Lyle, & Rynne, 2009; Nelson, Cushion, & Potrac, 2006) have highlighted that coaches often show a preference for informal learning opportunities, in particular learning from other coaches. Coaches view conversations with other coaches as more contextually relevant and meaningful to their development. Within studies that have focused on these informal learning situations (Walker, Thomas, & Driska, 2018), it has been suggested that networks of coaches exist, and these networks are often critical for engaging in this informal coach-to-coach knowledge exchange. However, while frequently referenced, research has not yet focused on understanding the natural structure to these coaching networks within various competitive settings. Stozskowski and Collins (2014) and Occhino, Mallett, and Rynne (2013) both created calls for understanding these dynamic social networks. Given the potential impact learning from a network of peers can play on actual behaviors

(Dearing, 2008; Rogers, 2004), it is necessary to understand the structure and function of these coach networks in action.

Beyond simply adding to the theoretical understanding of coach learning, examining the structure of coach networks has meaningful practical significance. Understanding the structure of a coach network may allow for clarity regarding how and what type of information flows from coach to coach. Furthermore, understanding this flow of information could allow for those concerned with improving the quality of coaching (e.g., coach educators, national governing bodies of sport (NGB)) to utilize more effective methods of knowledge dissemination. In a world of increasing technological connection and access, these stakeholders in coaching have to make decisions about where valuable time and financial resources should be invested to make the most meaningful impact on coaches within their sport(s). As such, the primary purpose of this study was to examine the social network structure of two regional coaching networks, with secondary purposes to understand what information flowed through the networks and why certain individuals held a position of influence in the networks. Addressing these study purposes allows for: (1) a valuable contribution to be made to the research literature regarding how coaches learn through networks of peers, and (2) coach educators and NGBs to understand how to best leverage existing networks to disseminate best practice information.

History of Coach Learning

In order to understand why social networks may be a potent way for coaches to learn their craft, it is important to understand a brief history of the field of coach learning research. While the field of sport psychology has examined how coaches learn their craft for many years, it took until the mid-2000s for a common vernacular to be decided upon when discussing learning situations that impact coach development. Two prominent, but complementary, views of

learning were adopted from the field of education: Coombs and Ahmed's (1974) view of learning situations as formal (e.g., certification courses), nonformal (e.g., coaching clinic run by fellow coach), and informal (e.g., knowledge search on the internet), and Moon's (1999) view of learning as mediated (e.g., led by someone other than the learner), unmediated (e.g., initiated by the learner), and internal (e.g., reflection by learner on current knowledge) (Nelson et al., 2006; Werthner & Trudel, 2006).

It can help to view these heuristics together to understand subtle variations in the learning situations coaches are faced with in their profession. For instance, attending a coaching clinic is generally not a mandated action (i.e., not formal learning), but it is a source of mediated learning (i.e., content directed by someone other than the learner). For conceptual clarity, the above learning situations will be divided into formal/nonformal (e.g., mediated) and informal (e.g., unmediated and reflection) for the remainder of the paper. Informal learning will refer to both unmediated and internal learning situations from Moon's (1999) heuristic, as they both fit within the overarching conceptualization of informal learning: learning or reflection pursued directly by a coach (Nelson et al., 2006).

By defining these types of learning situations, researchers provided a clearer approach to exploring the differences in these types of learning. As the literature grew in the field from 2000-2018, several pros and cons to each type of learning were highlighted (Cushion et al., 2010; Mallet et al., 2009). As such, scholars have concluded that for optimal development, coaches stand to benefit from a balance of all types of learning situations, as they each hold different value to the professional coach (Cushion et al., 2010; Mallett et al., 2009; Trudel & Gilbert, 2006). In fact, the exact sequence of learning, and value of different learning situations, may

change depending on the coaching context and developmental point in the coach's career (Cassidy & Rossi, 2006; Cushion et al., 2010; Côté, 2006; Nash & Sproule, 2009).

Though a balance of learning situations is recommended, informal learning situations are of particular interest to researchers, as coaches frequently cite engaging in this type of learning and show a preference for the information obtained through this learning situation (Erickson, Bruner, MacDonald & Côté, 2008). Informal learning situations allow coaches to able to reflect upon specific coaching problems and see how solutions might look in action (by another coach); as such, these learning situations may be more likely to change a coach's on-the-field behavior as well (Erickson, Côté, & Fraser-Thomas, 2007; Erickson et al., 2008; Walker et al., 2018; Winchester, Culver, & Camiré, 2011; 2013). It is clear that these interactions often do not occur in isolation but rather through a network of peers with whom the coach interacts consistently (Bertram, Culver, & Gilbert, 2017; Culver & Trudel, 2008; Culver, Trudel, & Werthner, 2009; Koh, Ho, & Koh, 2017). As such, it stands to reason that examining the structure of coaching networks may provide insight into how information flows between coaches and what is learned within the bounds of these coach networks. Furthermore, a better understanding of coach network structure may help in understanding how influence is developed with coaching peers, including the contextual factors that may make influence more likely, and how to optimize the impact of this informal learning situation.

While the concept of examining social networks is not foreign to the field of sport (Hambrick, 2013; MacLean, Cousens, & Barnes, 2011; Nash, Sproule, & Horton, 2017; Nixon, 1993; Occhino et al., 2013), it has not yet been used to examine the field of coach learning. With the continued ease of interacting informally with a social network (e.g., expansion of the internet, social media, video conferencing), this appears to be a valid and important area to examine.

Furthermore, NGBs must continually re-evaluate their role in the dissemination of non-required coaching knowledge, which can be critical in strengthening the culture of their sport at all levels. Given the desire to understand the structure of a coaching social network and how information flows from one coach to another in a network, a social network approach offers a theoretical and methodological way to examine these questions (Borgatti, Everett, & Johnson, 2013).

Coach Learning Paradigms and Social Networks

Nelson, Potrac, and Groom (2016) highlight that research paradigms often represent researcher's views about the way knowledge and experience are constructed and how this knowledge is translated into pedagogical practices. In a recent review of informal and nonformal methods of learning in coaches, Walker et al. (2018) highlighted that the majority of research within the field of informal coach learning was completed using qualitative methods, often arriving at the conclusion that coach learning is idiosyncratic in nature (Callary, Werthner, & Trudel, 2012; Irwin, Hanton, & Kerwin, 2004). Furthermore, several coach learning researchers frame their research from the qualitative epistemology of social constructionism, the idea that knowledge, learning, and reality are constructed through interpersonal interactions (Christensen, 2014; Gallimore, Gilbert, & Nater, 2014; Nash & Sproule, 2011; Patton, 2013; Stoszkowski & Collins, 2015). While social network approaches do not always share this epistemology and qualitative approach, they do share a similar interpersonal assumption: individuals' decisions, attributes, attitudes, and actions can all be influenced by the individuals with whom they interact (Borgatti et al., 2013; Scott, 2013). As such, Robins (2015) highlights that if your understanding of a research question suggests social processes or structures may at play, a social network analysis approach may be well justified. Given the related value and importance placed on the

interpersonal connections within coach learning body of literature, a social network approach offers a nice conceptual fit to examine the phenomenon of informal learning in coaches.

Full Social Network Analysis

Social network analysis is generally conducted in one of two ways: (1) through the examination of a full network, or (2) through the examination of ego (personal) networks (Scott, 2013). In gathering full network data, the intent of the analysis is to understand the connections between all individuals within a well-defined network (Robins, 2015). This can occur in two ways: 1) participants are presented with a roster of all other individuals in the specified network (e.g., all members of a sport team) and asked to rate/rank their relationship with all individuals on the roster, or 2) participants are presented with a name generator cue (e.g., name all individuals from whom you seek advice) that asks them to identify all individuals, within the specified network, that meet a certain criteria (Borgatti et al., 2013). A full network approach provides a way to understand the placement and connection of individuals within the whole network, allowing for an understanding of several measures that describe the network such as: density (i.e., are members all connected to one another), centrality (i.e., how central are certain members to the network), and reciprocity (i.e., are members of network citing mutual connections to one another) (Borgatti et al., 2013) However, it is often difficult to obtain full data for large networks. While the roster approach often results in the most complete information on network relationships, it can frequently only be used effectively with small networks, due to the cognitive demand of the survey on participants (Robins, 2014) The name generator approach to full network analysis eases some of the cognitive demand of the survey; however, it is not without flaws. If individuals are asked to generate the names of individuals within their network, they may forget to mention someone of importance and/or it may be difficult to identify,

depending on the generator cue question, individuals on the periphery of the social network (Robins, 2015).

In seeking to understand how coach learning networks work and their overall structure, a full network analysis approach was most amenable to the current study's purposes. As mentioned, at its most basic form, a full network analysis allows for the researcher to visualize the structural connections between individuals in a network, with each individual representing a dot on this visualization and each relationship representing a connecting line, similar to a web. In finer detail, however, a network's structure can also be defined by several factors including:

(1) Density: How concentrated or diffuse the connections within a network appear;

(2) Strength and reciprocity of relationships: How close individuals view themselves to be to another and whether the other person feels the same way;

(3) Centrality: How an individual's position in the network and connections impact the influence they have over information, attitudes etc. spread in the network. (Borgatti et al., 2013).

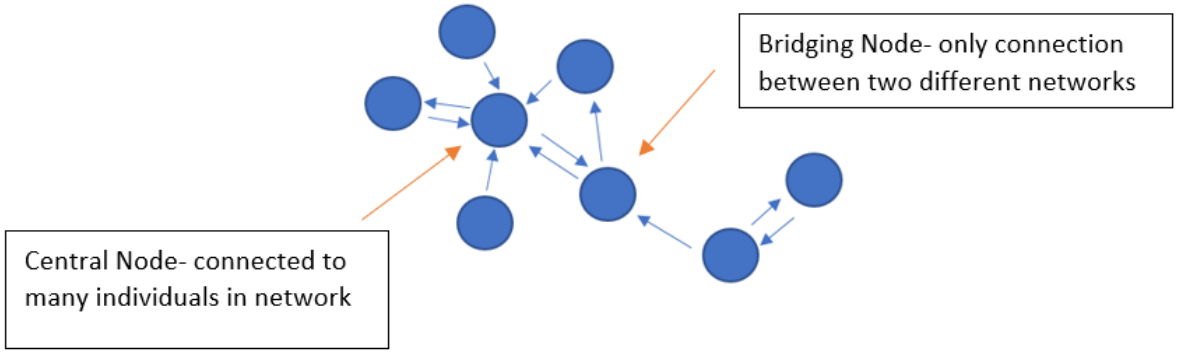

Figure 1. Example sociogram with central and bridging nodes.

While the structure of networks can be further broken down beyond the areas highlighted above, density, strength of relationship, reciprocity, and centrality often serve as appropriate measures for a basic examination of relationships within a network. As is exhibited in Figure 1 above, certain individuals may be more central to the structure, holding greater power over the

resources and knowledge that is shared with other parts of the network. This influence can appear in the form of central nodes (e.g., many others identify them as influential) or bridging nodes (e.g., individuals who serve to connect disparate parts of networks).

While social network analysis allows for the identification of central individuals to the network, it does not answer the question of why these individuals have come to hold that position of influence within the network or why they perpetuate the information/innovations they do in advice giving relationships. As such, social network analysis has a rich history of interrelations with a communications theory, Diffusion Theory, that often seeks to explain these "why" questions within knowledge dissemination (Rogers, 2004).

Diffusion theory focuses on the spread of innovations, with an innovation being any new concept (e.g., new technology, new idea) to an individual (Rogers, 2004). Generally speaking, innovations are developed in order to create behavior change (e.g., adopt new HIV prevention methods, adopt the use of a new fertilizer). Several decades of research within diffusion theory has highlighted multiple nuances to the way innovations spread across time. Of particular relevance to the diffusion/spread of innovations are: 1) the communication channels through which an innovation is spread within a social system, 2) the characteristics of the innovation, 3) the characteristics of the individuals or groups that are adopting the innovation, and 4) whether re-invention occurs with the innovation (Dearing & Cox, 2018; Rogers, 2004). Individuals are reached most rapidly with a new innovation/idea through mass media (Rogers, 2004). In the case of coaches learning new ideas to implement on the playing field, this would include information that comes from NGBs. However, this exposure will generally only contribute to awareness of an idea; it rarely changes the adoption behavior (Rogers, 2004). Interpersonal connections, including the subjective evaluation of the effectiveness of an innovation by an influential peer

(e.g., did Jack try this with his swimmers?), will exert far more influence over adoption of a new idea (Rogers, 2004). This is of critical importance when considering the spread of coaching practices, as the scientific value of the practice will often matter little compared to the personal endorsement of the practice provided by an influential coaching peer.

While certain characteristics of the adopter also factor into behavior change (e.g., adoption of the idea), it is emphasized that social values, beliefs, needs, and homophilous networks (e.g., tendency for people to be close to those who are similar) are going to be most influential in the acceptance and use of a new idea (Borgatti et al., 2013; Rogers, 2004). Furthering this idea is the conclusion that diffusion of an innovation happens in a very predictable manner, as the most influential individuals in a network (e.g., most connected, well liked, opinion leaders) are often the ones to take the innovation from minimal adoption to full-fledged adoption by an early majority of the community (Dearing & Cox, 2018; Roger, 2004).

As both diffusion theory and social network analysis serve complimentary purposes in the quest to understand how ideas spread in a network, they share a rich history of being intertwined in research (Ankem, 2003; Dearing et al., 2017; Quatman & Chelladurai, 2008; Rogers, 2004; Ryan & Gross, 1943; Sagas & Cunningham, 2005). This intertwining appears to lend itself well to better understand how peer-to-peer network influence works in spreading coaching knowledge and resources as one learns to be a successful sport coach. As such, while a quantitative social network analysis was the basis for this study, it was complimented by qualitative, semi-structured interviews informed by diffusion theory and focused on how influence is exerted in networks.

Study Purposes

Given the overlap in viewing the network as an important part of the spread of knowledge within professional contexts that is shared between coaching learning research and social network analysis, this research project employed a social network approach to examine coach learning networks. It bears mentioning that while frequently referenced, coach "networks" have yet to be structurally examined. As such, there was no literature on how diffuse or dense these networks are in reality for a given sample. A strong network density (e.g., multiple participants who know one another) or a very diffuse density (e.g., few links between participants in the study) were equally possible. As such, this study was framed primarily as an exploratory analysis with the following three purposes:

(1) To identify the structure of a professional coaching network;

(2) To identify the type of information that flows through the coaching network(s);

(3) To understand who is considered a person of influence within the identified network structure and why these individuals are influential.

Given the complementary nature of social network analysis and diffusion theory concepts in fully addressing these three study purposes, a full social network analysis approach was used to address the first and second purpose of the study. The third purpose was addressed qualitatively, using questions guided by the base of literature on diffusion theory and how influence is established within diffusion networks.

CHAPTER II: REVIEW OF LITERATURE

Sport participation can have a powerful influence on the physical, psychological, and social development of youth athletes (Camiré & Trudel, 2014; Gould & Carson, 2008). Within the arena of sport, coaches are one of the most influential stakeholders in ensuring that positive developmental outcomes occur (Gould, 2016). Early work within the field of coaching conducted by Smith, Smoll, and Curtis (1979) highlighted that coaches are one of the primary influencers of athlete commitment, enjoyment, and experience on a sports team. Furthermore, this work highlighted that coaches are amenable to being trained to improve these outcomes on the field. Smith et al.'s (1979) landmark study laid the groundwork for the rise of coach learning research and the quest to understand how on-the-field behavior changes as a result of coach learning. Furthermore, this research helped contribute to a rise in the development of formal coach education programs, aimed at promoting these positive and desired youth sport outcomes. Largely, these formal education programs have been sanctioned by ministries of sport and NGBs of sport (e.g., National Coaching Certification Program Canada, National Coaching Foundation UK).

How Coaches Learn: Balance of Formal and Informal Learning

While national coach education programs were in their infancy, coach researchers primarily focused their work on attempting to define coaching expertise, primarily how one attained it (Côté, Salmela, & Russell, 1995; Gould, Gianinni, Krane, & Hodge, 1990; Walker et al., 2018). However, Abraham and Collins (1998) pointed out that the attempt to define coaching expertise failed to acknowledge: (1) what knowledge should be taught to coaches, (2) the optimal method for conveying this information, and (3) how to encourage continued learning in coaches. These conclusions were further emphasized by Gilbert and Trudel (2004) in a review of all

coaching science literature from 1970-2001. As such, the turn of the century found coach researchers more interested in shifting the focus of research to address Abraham and Collins' (1998) and Gilbert and Trudel's (2004) critiques. Furthermore, as evaluation started to occur on formal programs, such as the NCCP in Canada, criticisms of only viewing coach learning from a formal perspective surfaced (Côté, 2006; Cushion, Armour, & Jones, 2003; Mallett et al., 2009; Nelson et al., 2006; Trudel & Gilbert, 2006).

Conceptualizing Coach Learning with Education Learning Theories

In acknowledging that other means of learning existed and were influential to a coach's development, researchers called for a common vernacular to be used to define these learning situations (Nelson et al., 2006; Werthner & Trudel, 2006). Two prominent, but complementary, views of learning were adopted from the field of education: Coombs and Ahmed's (1974) view of learning situations as formal, nonformal, and informal (Nelson et al., 2006), and Moon's (1999) view of learning as mediated, unmediated, and internal (Werthner & Trudel, 2006).

In understanding their applicability to the coaching setting and their complimentary nature to one another, it is helpful to understand how each of these researcher's defined these learning situations. Starting with Coombs and Ahmed (1974), formal learning is defined as a structured, guided, and mandated learning situation which, according to Nelson et al. (2006), may or may not be instructed by an individual currently in the coaching field (e.g., certification courses, college courses). Nonformal learning is defined as being structured, guided, and learner-initiated (e.g., coaching clinics). Finally, informal learning is defined as unstructured and learner-initiated (e.g., learning from on-the-job experience, "shop talk" on the pool deck). Complimenting this view of formal, non-formal, and informal learning are Moon's (1999) designations of mediated, unmediated, and internal learning situations. Specifically, Moon

(1999) defines mediated learning as learning situations where the learner is taught by an external individual. Unmediated learning occurs when the learner himself initiates and drives the hunt for new knowledge (Moon, 1999). Finally, internal learning is said to occur when the learner reconsiders current knowledge; for example, when a coach reflects on an action in practice and whether the knowledge they had was optimally applied through that action (Moon, 1999). Simply put, it helps to view these heuristics together to understand subtle variations in the learning situations coaches are faced with in their profession. While research within the coaching field has shown several pros and cons to each of these types of learning, scholars have concluded that for optimal development, coaches stand to benefit from a balance of all types of learning situations (Cushion et al., 2010; Mallett et al., 2009; Trudel & Gilbert, 2006).

The Rise of Informal Learning Studies

In conjunction with a call to greater balance and appreciation of all types of coach learning, several coach researchers have approached the topic from a qualitative stand point emphasizing social constructionism- the view that knowledge is constructed via social experiences and interactions with significant others (Mesquita, Riberio, Santos, & Morgan, 2014; Nash & Sproule, 2009; Stoszkowski & Collins, 2015; Werthner & Trudel, 2006). As a result, a greater proportion of studies moved into examining informal learning situations such as communities of practice, mentoring, and informal networks (Cassidy & Rossi, 2006; Culver & Trudel, 2008; Culver et al., 2009; Cushion, 2011; Mallett et al., 2009; Occhino et al., 2013; Werthner & Trudel, 2006). However, within informal learning, it is important to understand that the larger sport context may impact the accessibility of different types of informal learning and the overall significance of the type of learning may differ. Mallett, Rynne, and Billett (2014) emphasized that the range of opportunities, access to those opportunities, and the coach's

willingness to engage in learning all contributed to the proper sequence and type of learning they are exposed to as they progress through their career. In an attempt to understand this body of literature, Walker et al. (2018) highlighted several other trends about this research body that may limit our knowledge about how to use informal learning methods effectively within coach development.

Limitations to the Current State of Informal Learning Literature

Over-representation of elite-level programs. Due to the historical interest in understanding how coaches rise to the elite level of performance in their profession (Côté et al., 1995), and the social and political importance the success of sport programs can represent for a country (Coakley, 2015), the research body has remained focused on the elite sport setting. Trudel and Gilbert (2006) highlight that there are multiple types of sport settings: recreational, developmental and elite. The elite context is defined as involving intense preparation and the highest level of commitment, where performance expectations are clearly laid out in a highly structured environment (Trudel & Gilbert, 2006). Developmental contexts are those characterized by an increased commitment by coach and athlete, where a more formal competitive structure guides skill development in the sport (Trudel & Gilbert, 2006). Finally, recreational contexts refer to those where participation is emphasized with low intensity and commitment involved (Trudel & Gilbert, 2006).

Within their systematic review of nonformal and informal learning studies, Walker et al. (2018) found that of the 39 studies included in the review, 67% (n = 26) were focused on the elite coach. This trend is inherently limiting, as the majority of athletes that participate in sport do so at a developmental or recreational level. Furthermore, as coach learning is often framed as idiosyncratic in nature, which may suggest that trends in informal learning at the elite level do

not carry over to coaches at other competitive contexts, who may place a different emphasis on the balance and value of informal versus formal learning situations (Mallett et al., 2014; Nash & Sproule, 2009; 2011; Stoszkowski & Collins, 2015; Young, Jemczyk, Brophy, & Côté, 2009).

Over-representation of experienced, educated coaches. Given the focus on elite sport, which reflects years spent investing in the profession as a coach, the Walker et al. (2018) review also showed a correlated trend of studies being focused on experienced and educated coaches. This trend in the literature is an important one in regard to interpreting how a coach gains their summation of knowledge. Research reflects that coaches state a preference for learning from other coaches (Dieffenbach, 2007; Erickson et al., 2008; Mallett et al., 2014; Mesquita, Isidro, & Rosado, 2010); however, very few studies acknowledged that the opportunity to learn from other coaches may be higher within the expanded network of experienced, educated coaches, at an elite level (Nash & Sproule, 2011) Furthermore, Nash and Sproule (2011) also suggest that those who are younger in their career may not recognize the value in creating a network of coaches to assist them in their challenges and knowledge development in coaching. Time spent in the profession, the exposure to a greater number of formal education programs, and the resources that come from coaching at a higher level may all influence access and motivation for informal learning through peers (Walker et al., 2018).

Studies are conducted across multiple sports. Walker et al. (2018) also highlighted that 67% (n = 26) studies in their review took into accountable multiple sports in the analyses. Given most researchers have come to the conclusion that coaching is idiosyncratic and highly contextually dependent (Callary et al., 2012; Werthner & Trudel, 2006), it stands to reason that informal learning situations may vary across sport culture. For example, in examining the potential utility of communities of practice within the sport of hockey, Trudel and Gilbert (2004)

came to the conclusion that the competitive nature of the sport of hockey may prevent coaches from forming a rich and open discussion within a community of practice. Furthering this point, in examining the paths of Australian elite football coaches, Mallett, Rossi, Rynne, and Tinning (2016) also highlighted that coaches were often not forthcoming in seeking help from other coaches, so as to maintain the perception of competency and their job security. As such, while concepts such as communities of practice, mentoring, and informal networks may be valuable learning resources, the way they function within different sports may affect the knowledge a coach is able to extract from another coaching peer. As such, more attention should be paid to the minutiae of each single sport context.

Over-representation of qualitative methodologies. The last point that Walker et al. (2018) made regarding the current state of the body of information on informal learning is that the majority of this research has been conducted with qualitative methods. Given the initial exploratory nature of informal learning studies, the view that knowledge is socially constructed within sport coaching, and the idea that sport coach development may be idiosyncratic in nature, 65% (n = 25) of the studies employed qualitative methods. This qualitative exploration added substantial depth to the understanding of ways coaches can learn; however, understanding of the coaching development process could be better aided by a balance of methodologies and by utilizing multiple methods in expanding the knowledge base (Walker et al., 2018). Furthermore, this qualitative focus has often limited the size and scope of analysis in this area to limited case studies, and it could be advantageous for research to examine the larger informal networks that exist within the coaching profession.

Coaching Learning Social Networks

Though frequently mentioned as a source of informal learning, few studies to date have attempted to focus on examining how different types of potential coaching networks may exist and function (Walker et al., 2018). Studies that have examined networks largely have focused on examining dyads within a network through the examination of mentoring (Abraham & Collins, 1998; Cassidy & Rossi, 2006; Koh et al., 2017) or the creation of formalized communities of practice (Bertram et al., 2017; Culver & Trudel, 2008; Culver et al., 2009; Trudel & Gilbert, 2004). While mentoring is frequently cited as an actual and preferred source of learning for coaches (Erickson et al., 2008; Gonzalez-Rivera, Campos-Izquierdo, Villalba, & Hall, 2017; Mesquita et al., 2010; Stoszkowski & Collins, 2015) and mentor coaches can serve as a gateway to access further developmental resources (Koh et al., 2017; Mesquita et al., 2014), the gain in mentoring can often be one-sided and/or fall victim to perpetuating one type of knowledge (i.e., that which the mentor uses). Communities of practice are also not without their weaknesses. As already mentioned, communities of practice may not function well within certain sport cultures (Trudel & Gilbert, 2004) or within certain competitive contexts in sport (Mallett et al., 2016). Furthermore, depending on how they are structured and who serves as a facilitator, they may fall victim to power structures or a lack of engagement (Bertram et al., 2017; Culver & Trudel, 2008; Culver et al., 2009; Mesquita et al., 2014).

In recognizing that mentoring dyads and communities of practice serve as only a few types of coaching networks, Occhino et al. (2013) designed a study to examine the way social networks are conceptualized and exist in reality within a sub-set of coaches in Australian Football. Occhino et al. (2013) proposed informal networks to fall under four designations:

(1) Communities of practice (COP). Defined as a group of people who share the same interest or goal. COP need mutual engagement, joint enterprise, and shared repertoire to function appropriately.

(2) Informal knowledge networks (IKN). Defined as networks where bonds between stakeholders are unstructured and always changing. Mutual engagement is still present in these networks, but they exist primarily to pass information along without a strong connection between members.

(3) Networks of practice (NP). Defined as arenas for interaction among individuals who may not know one another (e.g., social media chat or blog sites). Information exchange may take place in these networks, but there is little sense of belonging or reciprocity.

(4) Dynamic social networks (DSN). Defined as active networks where bonds among members are strong, having formed over multiple years. The individuals in this network have built a mutual sense of trust and respect for one another and the amount of contact may vary over time, without loss of this trust and respect (e.g., the member is still meaningful even if contact becomes intermittent).

In examining whether all four types of networks were present in a group of Australian Football coaches, Occhino et al. (2013) concluded that while all types of networks can be present, dynamic social networks are the most influential on a coach's development. Since coaches are agentic in developing their own networks, and most relationships developed in DSN's were formed over the course of multiple years of interaction, the individuals in these coaching networks had a strong impact on actual behavior change in coaches (Occhino et al., 2013). While few studies since Occhino et al.'s (2013) have examined these dynamic social

networks, it can be argued that the characteristics of these dynamic social networks are shared with the networks found in most social networks (Borgatti et al., 2013). Furthermore, the characteristics that define influential coach-to-coach relationships are shared with those put forth as assisting with the diffusion of innovations in diffusion theory studies (Rogers, 2004). As such, though the field of coaching research may be weak in understanding the full picture of the impact of social networks within coaching, it may be possible to examine these social networks more fully by incorporating social network analysis and diffusion theory concepts.

Examining Coach Learning Networks: Social Network Analysis

Social network approaches encourage researchers to see the world through the lens of relationships, where the individual is inseparable from the context in which he/she is embedded (Quatman & Chelladurai, 2008). One of the primary concerns of social network analysis, as a method, is to uncover the structure and patterns of interaction between network members, the conditions under which they arose, and the consequences of this interaction (Hambrick, 2013; Quatman & Chelladurai, 2008). Thus, examining the relationships and structure of a network can help a researcher to understand the flow of power and resources (Nixon, 1993). Specifically, an individual's relative position within a network may reflect an accurate depiction of the access to power and resources from their position (Hambrick, 2013; Maclean et al., 2011), and it also allows for an understanding of how network structure may influence what knowledge, attitudes and behaviors are spread between individuals in that network.

In examining the structure of a network, social network analysis allows for the examination of multiple linkages between individuals. Linkages between individuals in a social network may differ in many ways including: strength (e.g., strong or weak), content (e.g., linked for advice seeking purposes or resource sharing), valence (e.g., positive relationship, negative or

neutral), or direction (e.g., reciprocal or one-way) (Maclean et al., 2011). Historically, the structure of social networks has been represented in pictorial form via sociograms (Borgatti et al., 2009). In examining these linkages further, multiple network definitions are needed:

Nodes: Actors in a network, which can be individuals, organizations or cities. Serve as distinct entities that are capable of participating in a relationship. In a sociogram, each node would represent a dot (Borgatti et al., 2013);

Edges: The relationships that connect actors to one another. In a sociogram, each edge would represent a line (Borgatti et al., 2013);

Broker/bridging node: Node whose connections allow it to bridge disparate or unconnected parts of a network (Borgatti et al., 2013);

Central node: Node which is highly connected to other nodes in the network (Borgatti et al., 2013);

Star node: Specific type of central node, highly connected to other nodes that are not connected to one another (Quatman & Chelladurai, 2008)

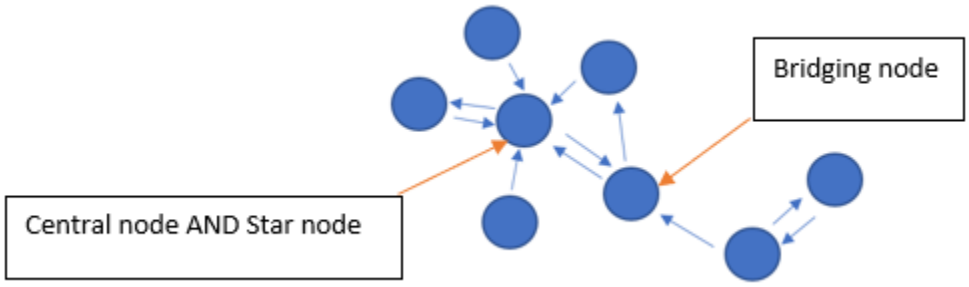

Figure 2. Sociogram with special nodes.

As is evidenced by the definitions above, a network's structure can represent multiple connectivity patterns (Quatman & Chelladurai, 2008). Powerful members of a network are often at its center; however, other individuals of power (e.g., brokers) can exist closer to the periphery of a network (Hambrick, 2013). In understanding a node's position within the network, it is also

necessary to understand how the relationships between nodes contribute to influence or flow of resources. Relationships can be examined in the following ways:

Density: Degree to which an actor's acquaintances are associated with one another (Scott, 2013);

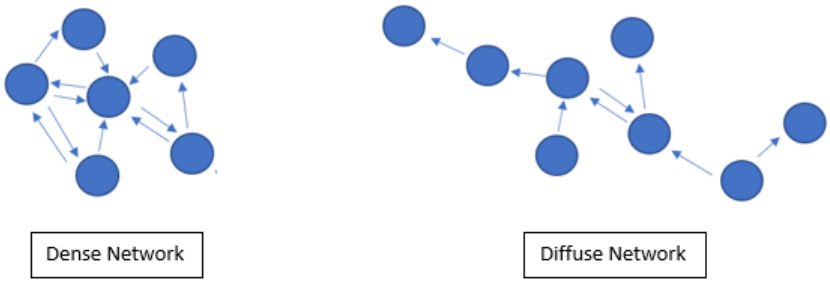

Figure 3. Pictorial example of dense versus diffuse networks.

Multiplexity: Extent to which two alters are linked together by more than one relationship (Quatman & Chelldurai, 2008);

Betweenness centrality: Part of brokering, the extent to which a node serves as a mediator or necessary connection between the other nodes (Quatman & Chelladurai, 2008).

Closeness centrality: Extent to which there is the shortest path between nodes in a network; the more central a node, the closer it is to all other nodes (Borgatti et al., 2013).

Examining the connectivity pattern of networks can also highlight areas where the network "clusters" (i.e., where relationships are dense and clump based on certain homophilous features of network members) (Quatman & Chelladurai, 2008). This type of relationship pattern in the network may highlight that a broker, who is more heterophilous than the cluster, may be needed to ensure the spread of new ideas (Quatman & Chelladurai, 2008). In a similar vein, it is often seen within networks that a node's strong ties frequently know one another. As such, the

information they pass along to the node is likely to be repetitive in nature highlighting, once again, the importance of the heterophilous nature of weaker ties (Borgatti et al., 2009).

Indeed, in discussing the role of homophily in network structure, Roberts, Dunbar, Pollet, and Kappens (2009) highlighted the idea that typical networks exist in layers, and these layers contain a mixture of strong and weak ties. This natural concentric layering structure to a network makes practical sense as maintaining close relationships is cognitively demanding and requires emotional commitment from an individual (Roberts et al., 2009). As such, as the number of individuals within a personal network increases, the level of emotional intimacy and interaction in the relationship decreases (Roberts et al., 2009). Roberts et al. (2009) proposes that the following three layers of a network can be seen in most personal networks:

(1) Support clique- all the individuals from whom one would seek advice or support in times of emotional/financial stress (Generally ~5 members)
(2) Sympathy group- all the individuals with whom one contacts at least once a month (~12-15 members)
(3) Active network- all the individuals with whom one feels he/she has a personal relationship and makes a conscious effort to stay in contact. Should have contacted within the last 2 years (Varies in size)
(4) Global network- all the individuals that one recognizes, knows their name and feels appropriate to greet but not necessarily to put forth the effort to keep up the contact (Varies in size)

The outer layers of this network structure offer greater access to new information, ideas, and experiences, because these individuals tend to be more heterophilous (Roberts et al., 2009). As such, though the strength of the relationship is considered low, these weak ties play a pivotal role

in introducing new ideas and resources to an individual node. Furthermore, the number of individuals in these broader network layers can influence exposure to ideas/resources. Fewer relationships in a network overall is often a signal of limited access to resources (Hambrick, 2013). As such, it is clear that both an individual node's placement in a network, as well as the defining characteristics of the relationship between dyads is of critical importance in understanding influence and what occurs in a given social network.

Types of Social Network Analysis

Given the breadth of research questions that can be addressed via social network analysis (SNA), multiple types of SNA are available to the researcher. The two primary types of SNA are the full network approach and the ego/personal network approach. In gathering full network data, the intent of the analysis is to understand the connections between all individuals within a well-defined network (Robins, 2015). This can occur in two ways: 1) participants are presented with a roster of all other individuals in the specified network (e.g., all members of a sport team) and asked to rate/rank their relationship with all individuals on the roster, or 2) participants are presented with a name generator cue (e.g., name all individuals from whom you seek advice) that asks them to identify all individuals, within the specified network, that meet a certain criteria (Borgatti et al., 2013). A full network approach provides a depiction of placement and connection of individuals in relation to the whole network, allowing for an understanding of several measures that describe the network such as: density (i.e., the level to which members are closely connected to one another), centrality (i.e., how central are certain members to the network), and reciprocity (i.e., are members of network citing mutual connections to one another) (Borgatti et al., 2013). However, it is often difficult to obtain full data for large networks. While the roster approach often results in the most complete information on network

relationships, it can frequently only be used effectively with small networks, due to the cognitive demand of the survey on participants (Borgatti et al., 2013) The name generator approach to full network analysis eases some of the cognitive demand of the survey; however, it is not without flaws. If participants are asked to generate the names of individuals within their network, they may forget to mention someone of importance and/or it may be difficult to identify, depending on the generator cue question, individuals on the periphery of the social network (Robins, 2015).

The second main social network approach is to engage in the analysis of ego networks. Ego network analysis begins with a name generator approach, just as in some types of full network analysis; however, the goal is not to examine the entire network and his/her placement structurally within that network but rather to examine one individual's personal network (Borgatti et al., 2013). Ego networks, by allowing the individual to identify and rate a smaller number of network members can often offer a less cognitively demanding social network research approach. However, given ego network analysis has a different research aim, to understand one individual's personal network rather than the individual's placement in a larger full network, questions of centrality, reciprocity etc. are not able to be answered with this approach. As such, each type of network analysis offers different strengths and weaknesses, but both have the ability to provide insight as to the relationships that exist within social circles (Borgatti et al., 2013).

The Marriage of Social Network Analysis and Diffusion Theory

One of the historical critiques of social network analysis has been the lack of a native theory guiding this work. However, the argument could be made, there is a complementary focus of diffusion theory and social network analysis (Borgatti, Mehra, Brass, & Labianca, 2009). The complement between these two methodological approaches lies in social network analysis' focus

on understanding the structure of a community and diffusion theory's aim to understand how and why ideas, attitudes, behaviors spread throughout that network or community (Rogers, 2004). At its core, diffusion theory aims to track the spread of an innovation (e.g., any new idea, technology or concept) (Rogers, 2004). Roughly 70 years of diffusion theory research has highlighted multiple characteristics that are influential in ensuring the successful diffusion, and adoption, of an innovation. The characteristics of greatest importance, that also impact the spread of new ideas within a coach learning network, are as follows: (1) type of communication channel utilized, (2) characteristics of the innovation, (3) characteristics of the individuals adopting, and (4) re-invention of the original innovation.

Type of communication channel. Rogers (2004) defines the communication channel as the means by which the message about a new innovation gets from one individual to another. Generally speaking, this occurs through either mass media communication or interpersonal communication. Mass media is considered the most effective means for rapid and efficient communication, and it is more likely to broaden awareness of the innovation (Rogers, 2004). While mass media can be an important tool in building awareness, the spread of an innovation is highly dependent upon interpersonal communication, as adoption is viewed as a social process (Dearing, 2008; Dearing & Cox, 2018; Rogers, 2004). While the perception exists that most individuals will adopt an innovation if given scientific proof of its effectiveness, diffusion theory research argues that subjective evaluation of the innovation is far more influential to a potential adopter (Ankem, 2003; Coleman, Katz, & Menzel, 1957; Dearing, 2008; Rogers, 2004; Ryan & Gross, 1943). In seeking to understand this trend, it is important to recognize that the root of interpersonal communication's effectiveness is an individual's desire to associate with those who are homophilous to them. Homophily is the "degree to which two or more individuals who

interact are similar" (Rogers, 2004, p. 19). Persuasion to adopt a new innovation is going to be more effective if individuals are homophilous in ways that are important to them, such as socioeconomic status, values, beliefs, and attitudes (Rogers, 2004). This homophily often creates a shared sense of the world and common meanings, which adds credibility to the subjective evaluation of the innovation. If one individual perceives his/her life situation to be similar to the individual using the innovation, it helps reduce the uncertainty that comes with adopting a new action (Rogers, 2004; Ryan & Gross, 1943). However, the irony in the easier spread of innovations within a homophilous network is that the process of diffusion, by definition, is introducing something foreign to the homophilous system (Rogers, 2004). As such, a degree of heterophily is required for the process of diffusion to occur. This seeming discrepancy contributes to the importance of other elements, outside of the communication channel, in evaluating the value of the innovation.

Characteristics of the innovation. Beyond just the subjective evaluation of the innovation, the characteristics of the innovation itself can influence the process of diffusion and adoption. Rogers (2004) highlights five important elements of the innovation that influence adoption: relative advantage, compatibility, complexity, trialability, and observability. Relative advantage refers to the extent to which the idea is viewed as better than what it replaces (Rogers, 2004). A part of this relative advantage includes whether the potential adopter believes the innovation will help him/her save time and effort, allow for an immediate reward, or decrease the discomfort associated with the daily experience. Compatibility refers to the extent to which the idea is perceived to be similar to existing values or needs of the adopter (Rogers, 2004). An individual's current ideas are the frame from which he/she assesses new ideas and give them meaning. As such, if an individual considers the compatibility of the new innovation to be low,

he/she may be unwilling to put forth the effort to put a new idea into practice regardless of its objective value. Complexity refers to the extent to which an idea is difficult to understand and/or use (Rogers, 2004). The more complex the idea, the less likely individuals are to adopt it especially if they view themselves as short in time (e.g., a busy athletic coach who is juggling a primary career and coaching). Trialability refers to the extent to which a potential adopter may use the idea on a limited basis (Rogers, 2004). Though not all innovations can offer a trial, the importance of interpersonal relationships is highlighted here, as the experience of early adopters can serve as a "stand in" for individuals trying it themselves. Finally, observability refers to the extent to which the idea's payoff can be seen by others (Rogers, 2004). This visibility often serves as a critical catalyst for discussion.

In examining the above five influential characteristics of an innovation, it is important to come back to the idea that diffusion is a social process (Dearing & Cox, 2018; Rogers, 2004). Each characteristic highlights and complements the importance of the interpersonal community. Potential adopters may change their perception of these innovation characteristics based upon the interpersonal interactions they have with meaningful members of their communities. For example, if one sport coach espouses the adoption of a new coaching idea, another coach may be willing to adopt it as a way of imitating this successful coach's behavior (relative advantage). Further by seeing another coach put the innovation easily into practice (trialability) would both reassure the potential adopter that the idea was not difficult to use (complexity), produces results that can be seen (observability), and is in line with their experiences and needs (compatibility).

Characteristics of the groups/individuals adopting the innovation. The third element that influences the adoption of an innovation are the characteristics of the individual(s) who adopt the innovation. As mentioned above, adoption is often dependent upon the compatibility of

the idea with the values, beliefs and past experiences of the individuals (Rogers, 2004). However, some individuals within a community may be more likely to experiment with new ideas; this tendency is referred to as innovativeness (Dearing & Cox, 2018; Rogers, 2004). In examining the characteristics of the adopter that influence when they adopt an innovation, five categories of adopters are outlined: (1) innovators, (2) early adopters, (3) early majority, (4) late adopters, and (5) laggards (Dearing & Cox, 2018; Rogers, 2004). For the sake of understanding the spread of an innovation, it can be important to understand each group contributes to its propagation. Innovators in a community are often actively seeking new information and ideas. In order to do this, they often have interpersonal networks over a large area (e.g., outside their main community), have a high degree of mass media exposure, utilize more technically accurate sources of information (and place higher credibility in those sources) and are able to cope with higher levels of uncertainty (Rogers, 2004). However, innovators tend not to be considered the most influential members of a community in spreading an innovation (Dearing & Cox, 2018; Rogers, 2004). Given their proclivity to seeking out new experiences and ideas, there is often a level of perceived heterophily with the community in question. As such, some members of a community may not be swayed by the subjective evaluation of an innovator due to a perception of heterophily (e.g., not sharing some beliefs or attitudes) (Rogers, 2004).

Early adopters are considered the most influential members in spreading a diffusion. Whereas an innovator's proclivity to pursuing new ideas creates a perception of heterophily, early adopters are viewed as more homophilous to the larger community. Early adopters share many characteristics with innovators (e.g., higher SES, large interpersonal networks, able to cope with higher levels of uncertainty, more education), but this homophily helps them to better convince others within the network of the value of an innovation. As such, early adopters are

often the source of the subjective evaluation of an innovation from which others in the network take their cues in making adoption decisions (Dearing & Cox, 2018; Rogers, 2004). The early majority represents those directly connected to and influenced by the early adopters (Rogers, 2004). Those in the late majority represent members of a network that still view the innovation as low in compatibility and/or relative advantage and will not make a decision to adopt until the innovation has started to approach a social norm (Rogers, 2004). Finally, laggards are often unwilling to be persuaded, at any point, to adopt an innovation, as the perceived need to adopt the innovation never reaches a critical level (Dearing & Cox, 2018; Rogers, 2004).

The characteristics that define innovators and early adopters (e.g., SES, cosmopolitan) are particularly relevant when discussing how an idea diffuses through a network. Innovators, often viewed as the most heterophilous individuals in a community, have broad networks outside their main community. As such, this heterophily can play a pivotal role in exposing a network to new ideas (Dearing & Cox, 2018; Rogers, 2004). However, given the perception of heterophily, they are often not the individuals who the majority looks to in order to decrease uncertainty about a new idea. Early adopters, given the strength of connection to their main network and their perceived homophily, are far more likely to serve as "hubs" for spreading new ideas. Since individuals in a community, who may have a high degree of uncertainty about a new idea, will look to early adopters for their subjective evaluation, they can be far more influential in spreading new ideas. This idea of an individual's position in the network altering how ideas flow through the network is shared with social network analysis and the potential hierarchical structure of coach influence within sport coaching networks.

Re-invention of innovation. The final characteristic, while peripheral to the three mentioned above, is an important concept to understand as it influences not only diffusion of an

innovation, but discussion of how the efficacy of an innovation is evaluated. One of the largest obstacles to overcome in the diffusion of an innovation is the community's desire to reinvent the innovation (Rogers, 2004). Reinvention refers to the "degree to which an innovation is changed or modified by a user in the process of adoption" (Rogers, 2004, p. 159). As a way both to decrease uncertainty about adopting the new idea/practice and to ensure it meets the needs of the adopter, reinvention has occurred to a considerable degree with numerous innovations. The act of shifting the innovation to better fit the needs of the individual or community allows for it to diffuse more rapidly and results in a more sustainable adoption (Dearing & Cox, 2018). For instance, reinventing an innovation that is complex may serve to simplify it or allow it to be applied to a wider range of problems, something that makes it more accessible and useful for a wider range of adopters (Rogers, 2004). Within the context of sport coaching, the idiosyncratic nature of coaching, paired with the problem-based focus of knowledge searches, may make ideas that are able to be adapted to various situations (i.e., reinvented) may be far more likely to be adopted.

Given these defining characteristics of the diffusion of innovations, it is clear that the spread and adoption of new ideas or practices can be more complex than it seems. Innovations often take a lengthy period of time from availability or conceptualization to widespread adoption (Dearing, 2008; Rogers, 2004). Part of this time entails the process of disseminating awareness and knowledge of the idea via mass media or personal network, with the personal network serving as the most persuasive source. The importance of this personal network is the reason the diffusion of innovations paradigm supports the need to take the structure of the network into account when examining adoption of innovations (Dearing et al., 2017; Sagas & Cunningham,

2005). As such, the concepts behind diffusion theory were used in a complementary manner to guide a more in-depth analysis of coach learning within social networks.

Study Purposes

Given the overlap in viewing the network as an important part of the spread of knowledge within professional contexts, shared between coach learning research, social network analysis and diffusion theory, this research project employed a social network approach to examine coach learning networks. It bears mentioning that while frequently referenced, coach "networks" have yet to be structurally examined. As such, there was no literature on how diffuse of dense these networks may be for a given sample. A strong network density (e.g., multiple participants who know each other) or a very diffuse density (e.g., few links between participants in the study) was equally possible. As such, this study was framed primarily as an exploratory analysis with the following three purposes:

(1) To identify the structure of two regional coaching networks;

(2) To identify the type of information that flows through the coaching networks;

(3) To understand who is considered a person of influence within the identified network structure and why these individuals are influential.

Given the complementary nature of social network analysis and diffusion theory concepts in fully addressing these three study purposes, a full social network analysis approach was used to address the first and second purpose of the study. The third purpose was addressed qualitatively, using questions guided by the base of literature on diffusion theory and how influence is established within networks.

CHAPTER III: METHODS

Due the potential benefit of utilizing multiple methodologies to fully understand the social dynamics in coach learning networks, a mixed method approach was deemed the most appropriate for addressing the study purposes. Mixed method approaches are most often defined by an epistemological backing of pragmatism (Johnson, Onwuegbuzie, & Turner, 2007). Pragmatism, as an epistemology, focuses on the practical consequences and useful applications of the issue under study (Patton, 2014). As opposed to several epistemologies that focus on emphasizing a particular nature of reality, pragmatism emphasizes the nature of experience. As such, a pragmatic researcher makes method choices based on situation and opportunities that emerge rather than adherence to a pure paradigm (Patton, 2014). This mixed method, paradigmatic epistemology was most appropriate for this study, due to the drive to understand coach learning in an actionable way and due to the ability to combine quantitative and qualitative procedures to obtain a richer understanding of the relationships between coaches in advice-seeking networks.

For the first phase of the study, the quantitative portion, social network analysis methods offered a strong platform for understanding the structure of a network (Purpose 1) and the information that flowed within that network (Purpose 2). For the second phase of the study, the qualitative portion, a semi-structured interview approach was utilized to allow for a deeper probe into understanding how influence is built and functions within that network. Each phase of the study's methods and sample are described below.

Phase 1: Quantitative Social Network Analysis Survey

Study purposes. The first phase of this study sought to address the first two purposes of the overall study: (1) to identify the structure of two regional coaching networks, and (2) to identify the type of information that flows through coaching networks.

Research design. To address the above study purposes, Phase 1 employed a cross-sectional, electronic social network analysis survey. This electronic survey was guided by a full network approach, using a name generator approach, due to the size of the full network of coaches (Borgatti et al., 2013; Scott, 2013). Within a full network approach, artificial boundaries often need to be placed on a network to limit the scope of the analysis. As such, the boundary to each network was chosen as the regional local swim committee (LSC) boundary, as defined by USA Swimming. Furthermore, it was believed that the examination of two networks would lead to a more fruitful understanding of coach networks than a single network analysis. Since the total number of coaches within each LSC fell within the 175-500 coach range, it was not feasible to obtain a response from all members of the network. As such, this study followed the recommendation of previous simulation studies (Costenbader & Valente, 2003), which states that engagement of a sample of 35% of the network can populate all members within the network. Coaches were contacted three times electronically through the USA Swimming organization, and those with publicly available e-mails were contacted a fourth time directly by the researcher to participate. It is important to note that USA Swimming as an organization, due to confidentiality agreements with the coaches, was unable to provide the researcher with the coaches contact information directly. As such, not all coaches were contacted within the fourth round of data collection. When coaches finished the survey, they were encouraged to send the survey link on to each of the coaches they listed within their own LSC.

Participants. Given the potential challenges that came with the exploratory nature of this study, the researcher must acknowledge upfront the way the final networks for data collection were determined. The following areas were used to narrow the participant sample:

(1) Single sport context: Given the potentially unique culture of each sport and the varied opportunities coaches may have to interact with one another (Culver & Trudel, 2008; Dieffenbach, 2007; Trudel & Gilbert, 2004) the participants all came from the same sport; in this case, swimming.

(2) Previous experience as a coach: Given the research literature shows it takes time for relationships of trust and reciprocity to develop in an individual's personal network (Occhino et al., 2013), new coaches to the network or novice coaches may be less likely to see the value and/or actively pursue building their own network (Nash & Sproule, 2009; 2011). As such, those who had not been actively coaching in the LSC network for at least 6 months did not qualify to participate in the study.

(3) Developmental level competitive context: Most research in coaching learning has focused on coaches at the elite level of competition (Walker et al., 2018); however, the majority of sport coaches work at the recreational or developmental level (Trudel & Gilbert, 2006). Elite level coaches, both through longevity in the profession and the opportunities at that competitive level, may have a more extended social network of fellow coaches. Developmental level coaches, though not as well connected as elite coaches, may be more likely to find a natural social network within the job setting (e.g., assistant, head coaches), making their networks more realistic to the average coach. Furthermore, developmental level coaches may be more likely than recreational level coaches, who often volunteer and can be isolated from other resources, to be connected to a coaching

network (Dieffenbach, 2007; Lemyre, Trudel, & Durand-Bush, 2007). As such, the sample was focused on pulling from the developmental level of coaches, which is defined as "age group" coaching in USA Swimming terms. It should be noted while this demographic was focused on, the study did not explicitly exclude national level coaches if they existed within the chosen LSCs.

(4) Part of a national governing body of sport (club sport): Given NGBs seek to support their sport coaches with education and resources, to decrease the likelihood that coaches develop their craft in isolation, the sample focused on only coaches within a single NGB-USA Swimming. Furthermore, the club atmosphere often makes it more likely that coaches will be a part of a team of coaches (i.e., higher chances of network connections) and less likely that coaches are thrust into a head coaching position without learning as an assistant first, a situation that frequently occurs with the high school coaching population (Wilson, Bloom, & Harvey, 2010; Winchester et al., 2011; 2013). All participants were USA Swimming certified and approved coach members of this LSC.

(5) Same regional/local NGB chapter: The sample was limited to individuals within one of two regional or local chapters of USA Swimming. Given the proclivity of developmental club coaches, to not only work within a team of coaches, but to also regionally interact with one another through competitions, it was believed that geographically limiting the networks to local LSCs helped in understanding how coaching networks function at a localized, competitive level (Dearing et al., 2017). As such, participants had to be currently coaching within one of the LSCs in question.

Beyond the above stipulations, it is important to understand how the chosen national governing body, USA Swimming, divides their regional networks, as these local regional networks were the

final boundary put on participants for this study. USA Swimming divides the governance of the sport of swimming, at the club level, to local swim committees (LSC). LSCs are generally divided by state lines, with the exception of larger states such as California, Texas or other populous states. A breakdown of all LSCs located in the United States can be seen in Figure 4 below.

Figure 4. LSC breakdown within USA Swimming. Figure used with permission of USA Swimming.

The LSCs for this study were chosen based upon the diversity each offered; both were located in racially diverse areas of the United States, with one representing a larger proportion of Hispanic residents and one representing a larger proportion of Black residents- two racial groups not well-represented in the sport of swimming. Two racially diverse LSCs were chosen due to the desire to understand if coaching athletes who were racially diverse impacted the type of coaching knowledge shared within the network, as swimming is a traditionally Caucasian dominated sport. Both LSCs were also chosen due to the presence of large geographic barriers that separated some rural clubs in the LSC from the presence of swimming within metropolitan areas. In choosing these two LSCs for comparison, the hope was to understand how geography

(i.e., propinquity) might play into interactions and connections between coaches. Finally, one LSC was chosen due to the relative proximity of the LSC to the NGB's main office and operations. This choice was to examine whether the presence of the NGB, and a potentially stronger culture of support for the sport, made a difference in the network connections.

Instruments. The electronic social network analysis survey, distributed and completed on the Qualtrics survey platform, included two parts: (1) a demographic survey, and (2) the social network analysis name generator and name interpreter questions. The demographic questions included were chosen based on demographic factors that have been found influential in the spread of innovations within diffusion theory (Rogers, 2004). Furthermore, they were complimented by demographics deemed relevant to the coaching context, to better understand homophily within the network and the experience of being a swim coach. The survey started by asking coaches to identify the fellow coaches, in their LSC, who they most frequently seek advice from about coaching. Participants were asked to identify two to three coaches. Coaches were then asked to respond to a series of questions regarding: (1) how they met each individual they cited, (2) how long they have had that relationship, (3) how the frequency of interaction has changed over time, and (4) the topics they discussed with each individual. The full social network analysis survey can be found in Appendix A.

Procedures. Prior to the initiation of the first phase of the study and recruitment, the study was approved through the Institutional Review Board at Michigan State University. After receiving IRB approval, in order to gain access to the contact information for the full LSC, approval for the study was gained from the national governing body- USA Swimming. All of the coaches within two regional LSC networks were contacted, via e-mail, with the social network analysis online survey. The survey was sent three times directly by USA Swimming, roughly

three days apart. The survey was sent a fourth time, directly by the researcher, to those coaches within each LSC that had publicly available e-mails. A description of the study was provided in the e-mail, and a full IRB consent form (see Appendix D) was included and mandatory for the coach to complete before accessing the full survey through the Qualtrics platform. Given the unique nature of mapping network structures, it was made clear to coaches that anonymity would not be possible in the study; however, their data was kept confidential in the reporting of findings by using pseudonyms as identifiers and disguising identifiable information about the LSCs in question. Furthermore, as part of the emphasizing the importance of a full and complete response, detailed commentary as to the purpose of the study was provided at the onset of the electronic survey.

Phase 1 included the online social network analysis survey and demographic questions. This survey was pilot tested on a small sample of current coaches, including a few coaches within one of the LSCs chosen for study, who no longer coached and thus would not receive the survey, prior to being distributed. Participants took 14-31 minutes to complete the survey, though the average duration was 21 minutes. In exchange for completion of the survey, coaches were offered an incentive of a $15 Amazon gift card.

Data analysis. After data collection for Phase 1 was completed, descriptive statistics were calculated via R statistical software for both the demographic variables of participants and for the demographic variables that described the relationships with advice-giving individuals. Descriptive statistics were also calculated for the topics of interest within these advice-giving relationships. These statistics were used to descriptively examine the networks in terms of homophily. Next, the name generators and identifiers used for the social network analysis allowed for the following social network analysis metrics to be calculated: density, closeness

centrality, betweenness centrality and in-degree centrality. It should be noted that these measures were chosen due to their robustness in producing stable results with only a sample of the whole network present in the study results (Costenbader & Valente, 2003). Furthermore, the social network survey results allowed for the mapping of the structure of these social networks in sociogram form. All social network analyses were completed using the R statistical program. The statistical analysis performed in R allowed for the identification of the individuals within each LSC that played the most central roles within each network. As such, these analyses were used to determine a purposeful sample for Phase 2 of the study.

Phase 2: Qualitative Semi-Structured Interview

Study purposes. The second phase of this study sought to address the third and final purpose of the overall study: to understand who is considered a person of influence within the identified network structure and why this individual was influential.

Research design. Prior to proceeding with the second phase of the study, the social network data analysis was completed to map out the structure of the networks uncovered in the first phase. To dive deeper into an understanding of influence, it was determined that a multiple case study approach, featuring one central node from LSC#1 along with six of the individuals who cited him as influential, was most appropriate to provide a rich understanding of influence. Guided by a semi-structured interview approach, these seven individuals were contacted to determine their interest in participating in a 60-minute interview about their role within the coaching network. All of the above individuals consented to being interviewed.

Participants. Purposeful sampling (Patton, 2014) was engaged in during this portion of the study, as the selection of this influential node was primarily due to his breadth of connections across club and geographic regions within the LSC. Furthermore, purposeful sampling was

engaged in when choosing which members of his network would be interviewed, with three of his current staff and three individuals from geographically diverse areas around the LSC being chosen. Furthermore, within those individuals chosen for interview, an intentional effort was made to obtain individuals who offered varying age ranges and experience coaching. To provide a fuller understanding of each of these individuals, idiographic profiles were created for all participants. These idiographic profiles outline additional information about their coaching history, current goals for their careers, and their personal approaches to building relationships within the LSC's network. For clarity of reading and interpreting the case study results, these idiographic profiles are located in the Results section.

Instruments. In order to address the purpose of Phase 2, semi-structured interviews were conducted. Semi-structured interviews were utilized as they allowed for a guided discussion of the study questions, while still offering the flexibility for new meaning to be uncovered through the participants responses to the interview prompts (Côté, 1993; Patton, 2014). The development of the interview guide questions was informed by the current understanding of influence put forth by the social network analysis and diffusion theory literature. Since the focus of the interview varied slightly based upon the individual's position in the network, two interview guides were utilized. Full semi-structured interview guides can be found in Appendix B and C.

Procedures. Since Phase 2 was already submitted and approved by the Institutional Review Board, as part of the full study, no further IRB approval was needed before initiating data collection. All individuals that were connected to the most influential individual in LSC#1, Stanley, were contacted via e-mail to participate in a semi-structured telephone interview. In this contact, coaches were provided with a second consent form (see Appendix E) that outlined the details of their participation in Phase 2. Coaches were required to return their consent

electronically to participate in this interview prior to the researcher scheduling an interview. Due to the geographic distance and ease of method for the participants (e.g., no need to access a computer), all interviews took place via telephone and were audio-recorded with two recording devices. Participants received a $30 Amazon gift card incentive for participating in the semi-structured interview, due to the time intensive nature of this participation. The interviews were pilot tested and necessary changes were made based on feedback from this pilot testing and feedback from the dissertation chair. It should be noted that while interview questions were not changed after the interviews began, the order of questions was adjusted to allow for an easier flow of conversation with participants (Patton, 2014). Interviews ranged from 55-107 minutes, but on average took 61 minutes to complete. After interviews were conducted, they were transcribed verbatim, by the primary researcher, and sent back to the participants for review approximately one week after the interview. Participants were encouraged to review and make any edits or detractions they felt appropriate to the content at that time.

Data analysis. As the primary purpose of the study was to map coach network structures, regardless of how diffuse or dense they appear in reality, the qualitative portion was meant to provide a more in-depth understanding of why individuals are influential in these networks. As such, the semi-structured questions were designed to probe deeper into this third study purpose. After interviews were transcribed and sent to participants for review, several steps occurred in the qualitative analysis of the interviews. First, it is recommended, regardless of the approach taken to coding qualitative data, that the researcher re-familiarizes himself/herself with the data and any audit trail notes to guide the coding process (Saldana, 2009). While several approaches to coding and analyzing qualitative data exist, it is strongly encouraged within the literature to choose an approach that matches the epistemology and research aims of the study, so as to be

more likely to convey methodological congruence (Holt & Tamminen, 2010). As the primary goal of pragmatism and mixed methods research is to understand the nature of the experience, and little is known about these organic social networks in coaches, the researcher conducted a grounded, inductive, content analysis of the transcript data (Côté, 1993; Miles & Huberman, 1994). Inductive analysis was used as it is an analytical method that allows for themes to emerge from the data, particularly themes that may not be present in current literature (Miles & Huberman, 1994; Patton, 2014). While not focused on engaging in deductive hypothesis coding, there was a desire to compare the inductive themes that came out of the current study's data to themes of influence within past literature on opinion leaders and boundary spanners (e.g., Cranley et al., 2019). As such, a figure was created comparing the inductive themes found in this study with the inductive themes that have arisen in Cranley et al.'s (2019) work.

After refamiliarizing herself with the data, the first step the researcher took was to analyze each manuscript separately for meaning units and to label those meaning units with tags that described them (Côté, 1993). The meaning units were then pulled out of each individual manuscript and organized according to categories of similar content- lower and higher order themes (Auerbach & Silverstein, 2003; Côté, 1993). This thematic analysis allowed for any trends within the data to be extracted to address the question of influence in a social network.

Furthermore, several questions not pertaining to influence within the network (e.g., tell me about the culture of the LSC, do you perceive there to be barriers to building relationships in your LSC?), but still deemed pertinent to understanding relationships in the network, were also analyzed in this way. This data, as it was viewed potentially useful in understanding Purpose 1 of the study, was added to the presentation of results within Purpose 1. This action was reflective of what mixed method researchers often term a "cross-over" mixed method analysis; specifically, it

is an example of what Onwuegbuzie, Johnson and Collins (2009) termed data integration: "integrating qualitative and quantitative findings/data into a coherent whole" (pg. 119).

CHAPTER IV: RESULTS

To examine the study purposes, the study took place to two parts: first, members of two USA Swimming LSCs took an online social network analysis survey, and second, semi-structured interviews were conducted with individuals connected to the most influential node in the LSC#1 network. In total, 97 coaches (70 from the LSC#1; 27 from the LSC#2) from the two LSCs participated in the social network analysis online survey. The overall participation rate, based on the number of coaches in the network, was roughly equal with 15.9% of the network participating in LSC#1 and 15.5% of the network participating in LSC#2 (452 registered coaches; 174 registered coaches respectively). For the interview portion, 10 total individuals participated- seven from LSC#1, which is the focus of the case study to address Purpose 3, and three from LSC#2. As mentioned in the rationale for the mixed method design of the study, Purposes 1 and 2 were primarily addressed through the social network analysis survey; however, also in line with a mixed method approach, the analysis of the data led to the conclusion that the understanding of the network structure in Purpose 1 was best supplemented with a portion of the qualitative data. As such, both quantitative and qualitative data are presented below in the discussion of Purpose 1. Purpose 3 was addressed through an in-depth case study into the most influential individual within the LSC#1 network- who for confidentiality purposes was assigned the name Stanley.

Phase I: Understanding the Social Networks of Two USA Swimming LSCs

To address Purpose 1 of the study, to identify the structure of coach networks, a social network analysis survey was conducted. While it is ideal to obtain at least 35% of the overall network to approximate the full network membership and connections among individuals within that network (Costenbader, & Valente, 2003), due to the exploratory nature of this study as well

as the challenge of engaging coaches in data collection, roughly 15% of each LSC's coach membership was represented in the responses to the social network analysis. This 15% of the network, through the name generator in the survey, identified roughly 30% (n = 138 coaches for LSC#1; n = 52 coaches for LSC#2) of the coaches in each network. As such, the samples within the data set reflect the relationships of a sample of 30% of this coaching network. Within LSC#1, 16 distinct geographic areas were represented in the data; and within LSC#2, nine distinct geographic locations were present in the data. It should be noted that for ease of analysis, larger metropolitan areas were combined into one geographic location (i.e., the main city plus all its surrounding suburbs). Sixty-five percent (n = 43) of the clubs within LSC#1 were represented in the responses, and 81% (n = 21) of the clubs within LSC#2 were represented in the responses. This sample size and response rate was deemed sufficient for this exploratory examination, as it still allowed for diverse areas of each LSC to be represented, central and bridging nodes to appear within the data, and a sufficient sample size to be relatively robust to the centrality measures used within the study (Costenbader & Valente 2003). Reasons for this lower response rate will be addressed in the limitations of the study.

Demographics of the LSCs. It is important to note that an individual may be a registered USA Swimming coach for the state both: (a) without currently coaching for a team or (b) when they have stopped coaching a team or have become a sub coach. As such, there may not be coaches within the above totals that fall under one of these two designations.

Table 1

LSC Demographics

	LSC#1	**LSC#2**
Total Number of Athletes	8,933	3,179
Total Number of Coaches	452	174
# of Year-Round Clubs	66	26

Note: Data provided by USA Swimming (May, 2019)

Table 2

Racial Demographics of Coaches and Athletes

	African American	Asian	Caucasian	Hispanic	Native American	Native Hawaiian	Other	Mixed
Athletes								
LSC#1	37	299	4007	199	6	7	45	544
LSC#2	81	80	1228	49	6	1	10	68
Coaches								
LSC#1	2	9	369	5	2	0	1	27
LSC#2	5	2	156	1	0	0	0	6

Note: 72 were no response in Colorado; 4 in Louisiana for coaches; 3789 were no response in Colorado; 1656 in Louisiana for athletes. Data was provided by USA Swimming, (May, 2019).

As previously mentioned, LSCs were chosen based off their presence within racial diverse geographic locations, with LSC#1 representing a high presence of Hispanic residents and LSC#2 representing a high presence of African American residents. These trends can be seen within the LSC demographics above; however, it should be noted that both LSCs still lacked diversity, in general, with athletes and coaches, showing a much stronger representation of Caucasian involvement, despite the racial diversity of the surrounding geographic region.

Demographics of study participants. While the participants were not very racially diverse, they were representative of the race of coaches currently coaching within USA Swimming for these LSCs as Table 3 indicates. Furthermore, though these LSCs represented

Table 3

Racial Demographics of Sample

	African American	Asian	Caucasian	Hispanic	Native American	Native Hawaiian	Other	Mixed
LSC#1								
LSC Overall	2	9	369	5	2	1	1	27
Sample	0	1	65	0	0	1	0	2
LSC #2								
LSC Overall	5	2	156	1	0	0	0	6
Sample	1	0	23	0	0	0	0	2

racially diverse areas of the country, the sample reflects the bias present in the sport of swimming toward reaching a greater Caucasian base. The sample represented a roughly equal split between male and female participants across both LSCs (female, n = 37 for LSC#1(52.8%); n = 15 for LSC#2(55.5%)). The age demographics of the sample can be seen in Figure 5. Note: These demographics have been adjusted to the percentage of the sample that fell within each age group due to the differing number of participants within each LSC. Furthermore, to ease the cognitive burden of open-ended questions on the social network analysis survey, categorical data was collected, over continuous data, as such averages are not reported. When examining the age of participants in Figure 5, it can be seen that the majority of participants in both LSCs were aged 30 or older (n =52, 74.3% of LSC#1; n = 21, 77.7% of LSC#2).

Within both LSCs, the majority of coaches have been coaching within their current geographic region for at least two years (n = 53, 75.7% of LSC#1; n = 22, 81.5% of LSC#2), though LSC#1 shows slightly more coaches who have coached in the region for over 10 years (45.7% compared to 33.3%). Furthermore, as previously mentioned, each LSC's participants reflected responses from rural or geographically isolated areas of the LSC as well as metropolitan areas. As such, most coaches within this sample have stayed in the same rural or metropolitan area for the at least two years.

While it was important to understand how long coaches were present in their current LSC, it was also deemed important to know how long coaches had been coaching within the

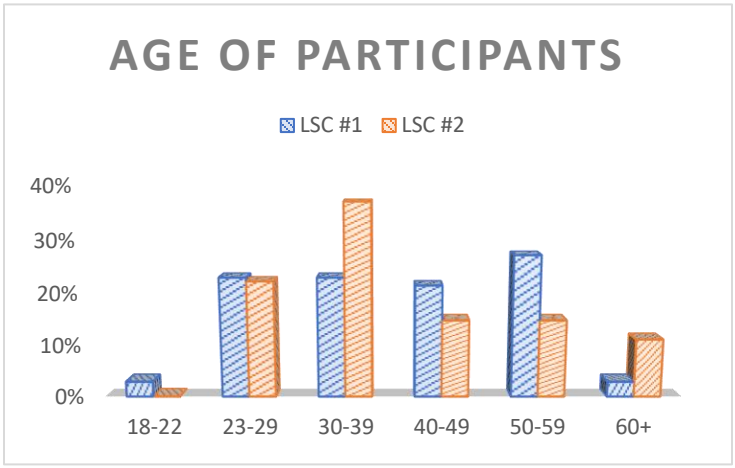

Figure 5. Age demographics of samples.

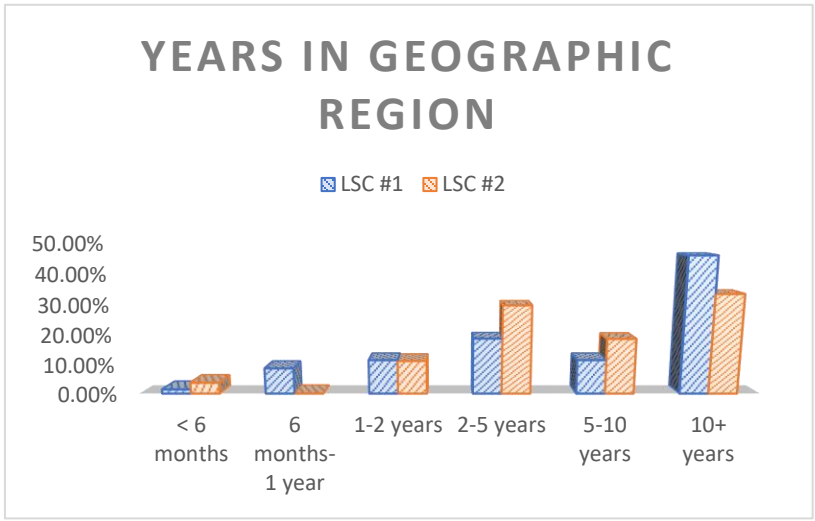

Figure 6. Years spent coaching in current geographic region.

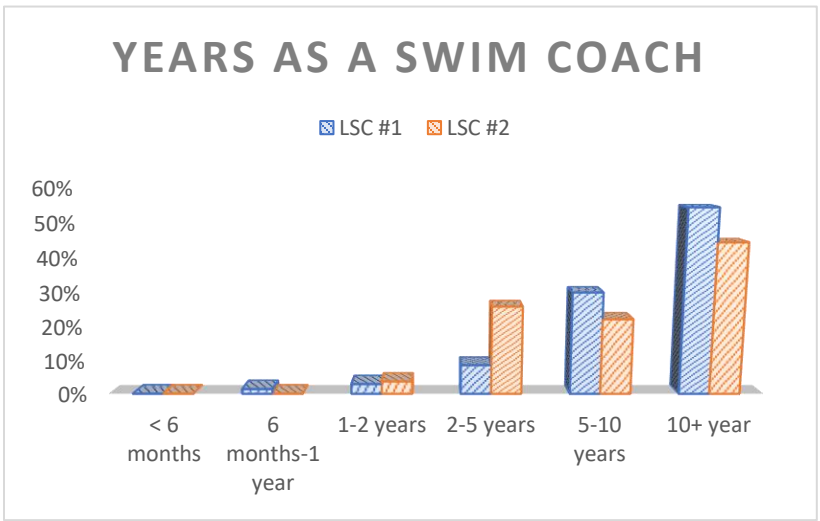

Figure 7. Years served as a swim coach.

sport of swimming. Similar to the trends within years spent coaching within the geographic region, the majority of coaches in both LSC#1 and LSC#2 cited their long tenure as a swim coach, with close to half of each LSC having been a coach for at least 10 years (n = 38, 52.4% of LSC#1; n = 12, 44% in LSC#2). The time served both as a swim coach and within their current geographic region seems to signify that this sample should have had ample time to build relationships within their sport and geographic region, as hoped for with the inclusion criteria. Participants were also asked for their highest level of education, with 77% (n = 54) of LSC#1's coaches citing either a Bachelors or Masters degree, and 92% (n = 25) LSC#2's coaches citing either a Bachelors or Masters degree.

Swim coaches are a unique population in that they often serve as coaches of multiple teams at the same time (e.g., club and scholastic based teams); they often coach multiple age groups at the same time (e.g., multiple practice groups); and they often coach multiple competitive levels at the time (e.g., national qualifiers and developmental kids). In previous work completed by Driska and Walker (unpublished), it was found that USA Swimming coaches, indeed, cited existing in multiple coaching contexts at the same time. It is thought that the diversity a swim coach faces in terms of coaching demands might influence their search for knowledge (Driska & Walker, unpublished). As such, the social network analysis survey sought to understand if the trend of coaching multiple teams, age groups and competitive levels was also seen with both LSCs under study.

When asked about competitive level coached, the options were broken down into the designations offered by Trudel and Gilbert (2006), while also considering club coaches often coach in the scholastic context as well; as such five categories were present: (1) scholastic: elementary/middle school, (2) scholastic: high school, (3) recreational, (4) developmental (age

group by USA Swimming terms), and (5) elite, which included college or national level competitors.

The sample reflected that the majority of coaches within both LSCs coached age group/developmental kids (n = 60, 85.7% in LSC#1; n =23, 85.2% in LSC#2); however, this data was also in line with the Driska and Walker (unpublished) findings in that the majority of the sample (n = 51, 72.9% for LSC#1; n = 21, 77.7% for LSC#2) cited coaching in more than one competitive context. Furthermore, when asked what age levels were coached, only four coaches across both LSCs cited coaching a single age group, and a roughly equal number of coaches cited coaching two through five different age groups (two groups, n =17, three groups, n =25, four groups, n =20, five groups, n = 18). As such, this sample appears to represent the typical demographic of an average USA Swimming coach: a coach who works within multiple competitive contexts and with varying ages of youth athletes.

Purpose 1: Structure of coach networks. The social network analysis survey asked each participant to identify the top two to three individuals to whom they went to most often for advice and information about coaching. For each of the individuals that they cited, they were asked to provide the following contextual information: (1) what that coach's current role was on his/her team, (2) how he/she came to know that person, (3) how long they have known that person, (4) what the frequency of interaction looked like at the relationships prime, and (5) what the frequency of interaction looks like now.

When examining the first demographic question, what role the influential node served on his/her team, 64.8% of advice-giving coaches in LSC#1 and 63.8% in LSC#2 served as head coaches on the team. While the length of relationship to the advice-giving coach varied, the majority of the sample in both LSCs reflected knowing the individual they sought for coaching

advice longer than 2 years (69.8% in LSC#1; 75% in LSC#2). This data appears to show that being a head coach and a greater length to the relationship often increased the likelihood that someone became an advice seeking source.

Within the literature, it is recognized that the frequency of interaction between individuals in a network may shift over time (Occhino et al., 2013). As such, participants were asked to reflect upon the frequency of interaction with the influential individual; they reported on their frequency of interaction at both the peak of their interactions and currently. Figure 8 and Figure 9 reflect this frequency of interaction for LSC#1 and LSC#2 respectively. While this is self-report data of the perception of the frequency of interaction over time, these data appear to reflect what is seen in the literature: relationships that may have involved daily or weekly interaction at their peak may transition to less frequent communication and interaction over time (28.3% of LSC#1 relationships, 15.2% of LSC#2 relationships); however, this decreased frequency does not change the perception of quality information and knowledge coming from this source (i.e. the value of the relationship is still present) (Occhino et al., 2013).

Finally, participants were asked how they came to meet the advice-giving individuals they referenced. While the answers did vary some across LSC, several large categories encompassed how coaches met these advice-giving coaches, as can be seen in Figures 10 and 11 for LSC#1 and LSC#2 respectively.

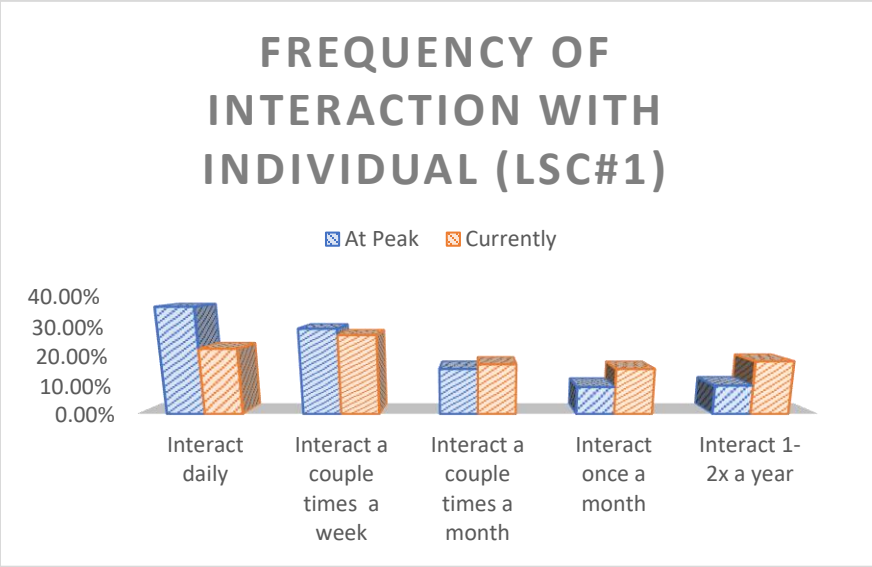

Figure 8. Frequency of interaction with advice source of LSC #1.

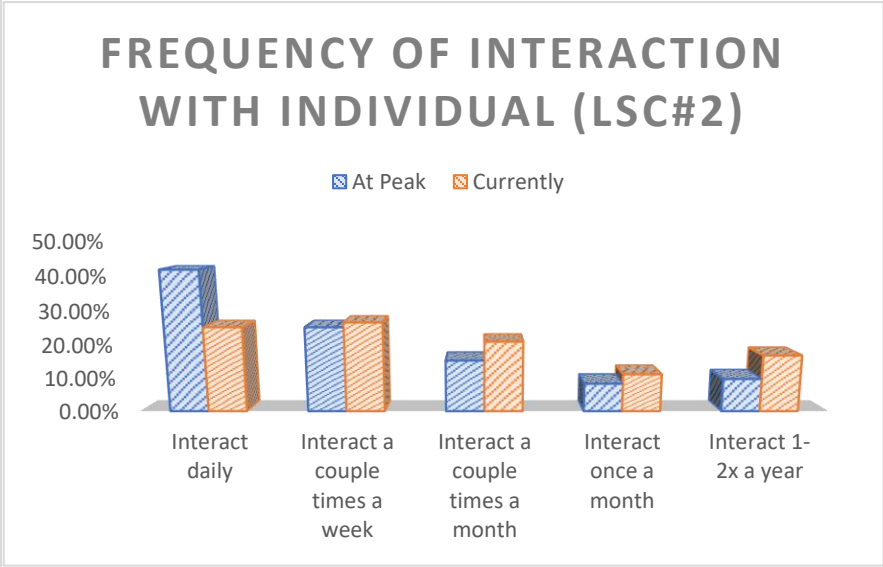

Figure 9. Frequency of interaction with advice source of LSC #2.

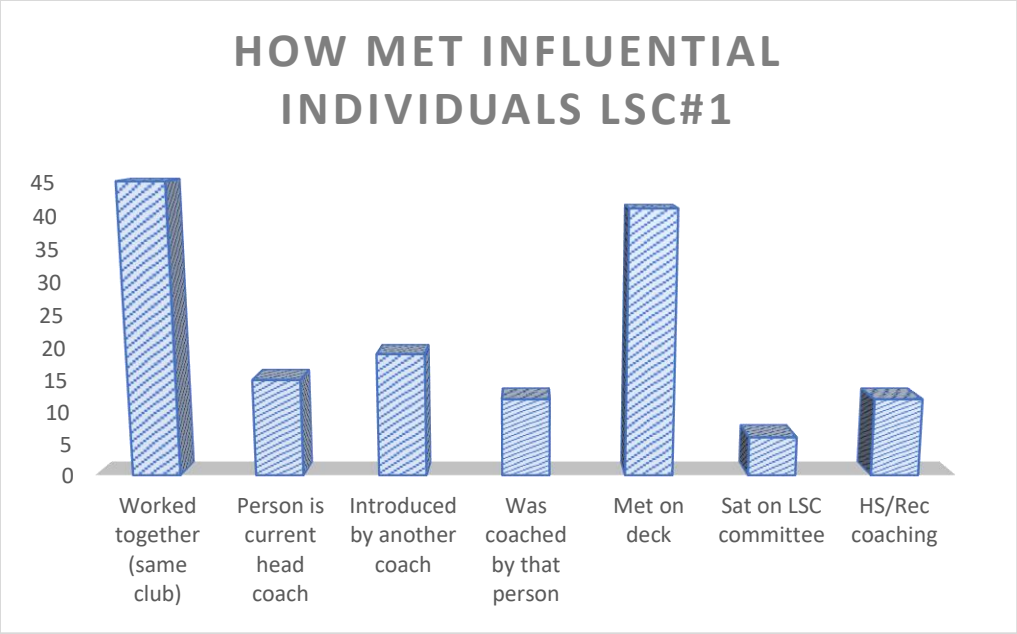

Figure 10. How participant met advice sources LSC#1.

Other less frequent ways coaches in LSC#1 met the individuals whom they cited: met as a parent (n = 5); grew up or swam together (n = 5); teach together; share training facility (n = 3); masters swimming; coaching socials (n = 2); through their spouse or family (n = 3); through cold calling via e-mail or phone (n = 3); coach their child (n = 2); coaching clinic; coaches neighboring team (n = 4); served on a national level coaching staff together (n = 2); and taught lessons or interviewed for a non-coaching job for them (n = 2).

Within LSC #2, other less frequent ways the LSC#2 coaches met these individuals were: coaching their kids (n = 2); swimming together (n = 6); working in the same rec facility (non-coaching) (n = 2); through a spouse or family (n = 3); were neighboring clubs (n = 3); through coaching a national level or zone team together (n = 2) and masters swimming (n =2).

Structure of coaching networks. In seeking to address purpose one of the study, coaches populated an advice seeking network within each LSC. In response to the data from the

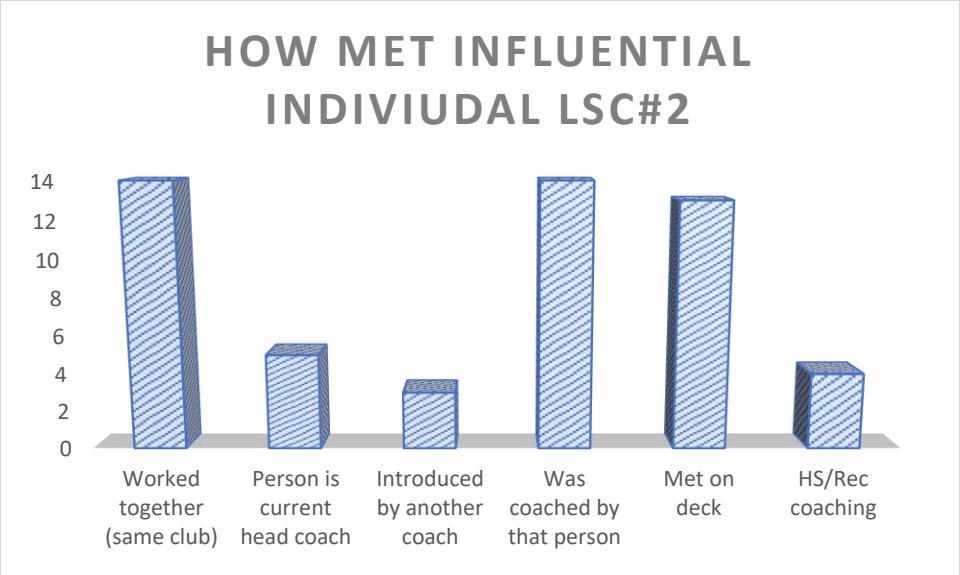

Figure 11. How participant met advice sources LSC#2.

social network analysis survey, a directed adjacency matrix was created, where 1s signified the presence of an advice-giving relationship and 0s signified the absence of such relationship. The following figures highlight side by side sociograms of the two networks for ease of visual comparison. Within each sociogram, the dots represent individuals within a network and the lines represent a relationship; specifically, the lines connecting these individuals are arrows indicating the directionality of the relationship based upon survey response data (e.g., if Jimmy cited Greg as a source of knowledge, the arrow will point from Jimmy to Greg). The sociograms also are coded, by color, with the different geographical regions of the LSC that each node represents to display the geographic dispersion of relationships.

As can be seen in examining the sociograms in Figures 12 and 13 both networks had several individuals who were cited by multiple other coaches as advice sources. Furthermore, each network appears to have one "central" individual, who seems to exert the most influence within these advice-seeking networks. However, in order to completely understand these networks, it is not enough to examine the sociogram, as it can lead to false conclusions about

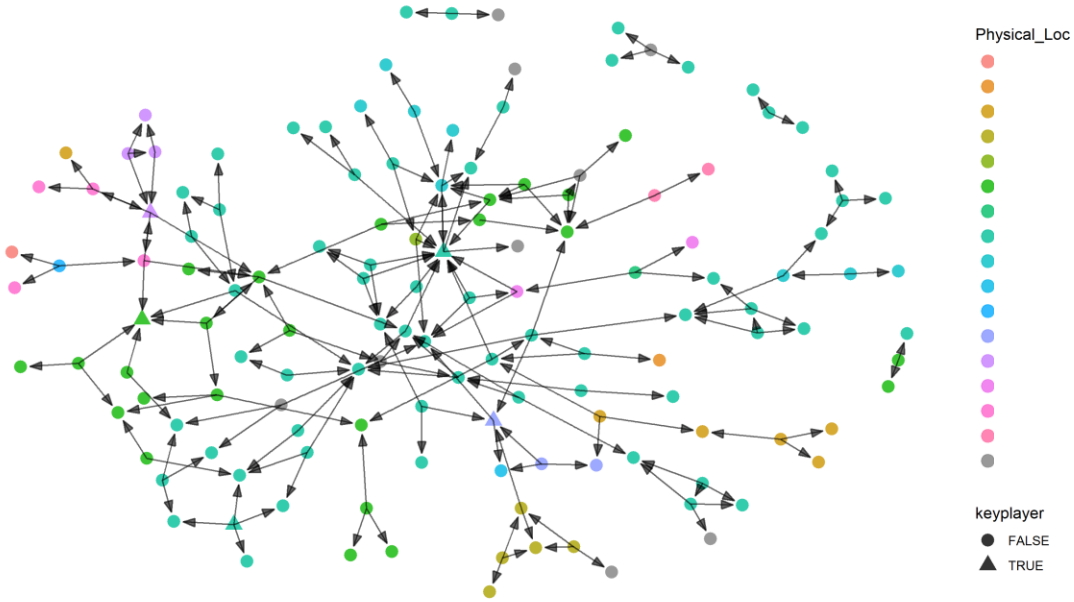

Figure 12. LSC#1 sociogram.

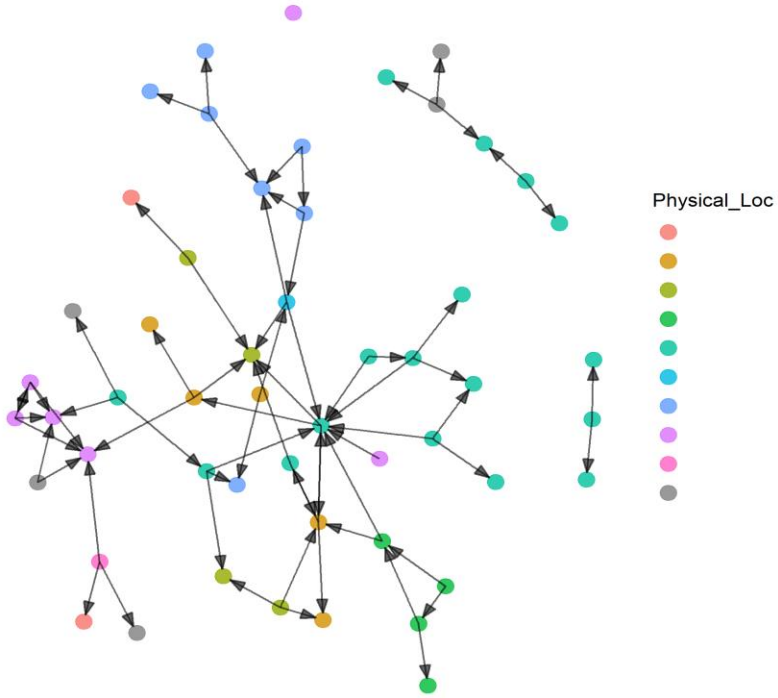

Figure 13. LSC#2 sociogram.

which individuals hold the most influence. As such, density and centrality scores (in-degree centrality, closeness centrality and betweenness centrality) were calculated to determine more information regarding the structure of these social networks.

Density refers to how closely tied all members of the network are to one another (Borgatti et al., 2013). It represents a ratio of the total number of observed ties with the total number of ties that can exist within the network (Borgatti et al., 2013). No set values serve as criteria for a "dense" or "disparate" network, as density is a function of the number of ties possible (Borgatti et al., 2013). As such, no criterion or average scores are given to compare density scores. The density of LSC#2 (density = .0253) is much higher than LSC#1 (density = .00979), due partially to the fact that there are less possible ties within the LSC#2 network. This is important to recognize upfront to prevent false conclusions that denser networks reflect better/closer relationships between individuals.

Centrality measures. Three centrality measures (in-degree, closeness, betweenness) were calculated for the LSC networks and normalized to allow for comparison of values across networks. In-degree centrality refers to the simple count of the number of ties that a node receives within the network (Borgatti et al., 2013). In-degree centrality can be indicative of who is regionally influential within pieces of the network; however, it not sufficient to determine who is the most influential within the entirety of the network as a whole. For example, Greg could be cited by five individuals within his club, reflecting a relatively high in-degree centrality, but no one outside of his club. Practically, this might indicate that he may be the most influential advice-giver in his swim club but have no real influence on knowledge sharing outside of his club within the wider network. Closeness centrality refers to the number of steps, on average, it takes to reach everyone else within the network (Borgatti et al, 2013). As such, the more

"central" an individual is to the network overall, the higher closeness centrality they will exhibit. It is important to understand that in individual who is connected to a highly central node, though he/she may personally not exhibit high in-degree centrality, can still exhibit a high closeness centrality. As such, closeness centrality is not necessarily indicative of an individual being an opinion leader within the network; rather it is indicative of him/her being an opinion leader or closely connected to an opinion leader within the network. Betweenness centrality refers to the role each individual has in decreasing the distance between two nodes in a network (Borgatti et al, 2013). Practically speaking, individuals with high betweenness centrality often serve the bridging node/boundary spanner role for two disparate parts of the network. As such, these individuals are important players within the overall network structure, as they may aid in certain information being disseminated widely and quickly around the network as a whole.

It should be noted that while in-degree centrality and closeness centrality are relatively robust, given only a sample of the network, betweenness centrality is slightly more sensitive to sample data compared to full network data (Costenbader & Valente, 2003). Since bridging nodes (i.e., those high in betweenness centrality) often exist closer to the periphery of the network, it is possible that with only a sample of each LSC's network, not all bridging nodes were identified within this study due to the missing data. This should be taken into consideration as centrality scores within Tables 4 and 5 below are interpreted. Tables 4 and 5 present the centrality scores for the individuals with the highest in-degree centrality (e.g., nominations) in each LSC. Data is presented in this fashion to highlight how different types of centrality help to distinguish between the relationship different nodes have to the network and assist in the identification of opinion leader and boundary spanner nodes.

Table 4

LSC#1 Centrality Scores

	In-Degree Centrality	Betweenness Centrality Normalized	Closeness Centrality Normalized
Stanley	11	.00400	.00950
Edward	7	0	.00883
Greg	6	0	.00781
Matt	6	.00217	.00945
Milt	5	0	.00812
Alex	5	0	.00819
Mitch	5	.00525	.00775

Note: The scores above are normalized scores for closeness centrality and betweenness centrality. The normalized scores allow comparison of values for influential individuals across LSC.

In interpreting the scores in the above table for LSC #1, it can be seen that all of the individuals listed in Table 4 exhibit a high in-degree centrality score; these are individuals who are sought out for knowledge on coaching with the LSC#1 network by several other coaches. As such, as scores are compared across the table, each of these individuals also exhibits a fairly high closeness centrality score. This means that each of these seven individuals exhibits a position within the network that is relatively few steps away from others (e.g., they are relatively central to the core of the network). However, it can be easy to assume that high in-degree centrality is needed for high closeness centrality. To exhibit the error in this assumption, there is one node- Bob- who exhibits a higher closeness centrality score than all of the individuals listed on the table (closeness centrality = .00966). While Bob is not well cited by others within the network as an advice-giving source (in-degree centrality = 2), he is directly connected to both Stanley and Matt, who make up part of the core of the network. As such, Bob exhibits few barriers or steps between him and his ability to access the knowledge in the core of the network, hence the high closeness centrality.

Of similar interest in the understanding of influential nodes within the network is the result of the betweenness centrality statistics. As seen in Table 4, four of the seven coaches who

were sought out the most, exhibited no betweenness centrality, meaning they did not decrease the distance between other nodes within the network. For one node, Edward, this may have been largely due to the fact that five of the seven individuals that seek him out for advice were his own staff members. For another node, Greg, the individuals that cited him were all close to one another within the same geographic region of the LSC. In both instances, the nodes connected to Edward and Greg could reach other nodes within that part of the network without Edward or Greg; thus, they served no intermediary or bridging connection between more disparate parts of the network. As such, the betweenness centrality scores highlight that individuals may exhibit localized influence, but may not serve to bridge geographical regions of the network and/or clubs. The highest betweenness scores were represented by Mitch (betweenness = .00525) and Stanley (betweenness = .00400), individuals who exhibited the largest influence on connecting disparate parts of the network regionally and across clubs.

Table 5

LSC#2 Centrality Scores

	In-Degree Centrality	Betweenness Centrality Normalized	Closeness Centrality Normalized
Randy	8	.0345	.0276
Christine	5	0	.0300
Conner	5	0	.0324
Burt	4	.0153	.0275
Bently	4	0	.0213
Sherri	4	0	.0208

Similar trends were seen within LSC#2: (1) the individuals with the highest in-degree centrality exhibited some of the highest closeness centrality scores, and (2) high in-degree and closeness centrality scores were not necessarily indicative of serving a bridging role within the network. Similar to the case of Bob in LSC#1, Janet in LSC#2 (not represented in the table) exhibited a low in-degree centrality (in-degree = 1); however, she exhibited a high closeness

centrality score (closeness = .0282) due to her very few steps between her and the central figures in the network. Furthermore, centrality scores also highlighted that Janet was an influential bridging node, showing the third highest betweenness centrality within the network (betweenness = .0133).

It is in examining these centrality scores that a better understanding is developed regarding the nuance of influence within networks. Specifically, the individuals who exhibit the highest in-degree and closeness centrality, while potentially regionally important to the spread of knowledge, may not be the most important coaches to target first in the desire to spread new knowledge. Those who reflect a high betweenness centrality may be the lynchpins in spreading new coaching knowledge, particularly those who are high in all three types of centrality, such as Stanley (LSC#1) or Randy (LSC#2). To pictorially exhibit these conclusions on the sociograms for each network, Figures 14 and 15 depict the network based on closeness centrality score (the higher the score, the bigger the node) and betweenness centrality score respectively for LSC#1. Figure 16 and 17 depict the network based on closeness centrality and betweenness centrality for LSC#2.

As previously mentioned, two individuals in particular, Stanley in LSC#1 and Randy in LSC#2, both appeared as intriguing individuals within their LSC networks, as they exhibited high centrality scores, in all three centrality measures, and several connections across club and geographic distance. In fact, not only did they serve to connect otherwise disparate clubs within the network, but both of individuals were cited as being top sources of advice for coaches located in rural areas, 200+ miles away from their current geographic location. Figures 18 and 19 present Stanley's personal network, across clubs and across geographical location respectively in LSC#1. Correspondingly, Figures 20 and 21 present Randy's personal network

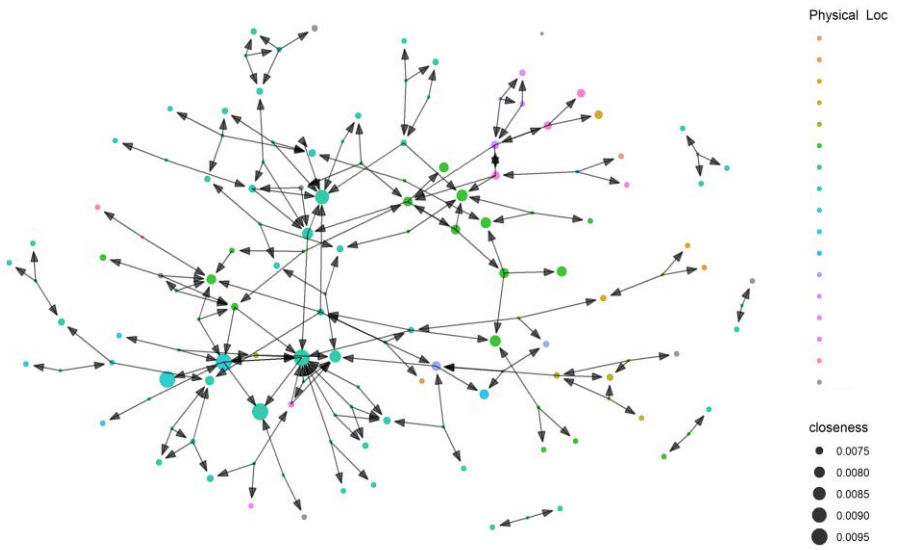

Figure 14. LSC#1 nodes with highest closeness centrality scores.

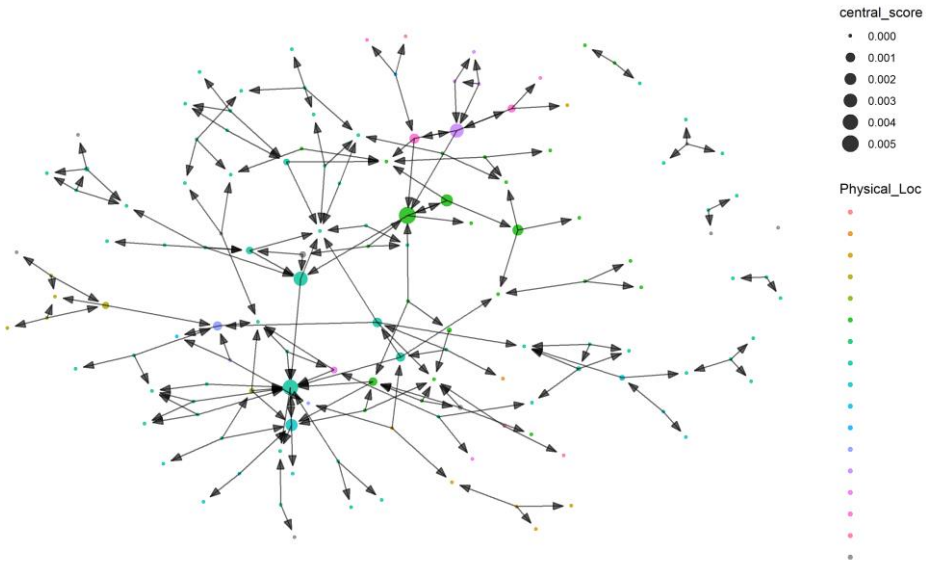

Figure 15. LSC#1 nodes with highest betweenness centrality scores.

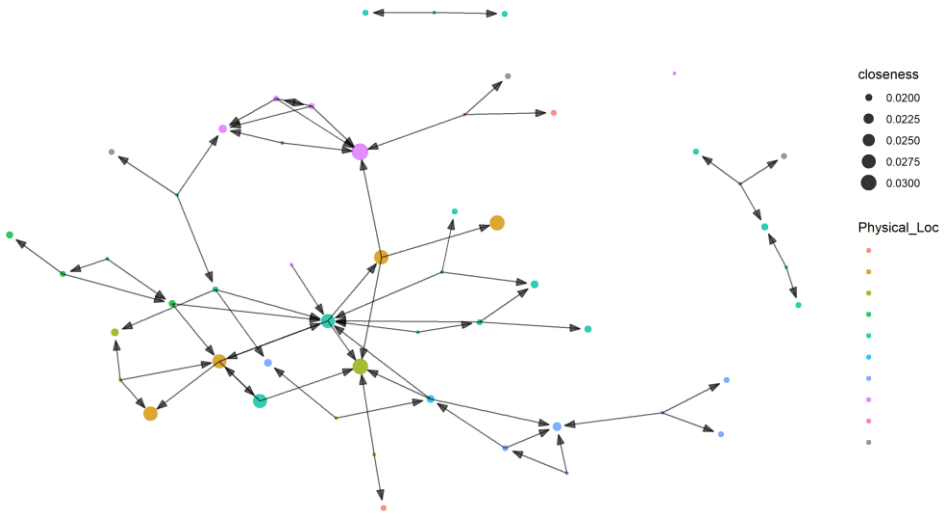

Figure 16. LSC#2 nodes with highest closeness centrality scores.

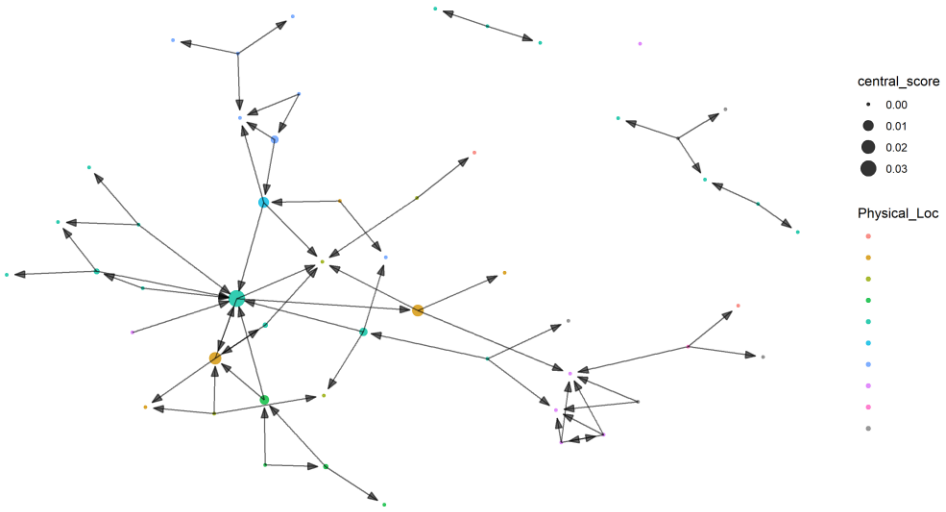

Figure 17. LSC#2 nodes with highest betweenness centrality scores.

across clubs and geographical location respectively in LSC#2. To protect the identity of individuals within the network and the LSC identity, a black box was placed around each club or location, without the name, to represent their presence in Stanley or Randy's network, as the colors may be difficult to differentiate.

The story behind the network: Culture and relationships within LSCs. Before addressing the second purpose of the study, the information shared within the LSC networks, it is potentially useful to learn more qualitatively about the connections that were seen in the sociograms. Specifically, an understanding of the coaches' perception of the culture of the sport within their respective LSCs adds some contextual information to these networks. The information within this section, while not coming from all 97 participants within the social network survey, came out in the ten qualitative interviews that took place to create the qualitative case study. Participants in the second part of this study, the semi-structured qualitative interviews, were asked about their perception of the culture of swimming within their LSC as well as their own geographical region within the LSC. Meaning units were extracted from their responses to these questions in the qualitative manuscripts, and higher order themes were created to encompass the view of the LSC.

LSC#1 culture. LSC#1, as a whole, was viewed as an LSC that was "in transition" or "on the rise." A recent high-profile Olympian came from the LSC and it has such been viewed as what one coach, Walt, termed a "top ten hotbed of swimming." Within the last 15 years the LSC has nearly doubled in athlete participants (Walt; USA Swimming). Though it can be noted, that individuals who coach within the more rural areas of the LSC view the sport of swimming as transitioning into something that is less accessible and has a higher entry point than in the past (Stewart). Within a rural region the demand on the parent is much higher, and the opportunity for

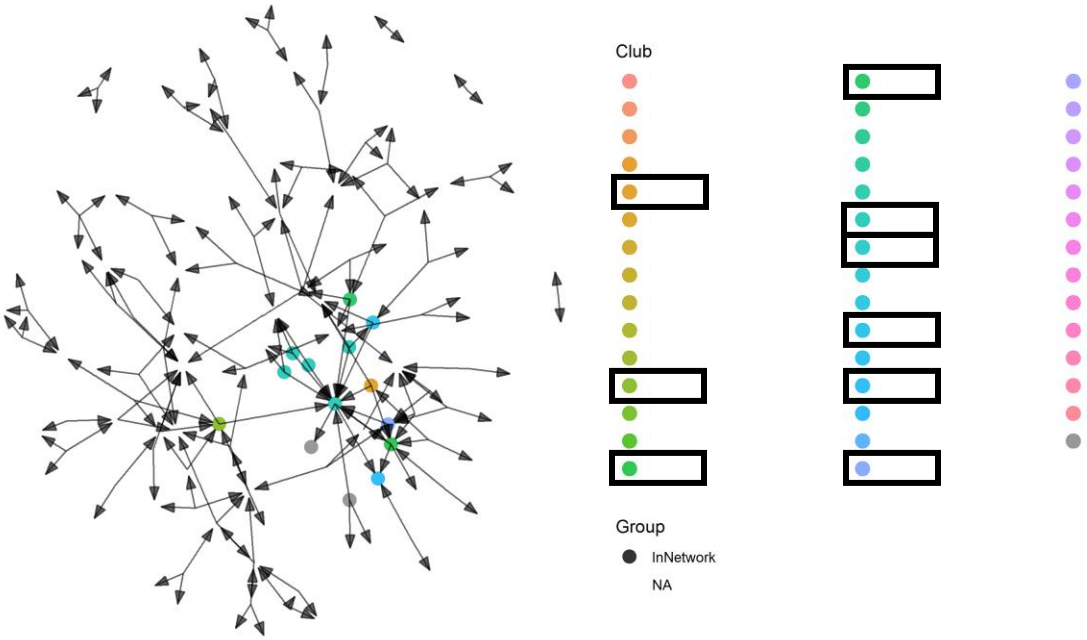

Figure 18. Stanley's personal network in LSC#1 across club.

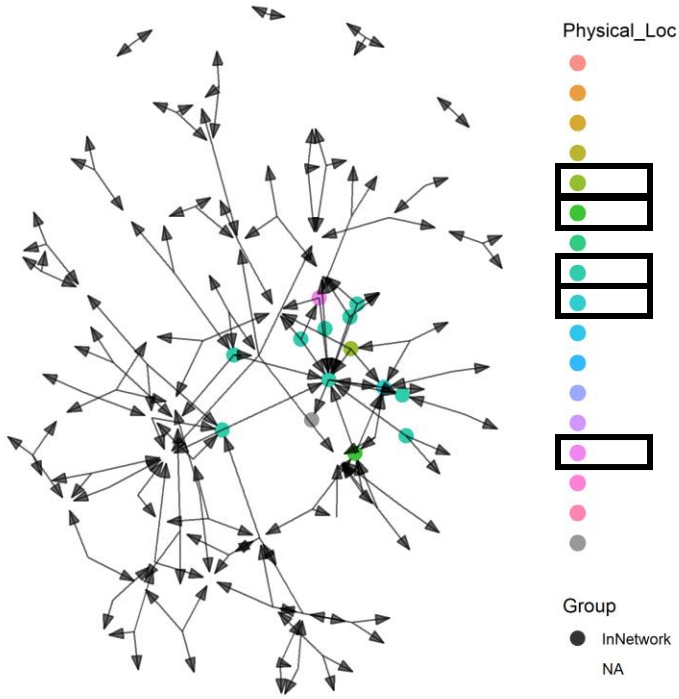

Figure 19. Stanley's personal network in LSC#1 across geographic location.

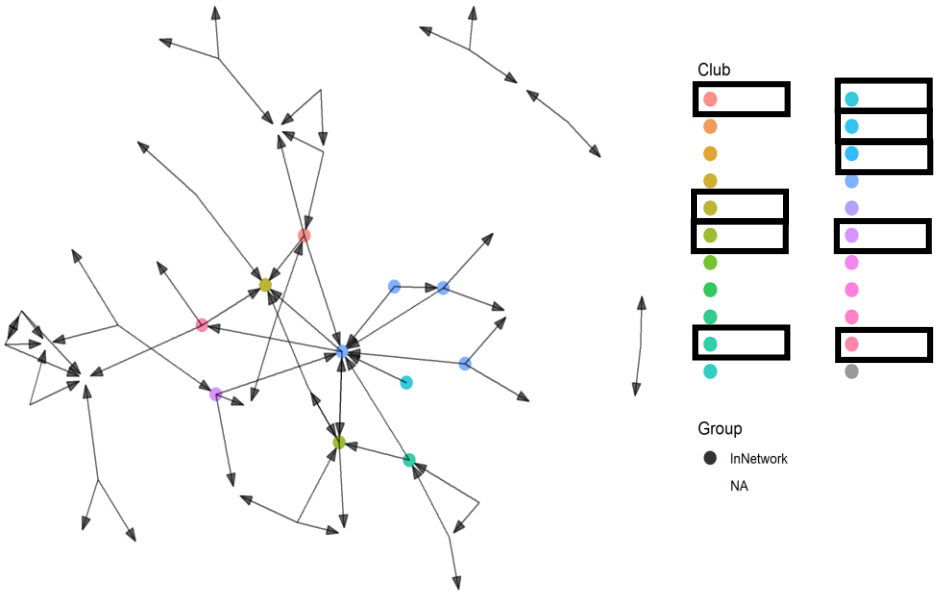

Figure 20. Randy's personal network in LSC#2 across club.

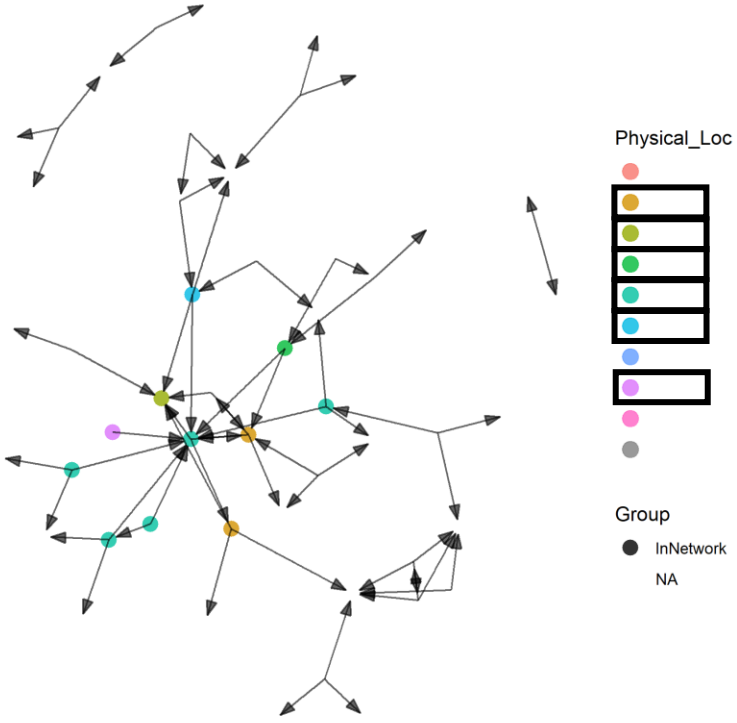

Figure 21. Randy's personal network in LSC#2 across geographic location.

high level competition is more expensive due to travel costs (Stewart). As such, it is much more difficult for rural athletes to seriously pursue high performance swimming in LSC#1.

> I think swimming in rural areas in on the decline. With all the emphasis and growth of swimming…many more higher level athletes got interested in swimming through the Phelps era, which is outstanding, but the depths of talent and athletes that became a part of the sport now has made the entry point for a rural kid that doesn't understand the level of training to be in one of those larger teams much higher…in the 90s I could run 5 workouts a night to teach my kids to swim better and they were competitors…now they have to not just swim, but their competitors are doing 10+ workouts a week...and our population base says 'I'm not going to buy into that,' because there is not the same support structure to make that a reality.
>
> Stewart

On the whole participants' descriptions of the culture reflected two higher order themes: social closeness and a strong professional network. Specifically, within the first theme- social closeness- LSC#1 coaches cited the ease and frequency with which they interacted socially over dinner and drinks after meets or on higher performance trips outside of the LSC (e.g., junior nationals, sectionals) where Team LSC#1 banded together.

> (Shortly after I moved to LSC#1), I think one day at a swim meet Stanley just invited me out for dinner with some of the LSC#1 coaches, and I had just moved to LSC#1's state. I had no friends, so I was like 'Hell yeah I will come, that is great!'…I then subsequently went on to go to Stanley's annual Crawfish Boil and went skiing several times with those coaches; they all became personal friends.
>
> Matt

> If we go to Juniors, my club might sit in the same spot as two other LSC#1 clubs…like the kids will sit together and they have shared training environments. They are supportive of each other, and I think it reflects all the way through into the coaches and athletes, top to bottom.
>
> Stanley

As highlighted by Matt's comments, several of the major "players" (those who had high centrality), including Matt, in the LSC#1 network consider one another close personal friends rather than work colleagues or acquaintances. In fact, several of these coaches began their terms

as head coaches within the same era (2000-2005) and/or had a previous connection (e.g., former swimmer) with some of the older members of the network.

> I mean every major coach in LSC#1 has been in the position for 10 years…there was a big turnover between 2000-2005 and everybody has been in the same spot since then, and I think that has been a major, major piece, in moving the LSC forward. Had there been continuous turnover in the coaching community…it would be a different story.
>
> Stanley

Within the second main theme, there was a clear emphasis in responses from LSC#1's participants that the network of coaches worked well together professionally for the good of the LSC. Subthemes highlighted a culture of not being outwardly combative and not feeling like they needed an ulterior motive as a reason to interact with others.

> Coaching is very stable here. I mean I feel like in a lot of places, if I had to say, I have been coaching at (location) for 14 years. A lot of people would say 'Oh that is a long time,' but here in LSC#1, it is just not even you know, not even Top 10. So, since we are all seeing each other for a long period of time here, we all just know we have to work together. It's a pretty professional group of coaches.
>
> Walt

Furthermore, several coaches felt that the geographic layout of the LSC and the overall size of clubs (e.g., no clubs were over ~350 swimmer range) led to more amicable relations between coaches, because it reduced the amount of competition with one another for athletes.

> I look back on (large club) in my old LSC, that has like 600 kids. Those team in (metro area) are all that big, and for kids they are offering similar things, so I think that creates some animosity toward each other. But in LSC#1, all the teams are small…like by USA Swimming standards. Like my team currently has 320 kids and USA Swimming considers us to be an average sized club. So, I think the size and geographic distance lends itself to positive relations.
>
> Matt

However, as general exceptions to this trend of amicable professional relationships, it was noted that there was some club overlap in competing for swimmers in one of the larger metropolitan regions- Metro 1 (Stanley, Walt). Within this region, one of the clubs- Achievers- was cited by several participants as always keeping to themselves and lacking approachability

when interacting with other teams (Bennett, Ethan). The head of coach of Achievers was Edward, the coach with the second highest in-degree centrality in LSC#1. As noted with the centrality data, Edward was largely cited as a source of advice for individuals within his own club. As such, this general lack of approachability, seen by others in the network, may contribute to the lack of connections Edward and his staff exhibit outside of their club. Furthermore, outside of Metro 1, the other largest metro region in the LSC- Metro 2 was said to exhibit the only openly combative culture within the LSC (Stanley). Within the centrality and sociogram data, Metro 2 clubs were largely disparate from one another and the geographic region as a whole was largely disparate from the central core of the network. If not for the presence of one of the strongest bridging nodes in LSC#1, Mitch, it would be remove even further from that knowledge sharing network.

Outside of these exceptions to the networks culture, one of the reasons for the perception of positive professional relations had to do with the fact that coaches in LSC#1 tend to have a long tenure, with most head coaches serving in their positions in the range of 14-30 years. This longevity was cited as a possible motive for why such positive professional relationships have developed- longevity meant they needed to coexist peacefully. One of the ways within the Metro 1 region they have done so is by several head coaches instituting a policy of requiring an athlete that wants to transfer clubs to discuss the move with their current coach first. It is believed that both the longevity and mutual respect given to each other are a few of the reasons coaches trust one another within the LSC.

> When an athlete from another club wants to join ours (from a neighboring club), I won't even meet with them unless they tell their current coach. I will only have a phone conversation with them and explain the policy. I feel I have to maintain professional relationships with coaches. So, I always say 'Your kid is going to graduate high school, but I am still going to be here coaching with the same people, and those relationships are important to me.

Stanley

LSC#2 culture. LSC#2, as a whole, was also viewed as an LSC that was within a state of transition (Rich, Stephanie). Coaches felt it was coming out of antiquated views of the sport at the LSC level and that it was clearly defined by a tension between the "Old Garde" of coaches within the LSC and younger/newer coaches. One of the challenges facing this LSC is the overall view of the sport of swimming within the geographical region. This LSC is located firmly in the South, where baseball and football tend to reign over other sports. As such, coaches worked to actively promote the fact that several types of athletes can excel and move to college within the sport of swimming as compared to baseball and football.

> I'm not saying it is easier to get a swim scholarship…but you know if you want to play (major university football) you got to be a freak athlete…whereas a 5'10, 150lb kid could come in and working hard goes a lot further than most other sports. But I think that is something that most people in LSC#2 don't understand.

Curtis

One other unique aspect of LSC#2 that was related to the culture of the sport within the region was the need to share practice facilities. During long course season, all the teams in one metro region, and surrounding areas geographically, all rent out of the same long course pool space for practice (Rich, Stephanie). This trend has occurred for several years, with teams needing to share practice facilities. As such, within this metro region of the LSC, this creates a unique opportunity to interact more frequently with other coaches in the area.

On the whole, the only higher order theme that came from the cultural data in the LSC#2 interviews was the consistent tension between the older coaches and the newer/younger coaches. LSC#2 was unique in that a large majority of coaches grew up swimming within the LSC and now serve as coaches. Several of these coaches were part of a high-performance era in LSC#2 Swimming where they had several national level/Olympic competitors; these coaches made up

the Old Garde. Most new/younger coaches also grew up swimming in LSC#2, often for some of the Old Garde coaches, but have cited tension with this group as coaching peers.

> There are coaches in this LSC that swam in this LSC in the 70s and 80s and are now coaching, I mean the LSC is smart….but I think there (is) a bit of 'This is how we have always done it' type mentality. I don't think we need to phrase this (coaching group) out necessarily, but there are more dynamic, younger coaches who are coming up and trying to do things.
>
> Curtis

The Old Garde coaches felt that young/newer coaches were to be discounted until they proved themselves dedicated to the LSC- a sentiment that these younger coaches definitively felt (Curtis). Whereas, the younger coaches expressed themes of being frustrated with the older coaches' resistance to change and blamed the "dumbing down" of the sport and loss of competitiveness on poor choices for rules/regulations (Curtis, Rich).

In relating this cultural information back to the social network results, one may view the higher density of network relationships and the presence of several nodes with high in-degree and closeness centrality as positive signs for the network. However, it is clear that boundary spanners within LSC#2 may be currently holding the most critical power within the LSC to bridge disagreement in ideas between the disparate Old Garde and newer/younger coaches. In fact, what may be most interesting about the culture of this network is where and how the most influential individual in this network- Randy- fits into the tension between old and new. Randy falls between the age demographics of this tension (40-49 year age bracket), and he purposefully left the state to coach for a period, to pursue new ideas and opportunities in coaching, before returning. However, he has managed to find the ear of both groups within the LSC.

LSC relationships. In seeking to understand the network connections, it may also be useful to understand individuals' personal approaches to building relationships with other coaches and how this might have influenced the connections observed. Coaches, in the

qualitative interviews, were asked whether they had an approach to building relationships within the LSC. Several coaches in both LSC#1 and LSC#2 did not believe that they had an intentional personal approach to building relationships, saying things such as they were quiet at meets and did not view themselves as outgoing individuals (Bennett, Stewart, Walt). However, while coaches did not perceive themselves to having an intentional approach to building relationships, there were several strategies, that appear as themes in Table 6, that were cited in further probing on this question.

Table 6

Strategies for Building Relationships with Other LSC Coaches

Strategies to Relationship Build
Be friendly on the pool deck at meets
Ask other coaches about athletes' performance
Volunteer for LSC committees
Organize social events on travel trips (e.g. Junior Nationals)
Talk to coaches about non-swimming topics
Refuse to talk about other teams disparagingly

All coaches within the qualitative interviews highlighted using several of these strategies to help improve their relationships with other coaches in the LSC; furthermore, the most influential nodes of each network Stanley and Randy were cited as employing nearly every strategy.

> I'm not one to have a lot of conversations (at a meet)…but I am probably next in line to be the next Age Group Chair for the LSC, and I would like to have the reason to reach out to the other coaches and get to know them.
>
> Bennett

> I am just always friendly and open talking to people. I guess it is jut kind of like, we are in this shared experience of being on deck for hours on end, and it's easy to talk to people in those situations. Besides, if you see something interesting another coach is doing, no one…or at least very few…are going to turn down the compliment if you ask them about their athlete's performance.
>
> Ethan

Barriers to LSC relationships. The strategies to improve relationships are best contextualized within the barriers that coaches cited to building relationships within their LSC's coaching network. Table 7 reflects the most prevalent themes that came out of the coaches' responses to this question of barriers.

Table 7

Barriers to Creating Relationships with Other LSC Coaches

Barriers to Creating Relationships in LSC
Relationships require time and mutual respect to build
Not all coaches value peer relationships
Disagreement with coaching philosophies and practices
Physical distance
The age groups coached
Ease of starting new clubs/lack of desire to resolve conflict

All of the cited barriers appeared within both networks, reflecting that similar barriers to building relationships are seen in different types of networks. Furthermore, these barriers often fall in line with the research literature regarding relationships being more likely with those coaches who share close proximity, homophily in professional practices, and share mutual respect for one another (Borgatti et al., 2013; Rogers, 2004).

Purpose 2: Information flow within networks. When examining the knowledge sought from all advice-giving individuals within the network, the following topical trends were seen. The most discussed topics within networks were training plans, pedagogical/technical knowledge and coaching philosophy. However, it should be noted that no topical category had no responses. As such, Figure 22 shows that coaches talk to other coaches in a way previously postulated-within a variety of different topical categories.

When examining the most influential and central nodes within each network, there were no trends seen in individuals being topical "experts," meaning that the individuals who cited seeking advice from these central nodes often sought advice on various topics encompassing all

of the categories in Figure 22. As such, to be a meaningful source of knowledge in an advice seeking network, coaches may be looking for an advice-giving individual who can answer several different types of questions or problems.

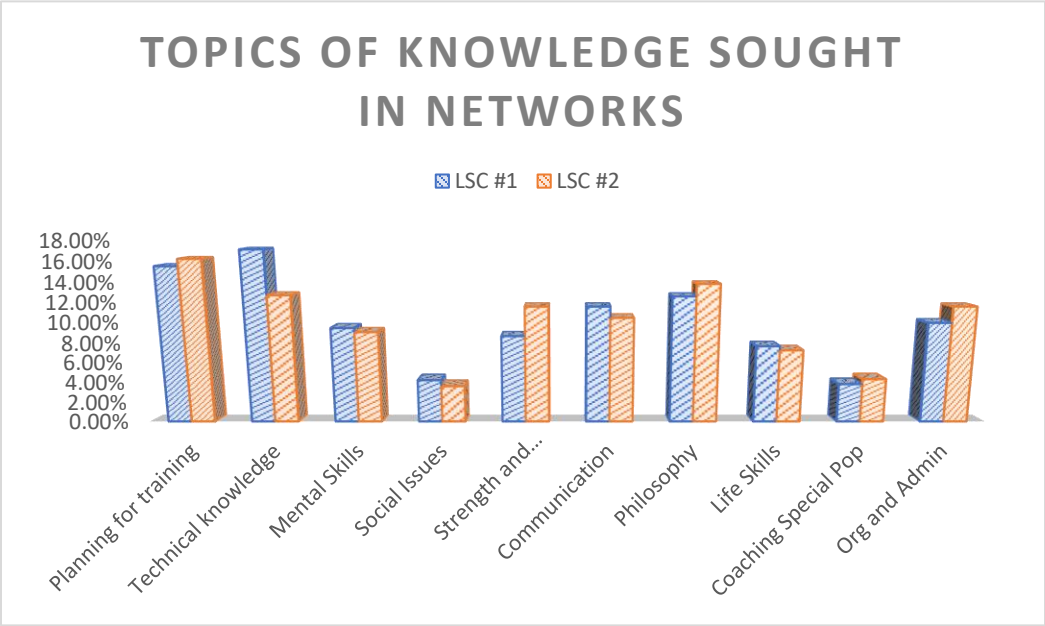

Figure 22. Topics discussed with advice-giving individuals.

This sentiment was encompassed by Stanley's (LSC#1's most important node) response when asked about why he sought advice from Matt, another influential node in LSC#1.

> If I have married a person (by building a professional relationship with them), I'm not afraid to talk about how he/she handles staff when they aren't performing well, and like really difficult topics. Things that I need advice on and he needs advice on. For example, as every new safe sport policy roles out and every new difficult situation is presented- how do you communicate with your team and manage travel trips.
>
> Stanley

As such, in meaningful advice-seeking relationships, coaches may view it as an open book time in which to seek out working through new coaching problems together. This reciprocal approach to the relationship, in addition to trusting the advice-giving coach has a strong knowledge base, may be more critical in knowledge exchange than the actual topical elements discussed.

Phase 2: Understanding Influence within Social Networks

Purpose 3: Influence within network, a case study of Stanley and LSC#1. To address purpose three, to understand influential individuals within a network and why they were influential, a single case study was completed, within the LSC#1 network, on the most influential individual within the network- Stanley. Stanley was cited by 13 other coaches, across a wide spread of geographic location and club affiliation throughout the LSC, as a meaningful advice-giving source. To examine Stanley's influence, Stanley himself was interviewed directly, as well as six of the individuals that cited him as influential; three who were his current staff members and three who worked for separate clubs around the LSC. The interviews primarily focused on understanding more about each individual's relationship with Stanley and his/her perceptions as to why others in the LSC viewed Stanley as influential. Stanley's interview was primarily focused on his own development as a coach and why he perceived others found him to be an influential person in the network. As mentioned in the methods, the analysis was conducted inductively, allowing for themes to emerge from the data. In order to better contextualize the responses obtained from each interview participant, some autobiographical data on each individual is necessary. All participants including Stanley are described below.

Stanley. Stanley is a Caucasian coach, in the 40-49 age range. He has served as a swim coach and a head coach for his current club for the last 18 years. Stanley began his coaching career in college, shortly after moving from another state to LSC#1 to attend college. He is currently the head coach of one of the largest and highest performing clubs within LSC#1, which he built from 75 swimmers to 300 swimmers. When asked about his ambitions for his career in the coming years, he stated that he was very satisfied with the constant dynamic state of his current club. As such, he cannot envision leaving it in the near future. Furthermore, he

highlighted the longevity of his tenure, both in LSC#1 swimming and at his current club, has allowed for the accumulation of coaching resources that would be hard to find in another location or club.

While Stanley's coaching philosophy has changed with time, the one constant has been wanting to create a high-performance program that allows any athlete the opportunity to train, for any event, up to a national level. Over time, he has felt that his push away from traditional yardage toward complimentary training (e.g., increased dryland) has helped to make the sport more enjoyable and helped the mental and physical development of his swimmers. Furthermore, Stanley reflected that club swimming was inherently a business of early sport specialization; there was no denying it. So, instead of trying to "sell" something else, his goal is to keep athletes healthy mentally and physically in the process of training. Keeping his athletes healthy is of critical importance to him, as Stanley believes they have another 4+ years of swimming beyond him (i.e., in college) and wants them to enjoy the sport for a lifetime.

When it comes to his role within the LSC, Stanley has served on several notable committees. He is currently sitting on both a national level committee for USA Swimming, as well as serving as the chair of an important committee within the LSC. His choice to serve on these committees was voluntary, and he does not get financially compensated for his time. Stanley's team practices in one of the nicer swimming facilities, of LSC#1's largest metropolitan areas. As such, Stanley has helped to coordinate and host a Junior National clinic that brings all qualifiers for this national level competition together to be coached by a rotating group of coaches from the LSC#1 network.

Matt. Matt is a Caucasian coach, in the 30-39 age range. Matt grew up in a neighboring state to LSC#1 with a very different swimming culture. He started his coaching career in high

school and used it as a platform to complete his undergraduate and master degree before deciding to commit to coaching full time. He currently serves as the head coach for the largest club in LSC#1, which is geographically isolated from the two most prominent metropolitan areas in LSC#1 by at least an hour. Matt originally met Stanley when he was coaching in another LSC, but reconnected shortly after moving to LSC#1. Matt became the head coach for a team in the metro region that Stanley currently coaches, and this allowed Matt to pursue a relationship with Stanley, as he worked out the demands of his first head coaching position. Matt and Stanley became close personal friends, as well as trusted professional colleagues. Matt is one of the individuals from whom Stanley seeks advice and whom Stanley considers a close personal friend. Matt described himself as intentionally pursuing new relationships with coaches in his network, as he found it to be the only way to continue growing as a coach. Matt also has previously volunteered his time to serve as a committee chair on a prominent committee within the LSC.

Walt. Walt is a Caucasian coach, in the 50-59 age group. He currently serves as the head coach for a club in the south part of Stanley's metro region. Walt began his coaching career by sitting as a chair on a US Masters Swimming committee, which is where he first met and interacted with Stanley. Walt began his USA Swimming coaching career when the head coaches for his current team abruptly left during the middle of the year, and he stepped in to fill a role as an interim head coach due to his son's involved with the team. During this time Walt actively sought out relationships with other coaches to help him understand and adapt to this new position. Stanley has served as a source of advice for a variety of types of information for Walt over the years, but Walt found him to be most helpful during a period where he had to balance coaching an elite level Paralympian, meeting her needs without sacrificing the development and

attention owed to the remainder of the team. Walt does not consider himself to have an intentional approach to expanding his coaching network, as he generally keeps to himself and has no intentions of moving from his current position; however, he is motivated to continue changing and growing as a coach.

Stewart. Stewart is a Caucasian coach, in the 50-59 age group. Stewart is a native to both the state in which LSC#1 is located, as well as his current geographic region in a rural part of that state. Aside from serving as the head coach for his USA Swimming team, he is also a teacher at the local high school. Stewart has been coaching for over 30 years and first met Stanley when he served as a Zone coach in the late 1990s. As a coach within a rural geographic region, Stewart has always acknowledged the importance of creating relationships with other coaches in the LSC both for the good of his swimmers and to help enhance his coaching knowledge. He describes the late 1990s-early 2000s as the primary time in which he built relationships with individuals who may be considered the core of LSC#1's network currently. He describes building a very reciprocal relationship professionally with Stanley and considers him a close personal friend. Furthermore, Stewart frequently sends high level athletes to Stanley to train. While Stewart is passionate about swimming within his rural area of the LSC, he is worried about the future of swimming within the rural areas of any LSC, stating the entry point and performance culture in the sport is shifting in a way that makes it disproportionately more difficult for rural teams.

Melody. Melody is a Caucasian coach, in the 23-29 age group. She has been coaching swimming for six years. Melody grew up swimming in a much smaller LSC and views the LSC#1 swimming culture as much more intense in size and competitiveness. She is currently pursuing her PhD and is an assistant coach for Stanley's club team. Melody works with the

youngest age groups on the team and describes that both serving as a coach for this age demographic and working on her PhD makes it hard to have many opportunities to intentionally build relationships with other coaches within the LSC. She originally met Stanley when she was teaching swimming lessons to his daughter while pursuing her master degree. When she decided to complete her PhD, Stanley offered her a coaching position for his club team. Melody finds Stanley's team culture to be a fruitful one where she is impressed by his willingness to support his assistant coaches' decisions, including actively encouraging parents to resolve complaints they have directly with their group coach rather than with him. Furthermore, she feels that Stanley is consistently available and always providing her with opportunities to learn and grow as a coach.

Bennett. Bennett is a Caucasian coach, in the 40-49 age range. Bennett grew up in LSC#1, in the metro area in which he currently coaches. His father was a swim coach for one of the foundational clubs within the metro area, and Bennett was very close to his father and his father's co-coach. While having spent time in and out of the profession of coaching, having taken lengthy breaks to work in other fields throughout the 1990s, 2000s, and 2010s, he has always felt there was a particular importance to understanding and appreciating the history of the sport of swimming within LSC#1. Bennett originally met Stanley when Stanley was in college, temporarily training with the club Bennett was an assistant coach for at the time. When Bennett decided to come back to coaching in 2014, Stanley offered him a position coaching with his team. Due to his history with swimming in Colorado and his on again/off again coaching experience, Bennett views himself as an expert within the area but often voiced frustration with not feeling like he had the respect and ear of other coaches within the LSC. While Bennett continually tries to push the threshold on adopting new ideas into his coaching practices, he cites

his opinionated views on the sport as potentially contributing to his level of influence (or lack thereof) within the LSC. Bennett is very motivated to continue growing as a coach and continue developing the connection between USA Swimming clubs and the local high school and recreational teams in the sport. Furthermore, Bennett is motivated to try to build more resources for coaches to learn.

Ethan. Ethan is a Caucasian coach, in the 30-39 age range. Ethan grew up in a neighboring LSC to LSC#1 but describes swimming as a being on a completely different level in LSC#1. Ethan has been coaching off and on for 10 years, also working full time as a graphic designer. Ethan currently serves as an assistant coach for Stanley's club and works with age group kids, ranging in age from 10-14 years old. Ethan first met Stanley when he moved to LSC#1 after college to train for Olympic Trials. A friend suggested training with Stanley, and they entered into an agreement that Ethan would coach for Stanley in payment for training with him. Ethan left coaching temporarily, when he moved to a different geographic region within the LSC, but came back to coaching with Stanley a couple years ago. Ethan does not have any motivation to change his current position within coaching, as he views coaching as a way to give back to the sport of swimming, not as his primary profession. As such, he is not particularly concerned about building new relationships with his coaching peers but is fairly connected to the network due to his previous time swimming and coaching with Stanley.

What makes someone influential? Advice seeker responses. To address Purpose 3, all coaches who cited Stanley were asked, within the qualitative interview, to comment on: (1) how they personally viewed Stanley, including why they find him to be a good source of coaching knowledge and advice, and (2) why they thought others within the LSC viewed Stanley as a good source of advice and knowledge on coaching. Several higher order themes arose from

analyzing their answers which all fell into one of three categories: (1) Stanley's LSC and coaching experience, (2) Stanley's personal characteristics, and (3) Stanley's actions within the network. The higher and lower order themes can be seen in Table 8.

Table 8

Higher Order Themes of Influence: Advice-Seeker Perspective

LSC & Coaching Experience	**Personal Characteristics**	**Personal Actions as a Coach**
Sitting on committees LSC level National level/USA Swim	Approachability Friendly demeanor Easy to get along with Honest and forthright Doesn't act "protective" of knowledge	Not afraid to innovate Thinking outside the box Seeks alternative views Willing to risk failure Tracks effectiveness of changes
Experience with high level swimming	Passionate about the sport Coaching is a lifestyle Values friendship	Engages in conversation willingly Seeks to make relationships reciprocal
Longevity Time spent in LSC Time spent as a coach	Knowledgeable Always looking to grow and learn/inquisitive Understanding multiple levels of elite training Perceptive	Hosts meets and clinics
High performance of personal club/swimmers	Excellent communicator	Offers assistance with other teams
	Quality work ethic	

LSC and coaching experience. In discussing why they found Stanley influential, and thought others did as well, participants discussed several meaningful experiences that they knew Stanley to be formerly or currently engaged in that changed their perception of the credibility of his coaching knowledge. As mentioned in his idiographic profile Stanley currently serves on

both a national level and LSC level committee. His service to these committees is voluntary, and several of the participants described recognizing the time and effort he puts into making the LSC move forward within his work on these committees.

> I probably don't consider him (Stanley) to be very much of a mentor on the swimming side of it, but I do talk to him a lot about the running of the LSC side of things. He has never been the chair of the LSC, but as part of the TPC (committee) he is probably the most important coach in the state. So, people always interact with him on a lot of different things. And he is really good at that job and smart, so people respect that.
>
> Walt

> I don't know of anybody who doesn't think Stanley is working for the good of the LSC. I mean I know some people who don't like him, but that is just not part of it. He does a good job of talking to all levels of teams, and even the people that don't agree with him in regard to the direction of the LSC feel heard. They will acknowledge that he knows his stuff and he is doing a really good job with the planning stuff.
>
> Bennett

More than just recognizing the time he puts into these committees, the knowledge he gains both about why USA Swimming is making certain decisions at the NGB level and what actions and opportunities will be coming down the pipeline to coaches was cited as another valuable aspect of Stanley's connections to these committees.

> (Stanley) puts himself on strong committees that are influential and highly benefit his kids, but in the long run, they benefit everyone if you are willing to see it. He volunteers for these committees, which a lot of coaches are like 'I don't want to do that volunteer stuff'…being in a rural area, staying connected to Stanley means I am able to stay abreast of changes within USA Swimming and the LSC before those decisions formally come down the pipeline which is a real advantage. If you know beforehand, you have a much better opportunity to take advantage of it.
>
> Stewart

Beyond his role on various committees, participants also discussed the respect they had for Stanley's knowledge both due to his exposure to high level swimming, serving as a Zone and junior national coaching staff member, and within the experience of creating consistently high performing swimmers within his own club. These two themes, though separate, are connected as

the presence of high-level swimmers often leads coaches within USA Swimming to be named to the coaching roster for high level competitions.

> I think one of the things that surprises people is, a lot of people know his team is fast, but a lot of people don't actually realize how fast his team really is. He has a lot of national class swimmers that he doesn't bring to a whole lot of meets in the state…and I know a lot different coaches look at that and respect how successful he is with separating out the different tiers of performance athletes and serving them individually without making it seem like he is only about his national qualifiers.
>
> Walt

> I think that I am an elitist. I really like being on the cutting edge of stuff, and I like surrounding myself with those who are the best at what they are doing…Stanley is one of those people…does a kid want to swim in college? Then that is where we want to get them and that is the ultimate goal? Do they want to make Trials? If they do, wonderful. We will help them with that.
>
> Ethan

Finally, in discussing meaningful experiences that influence the knowledge base Stanley brings to advice-seeking networks, participants cited that the experience that came with Stanley's longevity as a head swimming coach, his stability within a single club, and his tenure of coaching within the LSC all influenced the trust and respect that was afforded to Stanley's opinion on various coaching topics.

> Stanley is the epitome of the compilation of many days and years of information. And I think having the opportunity to be where he is for close to 20 years- he is in the same spot. I think there is respect that comes with that…that longevity gives you the chance to interact with more people and not be seen as somebody who is another one hit wonder.
>
> Bennett

> I just think his conduct on deck, his conduct at meets, his experience in the sport, and his interconnected knowledge of (metro) swimming, not just our club, makes him a really valuable person to know, because he understands the dynamics of LSC#1 swimming really well because he has been here so long.
>
> Melody

Personal characteristics. When asked specifically about what characteristics they felt Stanley had that contributed to his influence within the advice seeking network, coaches cited his approachability, passion for the sport, knowledge base, communication skills, and work ethic.

When discussing why they felt Stanley was approachable, coaches commented on his friendly demeanor and easy-going nature, once you broke the ice and initiated a relationship with him.

> I think when you first get to know him, he can come across as, what's the term- brief? Like I'm really busy, what's your deal? But once you get to know him, he really does open up…once you need him, he is approachable. Easy to laugh with a great sense of humor.
>
> Ethan

> We have a really laid-back, jovial office environment. And Stanley is in the office most, especially in the summers he is there a lot. I think a lot of the times, it is just a really organic conversation that we are all sitting in the office before practice, and he says: 'Hey, I found this old book of 100 swimming games.' We were just joking about it, but Stanley pointed out a few things in the book and said…'these four things would be really helpful for your guys and you should try them at practice.
>
> Melody

Participants also felt that an important aspect of this approachability, that was often missing in other coaches within the LSC, was that Stanley did not act threatened or protective of his knowledge when approached for a conversation.

> Stanley is willing to answer your questions or offer (the answer) and not be super guarded about what it is. He will say what it is, and it is pretty obvious that piece of knowledge or opinion is what he believes and feels. So, when you think of coaches' clinics or talking to coaches, and they feel like they are holding back the secret sauce to what makes a kid successful…that hesitance really creates a lack of approachability…and the relationship never flourishes.
>
> Stewart

Finally, another dimension of approachability that was cited by coaches was Stanley's willingness to be both honest and forthright- not only giving an accurate and truthful perspective on a topic but doing so in a straightforward and direct way.

> Any time there is an exchange of ideas, we are both prepared to talk about it and learn from it. From a coaching side that helps a lot. We talk about things like optimal hotels, warm-ups, dryland, stroke technique…I mean there is really nothing that is not on the table in those honest conversations.
>
> Matt

Participants also felt that Stanley's passion for the sport drew people to him in advice seeking. Specifically, knowing that coaching is a lifestyle for Stanley made coaches assured the he will either have an answer or be aware enough of a topic to have a discussion due to his immersion in the field.

> Stanley is incredibly passionate. He lives it. I would say even to the detriment of his interpersonal relationships (outside of the sport). And that is not a bash at all. He lives it; he loves swimming. I think he loves seeing how much it can evolve, and he is just a wealth of knowledge that he has accumulated over the years, being so invested.
>
> Ethan

Further, there was a distinct draw of participants to Stanley due to the feeling that Stanley's passion for the sport reflected not just a value of creating professional relationships, but friendships with fellow coaches in the network. These friendships have served as a meaningful platform for building the trust needed to maintain these relationships over time.

> I mean, we are friends; our families are friends. So, a lot of (the draw) has to do with our base relationship and that trust. 'Oh hey, this person that I want in my life at that level' and then from a swimming perspective he is like me…always looking for the next step or what is next…just always looking to grow and learn as a coach.
>
> Matt

> He is such a funny guy. I mean sometimes I can't find him at a swim meet, because he is just sitting at someone else's table. And I don't know if that is him forming a new relationship or him just wanting to chat with an old friend. I think that is something remarkable about him- he has so many friendships within LSC#1 swimming…like this is livelihood and he loves it, so it would be silly not to have friendships in a world where people also share the same passion.
>
> Melody

Coach participants also felt that Stanley's knowledge base was immeasurable. Stanley was consistently described as someone who may not always be considered "innovative" but was always looking to grow and learn within his coaching. As a result, many of his staff members felt that he was on the "cutting edge" of understanding elite training trends, but not at the expense of his knowledge and development of younger kids.

> I love his philosophy and approach to coaching younger kids, because I think it is antithetical to what people might expect of Stanley. You know he is a head coach of a very intensive, large program, and his approach to younger swimmers is very fun and energetic…He just has the desire to get kids in the water…He wants them to come to practice and have this amazing hour of swimming…maybe learn a thing or two, but just really enjoy the experience of being on deck.
>
> Melody

Advice seekers also highlighted Stanley's consistent desire to grow as a coach acted as a trigger to consistently expand his knowledge base by examining how non-sport concepts could be used on deck.

> Stanley bought us 4-5 books for all of us to read, when hired, coaching books. So, I think he is really good at just continuing to educate himself on a daily basis. Finding the time and knowing where to look is an important aspect. Or having the network that shares stuff with you- which he does.
>
> Bennett

Wrapping up the theme of Stanley being knowledgeable, coaches also felt that Stanley was perceptive both in his work with athletes and in his relationships with others. This perceptiveness led to timely and rich conversations occurring both about the sport and individuals' personal lives as they intersected with the sport.

> He is incredibly perceptive about things…like if I have had a really bad day or a really long day, he is really good at sort of identifying that and asking if you need something or asking if there is anything that can change things.
>
> Melody

> Stanley is very good at seeing what his team needs. There are a number of things that he does with his kids that are…a lot of us admire how he is able to notice it and get it done from the top to the bottom…he has managed to build a culture of little things that athletes just don't want to do.
>
> Walt

Closely related to his actual knowledge base, advice seekers felt that Stanley was an excellent communicator. Not only did they learn from his communication skills with others, but they felt he was able to convey complex pedagogical or training concepts in a clear way.

> I do think one of his (best) qualities is the way he communicates. He communicates very confidently, and he communicates very simply too…I was once told that you would be most respected if you could, tell the simplest of lay people what you did and they could understand. Stanley doesn't talk down to people, but I think he just simplifies it to the point where anybody can understand it, and as you are more sophisticated, you might be able to ask specific questions that might take I further down a road of fines points, and he is really good at that as well.
>
> Bennett

> When communicating with parents who disagree with us as assistant coaches, Stanley has no problem saying 'This is my philosophy, this is my model of the team top to bottom or bottom to top…if this isn't the model you want, we have other teams in the metro area.' So, I think it has been really good for me, as a young coach, to watch that unfold and watch him deal with parents.
>
> Melody

Finally, advice seekers also described Stanley as having a quality work ethic, as exhibited by the way he balances several responsibilities (e.g., head coaching responsibilities, committee responsibilities, attentiveness to his swimmers when they compete).

Personal actions as a coach. While most participants cited the subthemes within the personal action category in the interview prompt for either the experiences or characteristics that led them to seek advice from Stanley, it is important to separate them out as these were tangible choices advice seekers mentioned that Stanley implemented. These actions reinforced to them, and others in the network, that he was a good source for credible coaching knowledge and helped strengthen trust in the relationship. First, coaches cited that they felt Stanley was not afraid to innovate. Specifically, Stanley often considered swimming from an "outside of the box" framework, and in doing so, actively sought out relationships that offered different ideas than his own.

> What I like about Stanley is that he isn't afraid to do something different compared to what everyone else is doing. And I try to think about things that he might say or do with his team that are kind of working outside of the box for some of the faster teams in the state.
>
> Walt

> He is always trying to get us to do new stuff. Almost every year we go to a dryland clinic…he always tries new drills with his top-level swimmers, and whenever he does, it trickles down and he really wants us to implement it at a younger age. He is also always trying to get us to look for new ideas or re-engage with old ideas…like this (25 year old) book that he was showing me.
>
> Melody

> I think it helps to find the opposing perspective. Stanley and I have similar philosophies, but not exactly the same. So, we bounce ideas off of each other, and it's good because it is not an echo chamber…we disagree, and I think it is valuable, because it allows us both to see different sides of the issue.
>
> Matt

Several participants mentioned that Stanley was willing to risk failure by experimenting with changes to his training and competition; however, he only did so with the stipulation that he was able to track the effectiveness or understand the failure that resulted from the change.

> Similar to Stanley, I look at my training plan and think there is probably 75-80% that is not changing, and 20-25% that is up for grabs. We are both not afraid to try new things, but it is more like: 'What is the impact of that? How is it going to change the program? What am I giving up to do that?'
>
> Matt

As such, participants felt this more "scientific" approach to innovation led to results they felt could be more easily trusted and replicated within their own environment.

One of the most meaningful personal actions that advice seekers cited Stanley taking was his willingness to engage in conversation. While Stanley was cited as someone who by first impression might seem cold, short, or grumpy, they all felt that once you created the connection, Stanley was always willing to engage.

> On deck, we are all busy, but I think anyone appreciates someone coming and asking you about your knowledge. I think that is just a compliment in and of itself. I think that Stanley is open to it and welcomes it. And I don't think everyone does. Just because you gave them a compliment doesn't mean that they are going to be open and start a discussion- but Stanley does when you ask him.
>
> Bennett

> Stanley has a knack of coming and asking you questions that are disarming and getting strong answers about what you are doing. And that is one of the things he is good at- that is probably why our relationship started, by him coming and asking me questions.
>
> Stewart

Not only was he willing to engage, but all of the coaching participants expressed that Stanley's relationships became reciprocal ones- they were not a one-way conduit of information.

> When our relationship started, I was the one who was coaching high level athletes. We were really just sharing things over phone calls and when he got together on deck. We watched each other's kids and talked about it. And slowly over time, the level of kids and the depth of kids he had on the team shifted. So, for a relationship that was 50/50, now I would call it maybe 80/20 (go to Stanley more often), but we still actively engage in a reciprocal exchange of ideas.
>
> Stewart

His staff members felt that any topic of conversation was open within the office environment, and members of his larger coaching network cited interacting with Stanley on a frequent basis, either via phone, text, or e-mail, to share workouts and other relevant ideas (Matt, Stewart).

Furthermore, several other smaller actions were cited as reasons participants' felt Stanley had a large network: hosting meets that consistently drew both local and high-level competitors, and offering to assist other teams with tasks.

> Stanley's willingness to put so much time and effort into our meets and run such great meets, makes him someone everyone else wants to learn from. Additionally, we had a meet a couple of cities over and Stanley stayed for the second session and ran the console, because they wanted to teach new volunteers and knew Stanley could do it.
>
> Melody

Participants felt these actions not only made Stanley a centerpiece of the community, especially within the metro region of his club, but continued to convey goodwill and relationships with other clubs in the LSC.

What makes someone influential? Stanley's response. In attempting to understand influence, it is meaningful to examine both the perspective of the influenced and the influencer. As such, Table 7 reflects the themes that came about in Stanley's interview within the same

general categorical headings of: (1) LSC and coaching experience, (2) personal characteristics, and (3) personal actions as a coach. In comparing Table 6 and Table 7, there were several elements of continuity between the perceptions of Stanley and the perceptions of those within his network as to how and why he has established a level of influence within the network.

Table 9

Higher Order Themes of Influence- Stanley's Perspective

LSC & Coaching Experience	**Personal Characteristics**	**Personal Actions as a Coach**
Sitting on committees LSC level National level/USA Swim	Approachability Honest and forthright Doesn't act "protective" of knowledge	Not afraid to innovate Seeks alternative views Willing to risk failure Tracks effectiveness of changes
High performance of personal/club swimmers	Passionate about the sport Coaching is a lifestyle Values friendship	Engages in conversation willingly If sees something interesting, says something Makes relationships reciprocal
Longevity Time spent in LSC	Knowledgeable Always looking to grow and learn/inquisitive	Creates opportunities to interact Hosts meets and clinics Invites others to dinners/social events
	Quality work ethic	

LSC and coaching experience. Within the category of LSC and coaching experience, Stanley felt that his presence and time spent sitting on LSC and national level committees was a big player in his centrality in the network and the view individuals had of him as a source of knowledge on coaching.

> I think, for the most part, people recognize that I am volunteering my time to make the sport a better place, and we are doing a lot to make the community better…trying to do the best we can to handle growth and promote swimming in LSC#1.
>
> I have been on the LSC#1 board for 17 years, I have been on a USA Swim national board for 7 years. I probably have a higher interface with other coaches than almost any other coach in the LSC because of those things. I am educated about what is going on at the National and LSC level…I put myself into a position where a lot of people will call me to find out stuff that I am involved in.

He also confirmed the inductive themes that came out in the advice seekers interviews about both the high performance of his club and his longevity coaching within the LSC were critical factors in obtaining and maintaining influence within the LSC#1 network.

> I don't want to sell myself short- I mean we swim well. Our team is good. We were the first club in LSC#1 to be recognized as Gold Medal…we were for three years after that, and we are likely going to be again this year.
>
> There isn't that much turnover. I really do think that is (partially) what it is. (The main core) established really friendly relationships when we were young, right out of the gate, and a lot of the major players that feed the community have fostered the culture. When coaches come in, this is how it works. So, I think myself and others have continued to lead by example in how we deal with each other, and all you have to do is penetrate one person in the chain and you probably get brought into the whole thing.

Personal characteristics. When it came to personal characteristics that Stanley felt helped influence his centrality as an advice-giving figure within the LSC, Stanley also emphasized the idea that he tried to maintain an attitude of being approachable both by being honest and forthright in conversations and being an open book in conversations with those to whom he was connected.

> I think people consider me fairly approachable. I just think inquisitively, and if I am inquisitive, they know they have room to do that with me and to ask me what I am doing. So, there are a lot of coaches who have understood that it is a pretty open door of communication.
>
> I have multiple text strings, probably 5-6 coaches that exchange workouts within the LSC regularly. Either through text or e-mail we say 'Hey, we tried this during morning practice; this is how fast my kids swam.' It's a really collaborative, shared scenario that happens multiple times a week.

Another corresponding theme that came out in the interview was the continued emphasis on Stanley's passion for the sport. His personal approach to building relationships within coaching revolved around making coaches both friends and colleagues, often citing his near 100% willingness to say yes if asked out for a drink.

> I would say my relationship is very cordial with 90% of the coaches in the LSC, and probably 50% I would call friends in my life…I host a crawfish boil in my backyard every year and coaches from 8-9 different clubs, including college coaches, will be at a social event at my house.

Finally, while not directly referenced when Stanley was asked for his perception of characteristics that made him influential, he did mention several times in his interview his own personal desire to keep learning and growing within the sport. Furthermore, he cited this as one of the primary reasons that he sought out connections to other outside of the LSC#1 network.

Personal actions as a coach. When asked whether Stanley viewed himself as an innovative coach, he stated that he abided by an 80/20 or 90/10 rule, where 80-90% of what he did on a yearly basis remained the same; whereas the other 10-20% was negotiable to change. However, it should be noted that similar to the advice seekers, Stanley said he deeply valued this approach because it allowed him to understand the effects of making new changes to his pedagogy. As such, he was not afraid to risk failure, but he had a strong desire to understand that failure (or success) if it occurred.

> I usually work off the 90/10 rule. Keep 90% of the stuff you do each year the same and change 10%. That way you know what variables you are working with, and you can identify what effect those things had. I try to be as innovative as possible within that frame.

> How you present and sell the sport and what you are doing to the athletes is changing constantly. (While the workouts might not change) that changes with every group and with every year. As the phone addiction grows, we have to continue to find a way to make (swimming) relevant to an ever-changing generation of kids who have different values and attention.

Stanley also strongly echoed that one of his biggest personal actions as a coach for building his knowledge base was willingly engaging in conversation with other coaches. He abides by a "if you see something, say something" approach.

> I just have never been very shy about it. If a saw something that was intriguing or interesting, or I saw someone improving in a certain way, I just asked them 'What are you doing? What is successful? Why is this happening?' I'm just of the opinion that if I don't reach out and ask questions of other people, then I am not going to have any new inflow, any new material, any new thought that comes into the way I work.

More importantly, however, Stanley emphasized that he is often motivated to initiate these conversations by a desire to make the relationship reciprocal. As such, he utilizes the approach of providing a compliment or question to a coach to break the ice and continues to engage with that relationship in a reciprocal way. Within this process, Stanley finds it important to seek out alternative views from his own, as he believes that the sport of swimming and your personal network can sometimes become an echo chamber.

When responding to the question of his influence, Stanley also cited that he felt he was a central figure in the network due to his proactive approaches to interact with other coaches. Aside from the conversations that are initiated at swim meets, as previously mentioned, Stanley highlighted that he often will offer to host meets and clinics at his club's home pool. While this hosting duty makes him take on extra leg work with set-up and clean-up, it allows for him to draw other people to him. Particularly, Stanley mentioned organizing and hosting a clinic held every year for the Junior National qualifiers within the LSC. Every year, the Junior National qualifiers are invited to a swim clinic where they are able to practice with other JN qualifiers for the LSC, during which they are coached by a rotating makeup of coaches from around the LSC. This clinic serves as an opportunity to ease nerves about competing at that level and builds rapport with teams across the LSC.

> We do a Junior National Camp every November that every JN kid in the LSC attends. I host it, I run it, and I do a lot of work on behalf of the LSC…we rotate the coaches that are on deck, and within the last 10 years, probably 20 different LSC coaches have been part of the camp. I think that camp has played a big role in fostering a relationship of trust within the community.

On a smaller scale, Stanley also highlighted intentionality in creating social outings and events with other coaches while traveling for meets, after meets and during certain times of the year.

However, one of the most meaningful, under the radar, subthemes that highlights the undercurrent of respect for Stanley in the LSC is his approach to coaching within a metro area where athletes often wander from team to team. Rather than viewing this competition for athletes as a threat, Stanley has adopted a practice of requiring athletes to talk to their current coach first if they are considering transferring to his club (as previously mentioned).

> I think that (policy) has helped me to maintain myself in a good light, for a long period of time in the (metro) community. I mean you have kids change teams and there is not much you can do about that, but the way you go about your business and how you handle it directly impacts how people perceive you and whether they are willing to continue working with you moving forward.

This policy and Stanley's reasoning behind it, undoubtedly have helped to contribute to positive relations and respect with other coaches in the LSC network even if they personally choose not to engage in a closer relationship with Stanley.

CHAPTER V: DISCUSSION

Coaches have been found to play a central role in creating sport environments and employing coaching strategies that facilitate athlete development. As Gould (2016) has stated "quality coaching counts" when it comes to maximizing the sport experience for participating athletes. For this reason, researchers are focusing their attention on understanding how coaches learn and continually develop their craft. Coaching researchers, for example, have focused substantial research attention on understanding how coach learning takes place and how this learning translates into on the field behavior (Cushion et al., 2010; Mallett et al., 2009; Smith et al., 1979). While much attention has been paid to more formal coaching education processes (e.g., high education curriculum; required coach education), coaches appear to value and seek interactions with other coaches as a preferred knowledge source in their career development compared to these formal opportunities (Erickson et al., 2008). As such, the overarching goal of this study was to provide additional insight to the literature in regard to understanding how these networks of coaches' function within the sport of swimming. In doing so, the following three purposes were addressed: (1) to identify the structure of two regional coaching networks; (2) to identify the type of information that flows through the coaching networks; and (3) to understand who is considered a person of influence within the identified network structure and why these individuals are influential.

Purpose 1: Structure of Social Networks

The networks examined within this study included two regional local swim committee (LSC) networks within the sport of swimming. USA Swimming, as the national governing body of the sport, divides the implementation of sport regulations and competition into each of these 59 LSCs. As a social network study, such as this one, had not been conducted with sport coaches

before, the decision was made to use the LSC as a cut off for the "boundary" of the network. Furthermore, the LSCs used for this study were purposefully chosen due to: (1) the relative racial diversity of their surrounding state, in terms of races with low representation in the sport of swimming, (2) the presence of large geographic barriers that divided parts of the LSC from other metro areas, and (3) the proximity to the NGB headquarters (LSC#1 was geographically close, LSC#2 was not).

While most network studies that implement a name generator approach to full network analysis recommend obtaining a response from at least 35% of the network, in order to populate all of the individual within the network (Costenbader & Valente, 2003), that recommendation was not reached for this study. However, the sample population was fairly representative of the wider LSC networks, as was seen in the racial and gender divide of participants. It has been postulated by researchers that those individuals who are new to a geographic area or new to the profession of coaching may not have strong connections within the network (Nash & Sproule, 2009; 2011). As such, the fact that the majority of the sample had both been coaching within their LSC for at least two years and coaching swimming for at least two years was indicative that those individuals with strong network connections were included within the sample. Several influential nodes within each regional network were identified. Furthermore, in comparing both LSCs, 30% of the network was sufficient to see distinct patterns within each LSC that differentiated it from the other in terms of network relationships. Finally, the strongest reason that this sample was believed to be representative of the large coaching network of each LSC was due to the span of engagement across geographic regions in the LSCs, particularly across clubs. Specifically, 65% of the clubs within LSC#1 and 81% of the clubs within LSC#2 participated in the social network analysis survey.

In examining the first purpose of the study, the structure of these regional advice seeking LSC networks, several conclusions can be made from the social network analysis results.

The multitude of ways coaches met advice-giving individuals is encouraging for those new to a network. One of the potential downfalls to purposefully trying to obtain responses from coaches who have been coaching within the LSC for a certain period of time, was the risk of not understanding the perspective of those new to the network. However, in examining the multitude of ways that coaches met those they went to for advice within the LSC, there is reason to believe that entry to the network is possible through a variety of connections. Coaches most frequently cited direct, interpersonal connections such as meeting the advice-giving source through directly working with him/her, directly swimming with him/her or having that coach know their family. However, coaches were equally as likely to "cold call" a coach, by either contacting them directly, without a previous relationship, or by meeting one another on the pool deck during a meet. As such, a new coach to the network may have many options that are all equally as useful in creating new connections within an LSC network.

Coaches were more likely to be named a source of coaching knowledge the longer their relationship was with the advice-seeking coach. While not a new finding within networks in general, the LSC coaching networks reflected that the longer the relationship, the higher likelihood that the relationship exhibited mutual trust and respect (Rogers, 2004). When considering advice-giving sources in their coach development, it may take time for coaches to develop a trusted relationship and evaluate the other coach's knowledge base and credibility as a source. However, while the relationship may need a critical mass of time to become influential, the influence does not appear to decrease with time, regardless of the frequency of contact As

such, the importance of time to building a relationship may be more important than the frequency of interaction after the relationship has been established.

Networks within both LSCS were well connected across geographic region. One of perhaps the most surprising conclusions from examining the social networks within both LSCs was that the networks were more connected across geographic region than one might expect. Propinquity, the physical proximity to an individual, has often been proposed as a notable factor in influencing relationships with a network (Borgatti et al., 2013). Despite the distance between rural and metropolitan areas within the LSC and other geographic barriers (e.g., mountain ranges, lakes, rivers) making travel between areas of the LSC more difficult, relationships still appeared across this geographic space. Furthermore, the most influential individuals within both LSC#1 and LSC#2 served to connect geographically diverse areas of the network.

Several individuals who were cited by advice-seeking coaches were not central figures within the overall network. Generally speaking, a high in-degree centrality (i.e., the number of individuals that cite attraction/relation to a person), would seem to indicate that central figures within the network have been identified. However, when taking into account several additional measures of centrality, it was shown that while some individuals may serve as localized central figures (e.g., the most influential person in their club or geographic region), several of these individuals with high in-degree centrality were not considered central figures within the overall LSC network, due to their lack of connections outside of their local club/region. Practically, this means that while some coaches may have strong influence over those who work for or with them, they may not share the same homophily of ideas with the larger coaching network. Identifying these individuals, with high local centrality but low full network significance, can help in understanding where knowledge flow may be halted or hit a

barrier within the network at large. Furthermore, their isolation from the network at large may also suggest that practices or coaching knowledge within these localized networks may not be flowing out to the larger network as well.

The most central figure to each network was not the only person to exert an important structural role. The social network analysis, through the examination of betweenness centrality, allowed for identification of individuals within each LSC network that served as bridging nodes between otherwise disparate parts of the network. These individuals hold a particularly important role structurally in the network, as the areas of the network that they connect would be otherwise disconnected completely or remotely connected without their presence (Borgatti et al., 2013). One important bridging node (high in all measures of centrality) appeared within each network. These individuals not only served to connect geographic areas that were disconnected within the structure, but they also served to connect relations between clubs within the LSC that would otherwise have not been connected. However, each network also reflected a few smaller bridging nodes who, while not looked to frequently as advice-giving individuals (low in-degree centrality), still served to connect disparate parts of the network. Practically, in understanding how knowledge flow may be enhanced or disrupted, bridging nodes often hold a role as a central piece to ensuring a quick diffusion and exchange of information across the network. As such, their identification is just as critical as those who serve traditional centrality roles (e.g., are connected to a lot of people).

The culture and norms of the LSC impact the relationship connections seen in the networks. While not directly asked during the social network analysis survey, during the following qualitative interviews, coaches were asked to describe the culture of the sport of swimming within both their LSC as a whole and their current geographic region. It was clear

from the inductive themes that the culture of a network must be taken into account when seeking to understanding network connections. For example, within LSC#1, the social network statistics appeared to highlight two interesting trends: (1) that there is a relative lack of connection between the two largest metropolitan areas within the LSC, even though they are geographically close, and (2) that one of these metro regions is well-connected across clubs while the other is not. When examining the culture, however, several LSC#1 coaches commented on the discord and general animosity between coaches within the disconnected metro region in question, which may help to explain the lack of relationships around these coaches in the network. However, the cultural data on the whole also reflects that this region appears to be an anomaly of the greater LSC culture, which several coaches characterized as friendly and welcoming, with a shared mutual respect and collaboration between coaches.

To further exhibit this point, the LSC#2 network exhibited a higher density and more connections across club and geographical regions. These observations, however, may lead to the erroneous conclusion that this network is an amicable one. Participants within LSC#2 highlighted a very strong theme of tension between the older coaches within the network and the newer/younger coaches. As such, the connection between coaches may be more indicative of the relatively small size of the network, and thus increased likelihood that you would know all the players in the network, than it was of amicable relations between the members of the network. As such, seeking to qualitatively understand the factors that influence the structure of a social network may be just as important as understanding the structure itself quantitatively.

Coaches largely do not consider themselves to have a defined approach to building relationships, but several did in action. Perhaps one of the more interesting insights into social networks between coaches, that came from the qualitative interviews, was that most coaches do

not consider themselves to have an intentional, defined approach to building relationships with other coaches in their LSC. Several coaches mentioned that their relationships happened organically. However, when pressed further about their perception of their relationship with others within the LSC, coaches began to list several actions they took that clearly contributed to building these relationships; things like giving off approachable nonverbals on the pool deck at meets, starting conversations with coaches by asking them questions about their swimmers performance, arranging or making a point of attending social functions after meets or on travel trips etc. As such, while coaches may not perceive themselves intentionally pursuing new relationships, they engaged in behaviors frequently that made it more likely new relationships would be developed or old ones would be strengthened.

Purpose 2: Types of Knowledge Shared within Networks

Purpose 2 explored the types of knowledge that were shared within the two advice-seeking networks identified in the study. The findings led to several interesting conclusions that are discussed below.

Coaches will discuss any, and everything, with trusted coaching network relations. The quantitative data from the social network analysis survey highlighted that nearly every topical category was discussed within coaching advice-seeking relationships. This was emphasized, again, in the qualitative interviews, with several coaches saying that once a reciprocal relationship was established with a knowledge source no topics were "off limits" to discuss. One curious finding that did come out of these results, however, was the fact that though racially diverse LSCs were chosen and several coaches highlighted working in lower SES contexts, there was very little conversation cited about social issues relating to these topics within the sport.

It seems to be more important that an advice-giver have a breadth of coaching knowledge than be a content expert on a particular topic. In line with the observed breadth of topics discussed in these advice-seeking network relationships, it appears that coaches may be more likely to go to individuals who they view as having a breadth of coaching knowledge rather than being an expert in one coaching topic. When the topics discussed were collapsed across the most influential members of the networks, no trends were seen other than the most central and important nodes within the entire network were sought out for discussion on every topic. As such, to become a central figure in the advice-seeking network, one may not need to be the content expert in the LSC on that topic but rather should have a good depth of knowledge on several coaching topics.

Interestingly, these finding compliment work that Cross and Borgatti (2001) conducted on advice-seeking professional networks. Cross (2000) originally proposed, through exploration of advice-seeking networks, that professionals interacted with one another in the following ways: (1) they provided solutions, particularly through sharing procedural knowledge that helped generate steps toward a solution; (2) they serve as a source of meta-knowledge, directing others to experts or relevant documents; (3) they help to reformulate problems by helping to define dimensions of a problem; (4) they provide validation for an individual's solution; and (5) they legitimize a solution by citing a respected source. Cross and Borgatti's (2001) work sought to further understanding these roles within advice-seeking networks and found that these five categories of assistance were best conceptualized as a unidimensional scale, and a contact who provides any of these benefits is highly likely to provide all of these benefits. As it relates to this study's findings, Cross and Borgatti's (2001) work may suggest that it is not necessarily that coaches want to seek advice from someone who serves a specific role or specialty, but the most

meaningful individuals may be those who can serve a number of different roles, across topics of interest. This area should be further explored within subsequent advice-seeking networks within the profession of coaching.

Purpose 3: Influence within Social Networks

While the social network analysis methodology helped to assist in understanding the structure of the LSC networks, and allowed for the identification of influential individuals within the network (e.g., central nodes and bridging nodes), it needed to be supplemented with a qualitative approach to get at the third purpose of the study- to understand how and why influence is built and maintained as a central node within the LSC network. To examine this question a case study approach was utilized to focus on one specific key player within LSC#1, Stanley. In order to understand perception of influence and Stanley's relationship to those who seek him out for advice, both Stanley and six members of his network were interviewed (three of his current staff; three coaching colleagues from around the state). The results showed a great deal of continuity between the themes that appeared in the interviews of those who sought Stanley for advice and Stanley's own views about his level of influence within the network. This continuity reflects previous conclusions from the diffusion theory literature that suggest the perception of influential individuals is actually quite accurate in describing why those individuals have a position of prominence within the network (Rogers, 2004). Furthermore, the themes, specifically, that came up within the inductive analysis of Stanley and his network showed strong continuity with the findings of Cranley et al. (2019) who also sought to understand the influence of opinion leaders and boundary spanners within an advice-seeking network. This continuity is discussed below, within the conclusions resulting from this case study interview data.

Time spent in an LSC, or current geographic region, may be an important precursor for gaining respect and a voice within that LSC network. In discussing Stanley's influence all three groups, his current staff, his geographically diverse network members, and his personal reflections, emphasized the importance of becoming a known entity within the network as a precursor to developing influence. Stanley has coached at the same club, within the LSC, for the last 18 years and he came into his position at a time when the LSC had a large turnover in head coaching positions. As such, he felt that longevity of time spent with his coaching colleagues was critical in building relationships of trust and mutual respect, even if other coaches did not always like or agree with him. The years of time spent serving on these committees helped to build and provide a voice fort Stanley within the network.

In relation to Cranley et al.'s (2019) findings, Stanley would be considered both an opinion leader within the LSC and a strong boundary spanner. In their investigation, a thematic characteristic that arose from boundary spanners, in particular, was a long tenure in their current job and within the regional network (Cranley et al., 2019). Stanley's tenure contributed to further strengthening the perception of his credibility, both in knowledge base and historical understanding of the network, as a boundary spanner, this longevity within a network is purported to contribute to influence due to the higher likely of having built those relevant relationships over time that allow one to bridge disparate parts of the network (Cranley et al., 2019). As such, the current studies findings were reflective of themes that appeared within Cranley et al. (2019).

Serving on committees for the LSC is a critical piece of building influence. While this was cited as a theme in the LSC#1 interviews, the few interviews that were conducted with LSC#2 coaches also highlighted the importance of committee involvement as a step to becoming

a more central figure within the network. Given the LSCs are expected to implement all of the national level rules for the sport that come from USA Swimming, and are tasked at improving the presence and performance of swimming within each LSC, the need for service on LSC committees is always high. However, service on these committees is not compensated. As such, several coaches may willingly pass on the opportunity to provide a voice and connection within the LSC network, as they do not want to volunteer their time for these committees. Stanley sat on several committees both at the LSC and national level for several years. His network felt that his presence on this committees was of value, as he always knew what was coming down the pipeline before it was made public, and his contribution was viewed as in the best interest of the LSC as a whole. Stanley himself also felt that a role on these committees was a factor in his influence not only due to his exposure to a greater breadth of information, but also due to the opportunity it gave him to interact with more coaches on a consistent basis.

Again, this theme appeared to mirror the findings of Cranley et al. (2019), particularly the finding the opinion leaders had a heighten sense of "systemness." This systemness was defined as an interest and a feeling of responsibility to help progress the wider health organizations, which could be likened to the view that Shawn and others felt his role on LSC committees signified.

Conveying and maintaining an approachable attitude and demeanor was a critical piece of building positive relationships. Stanley's approachability largely revolved around his inquisitiveness and desire to create reciprocal relationships. In his own words, Stanley viewed himself within a "see something, say something" lens. As a student of the sport and someone who is always looking to grow within his knowledge base, he keeps his eyes open for interesting or surprising swims at meets. When he sees something that piques his interest, he approaches the

coach and starts a conversation. In return, he stated feeling the need and desire to convey that same willingness to have others do that to him. In that way, he felt like he was modeling an approachable attitude by showing his staff and network what he does to build relationships and being open when they (or someone new) does that to him. Furthermore, the interviews highlighted that an important part of this approachability was not just his openness to being asked questions, but his forthright and honest responses to those questions. As opposed to other coaches with whom they had tried the "provide a compliment, ask a question" approach, who were evasive or vague in their responses, coaches in Stanley's network felt he always gave his genuine insight and opinion on the topic. In his own words, Stanley conveyed a strong desire to create reciprocal relationships, and he felt a critical piece of that was being willing to honestly talk about any topic that was currently an issue within swimming. As such, to develop influence within a network, there is a certain level of authenticity and humility that coaches want to see in order to trust and deem credible the source.

This general conclusion encompassed several smaller characteristics that were identified of opinion leaders and boundary spanners in Cranley et al.'s (2019) work. Cranley et al. (2019) highlighted that opinion leaders were defined by their approachability, their willingness to be forthcoming, their unguarded demeanor and their willingness to share. As such, these characteristics may be critical for any opinion leader within a network, regardless of context.

Influential individuals, and those coaches attracted to them, appear to be defined by a constant desire to grow. Both Stanley and his network conveyed that part of the draw to him was his vast knowledge base about the sport and the LSC, being a student of the sport. However, it was not just his knowledge base, but his attitude and desire to continue to grow in that knowledge that was the real draw. Stanley himself felt that his desire to grow as a coach was the

primary catalyst behind his actions to build further relationships within and outside of the LSC; he did not want to be caught in an echo chamber of his own ideas, and he felt like relationships with other coaches were one of the best ways to enhance this growth. Within the responses of his network, it was clear that there is a distinct draw to individuals who are always looking to stay up on the field. Particularly, several of Stanley's network highlighted that there was a distinct element of humility that was appealing in embracing a desire to constantly learn- it meant you had to admit that you were not right all the time. As such, this incremental focus not only helped push Stanley on a personal level as a coach, but it gave him another level of credibility with his network.

Once again, this theme of a growth mindset and willingness to be dynamic appeared within the thematic analysis of opinion leaders within Cranley et al.'s (2019) work. Opinion leaders were thought to be in a continuous state of knowledge construction and re-construction, similar to what Stanley's case study interviews relayed. In addition, Cranley et al. (2019) highlighted that an important part of this dynamic element of opinion leaders was their purposeful building of their own personal network, an attribute that was definitively reflected in Stanley's approach to his own professional growth.

While not always described as innovative in their coaching, influential individuals are open to and incorporate change. As a corollary to the above conclusion about seeking growth, it was clear from the qualitative interviews that influential individuals, like Stanley, were not always described as the most innovative coaches, but they did actively incorporate change and were willing to try changes that may fail. One of the critical differentiators within diffusion theory between innovators and early adopters is the view of their opinion in the eyes of the rest of the network (Rogers, 2004). Early innovators are defined as having a trusted opinion due to

their willingness to be at the cusp of trying new things but also a complimentary focus on evaluating and vetting those new ideas for impact (Rogers, 2004). Stanley felt squarely within this in response to being asked where along a continuum of innovation he fell. Under his own admission, he was only willing to change about 10-20% of what he did every year; however, the reasoning behind this was to take the time to control what was being changed in order to properly evaluate its effect. However, it is also important to mention that while Stanley may only change 10-20% of what he is doing at any given time, over the course of his career, that has meant creating a dynamic culture within his own team, that led some of his assistant coaches and network members who grew up in other LSCs to classify him as higher in innovativeness, as several aspects of his program were unknown to them in their personal experience within swimming. Stanley values change, because he recognizes the sport is dynamic; each year the culture of his athletes differs and each year what is available (or not) as resources to coach differs. As such, in line with diffusion theory, to exert a more central impact on the knowledge being shared within a network, it may be critically important to not only have a desire to keep learning and pursue heterophilious knowledge, but to take the time to consider the impact that knowledge is going to have before immediately implementing it as gospel (Rogers, 2004).

Influential coaches value relationships. Finally, while this last conclusion may seem like a given, based on the conclusions previously mentioned, there was a clear trend that appeared several times in Stanley's interview that influential coaches value relationships. Coaches generally prefer to pursue coaching knowledge directly from other coaches, because they view it as more contextually relevant (Erickson et al., 2008). Furthermore, it appeared that this advice-seeking relationship was strengthened when colleagues became friends, due to the trust and reciprocity on both a personal and professional level. Stanley was highly motivated to

create positive professional relationships and friendships within his network due to his love and desire to stay in the sport long term. However, more than that Stanley recognized that one of the only means for continued growth as a coach in his own career was to value these relationships- to be willing to give the other person an equal voice and be willing to have your ideas challenged over time. As such, another important pre-requisite to developing influence within networks may actually be the level at which a coach finds value in cultivating relationships and letting "iron sharpen iron."

There was support to this inductive theme within Cranley et al's (2019) work as well, with boundary spanners and opinion leaders cited as individuals who not only had broad and deep connections but were intentional in maintaining their connections across their careers. This can be seen in the length of many of the relationships that Stanley built in his personal coaching career, including the 18+ years he has known and interacted with one of his network members Stewart. As previously mentioned, though the study was not approached from a deductive coding standpoint, the thematic findings of influence within networks from Cranley et al's (2019) work could have easily been superimposed onto the current study to serve as a thematic codebook for influence. As such, this study strengthens the base of understanding within the wider social network and diffusion theory literature in that it acts as a "replication" study, reflecting the same characteristics of advice-seeking networks in health providers as seen in the profession of coaching.

In summary, while coaching networks offer several complexities, there are some clear conclusions that can be taken away from the investigation of their structure and the way influence is developed among coaches that may directly inform future research with these

networks as well as actions taken by national governing bodies of sport to utilize networks in assisting with coach development.

Study Limitations and Future Research Directions

Study limitations. To understand the application of this information, it is critical to address the limitations of the scope of this study. First, while the aim was to engage at least 35% of the total sample in the social network analysis survey, the actual data collection fell short of this number, only engaging 15% of each LSC coaching network. While it is believed that a representative sample of the network was obtained, and thus, no highly influential individuals within the network were left out of the network pictures, it is possible that some of the structural holes seen in the data (i.e., disconnected areas of the network) are not present in the full network. Furthermore, while there was a strong engagement across geographically disperse areas of the LSCs and a good representation across clubs within the LSC, the lower participation of smaller or more geographically isolated club coaches may have prevented an understanding of regionally influential individuals, who may be important sources of knowledge for those communities that fall outside of the high resource metropolitan regions. Finally, in relation to the low participation numbers, the study was unable to provide a true understanding of reciprocity within the network, as several individuals who were cited in the network (as advice-givers) did not participate. As such, it is difficult to determine if all central figures were defined by the value of creating reciprocal relationships shown by influential node in the case study.

Second, the responses for those who did not complete the entire social network analysis were indicative that the LSC may represent only one type advice-seeking network for sport coaches. While several of the participants in the survey found value within the LSC relationships they had and felt the LSC coaches offered a good base of knowledge support for the sport, there

were several incomplete survey responses that left comments indicating they felt negatively about fellow LSC coaches. For example, the following was a response left to an incomplete survey:

> I don't reach out to other coaches within my LSC. I've learned over the years that talking to other coaches is mostly drama filled and self-serving due to their competitive, rather than cooperative, way of approaching things. I also see it as incest of information. I tend to go outside of the swim coaching realm to get real business, coaching, life, etc. advice.

While it is not accurate to claim that all coaches who failed to finish the survey felt similarly about coaches within the LSC, nine individuals who were contacted or started the survey left comments related to the comment above, suggesting there may be a small, but critical population, that does not find connection to others in the LSC valuable. Furthermore, while not presented within this study write-up, as it did not directly contribute to the study purposes, coaches in the social network analysis survey were given a chance to provide information on those outside of the LSC, the sport of swimming, or the profession of coaching that influence the coach's knowledge and development as a swimming coach. Over 80% of the coaches who participated cited several individuals outside of the LSC that were valuable sources of coaching knowledge. Furthermore, in the qualitative interviews conducted, every coach took the opportunity to discuss other individuals, outside of the LSC, that actively contributed to their coaching knowledge and development. Thus, while the LSC may have been an easy boundary to impose structurally speaking, it may be only one of a few relevant advice-seeking networks in understanding the growth and development of a sport coach.

Finally, there were several small groups of coaches that were not well represented within the study's sample of the overall LSC networks- coaches who had recently stopped coaching in the LSC, coaches who were new to the LSC, and coaches who were new to the profession of coaching. Part of this exclusion was an intentional focus on coaches who were actively coaching

within the LSC (i.e., the exclusionary question at the beginning of the survey); however, the demographics of the sample as showed a strong skew toward experienced coaches who had been in the geographic region for several years. As such, a good understanding of the network, through the eyes of those who have been a part of it for several years, may be present, but an understanding of how one assimilates into this network and the impact when someone leaves it is not well understood by this sample. However, these may be relevant pieces of knowledge to understand, as new members to the network may feel isolated and those who leave the network might have served critical roles in connecting bridging structural holes.

Future research directions. While several limitations are present, this study served as a meaningful first step into exploring the structure of coach social networks and how influence is developed within an advice seeking network in particular. Additional work needs to be completed within this area to further understand the impact and role these network relationships play in informal learning situations for sport coaches. Given the exploratory knowledge this study provided, several areas of research may serve a fruitful purpose in expanding this knowledge base.

Explore the advice-seeking networks within other sports at the development level. As was stated in the conceptualization for this study, swimming was chosen for investigation due to several characteristics that make it potentially more amenable to strong coach networks being created: (1) athletes infrequently compete directly against each other in a high stakes way, thus decreasing adversarial relationships between coaches in a geographical region; (2) the structure of developmental club swimming is one where competitions frequently allow for "downtime" where coaches may interact; and (3) the roster size of the sport is unlimited- increasing the likelihood that coaches exist within a staff of several other coaches. The results of this study

reflected a clear coaching network within each regional LSC and an expressed value for those peer relationships. It is important to understand more about why the network trends seen in this study occurred. Specifically, if there were sport related factors that may differ in either a team based or alternative sport setting that make the likelihood of a fruitful knowledge network less likely. As such, it is recommended that future studies replicate this analysis within both team-based Olympic sports (e.g., hockey, volleyball) and alternative Olympic sports (e.g., snowboarding, BMX) that have recently started incorporating more attention to their coach development as national governing bodies.

Explore the cultural aspects that contribute to relationship building or relationship thwarting. While this study did explore the topic of the swimming culture within each LSC and geographic region in the qualitative portion, the focus was not on understanding how cultural elements and social norms within a region or bounded network may impact the development and maintenance of these advice-seeking relationships. However, the limited data this study did produce would suggest that an underlying explanation for structural holes and absence of relationships within a network may be found within an exploration of cultural factors that support or do not support positive relationships within the network. As such, future work should engage the population of coaches that does not feel the LSC (or other regional network) is valuable for developing knowledge seeking relationships with their peers. Factors that contribute to this perception need to be better understood to provide a more accurate picture of a bounded network as such as an LSC. In addition, the exploration of the culture of sport brought out a frustration several coaches had about an NGB level policy- the ease of starting a new club. Coaches felt this policy contributed to erosion of relationships between coaches, as it prevented resolution of conflict in a healthy way. As such, further work understanding the culture of a

regional network may help to further elucidate policies that come from the national level, which may actively help or harm relations between the coaches in a network.

Additional boundaries to coach advice-seeking networks should be considered and compared to the regional boundary. As previously mentioned, the regional boundary for a coach's advice seeking-network may not be considered the best boundary for these networks. Within future studies of the sport of swimming, further work should be done to explore whether alternative bounding to the network would result in a more accurate picture of advice-seeking behaviors in coaches. Furthermore, within the boundary of an LSC advice seeking network, additional work should be done to explore any differences between the type of information obtained from individuals within the network compared to outside the network, and whether advice-givers outside of the LSC share similar characteristics as those influential individuals within the LSC or whether they are more likely to be topical experts.

Contributions to Theory and Practice

To conclude, it is important to understand how this study both contributes to the theoretical understanding of the fields of coach learning, social network theory and diffusion theory as well as to understand the practical actions that national governing bodies of sport may be able to take to act upon this knowledge to improve coaching learning situations. Theoretically, this study has served as a proof of concept on several levels as to the logic of integrating knowledge from the social network theory, diffusion theory and coaching learning fields. Furthermore, the continuity between study findings and previous literature within the social network analysis and diffusion theory fields, appears to add to the understanding of how influence functions within a new advice-seeking context, coaching learning networks. In the effort to both promote safe and positive coaching practices within their sport and address athlete

performance and well-being in the sport, it is critical for NGBs to understand how the advice-seeking network structure of their sport impacts the knowledge that flows through the network, and the coaching practices that are then implemented on the field. As such, several theoretical and practical considerations can be gleaned from the examination of the two regional networks with the sport of swimming.

Theoretical contribution #1: Bounding a coaching network creates distinct challenges due to coaches' patterns for seeking knowledge. It is clear from the findings of this study that coaches often viewed other individuals outside of the regional LSC network as valuable sources of knowledge for their coaching development as well. These individuals varied from other coaches within swimming who were not in the LSC to other coaches outside of the sport of swimming to individuals unrelated to the field of coaching (e.g., teachers, business people). This finding is a relevant one for both the coaching learning literature base and for the social network analysis base. Given that most sports must divide governance of the sport to regional committees to manage all levels of competition, it is important to continue to explore social network connections within these regional networks. However, it is also important to take into consideration with future work, specifically within the field of coaching, that coaches appear to draw from multiple fields, though usually related ones, in their advice-seeking relationships. The fact that coaches may be pulling knowledge from others outside of the LSC can be both a complicating factor in understanding the origins of on the field behavior change, but it may also be a hopeful finding in that coaches may stand to benefit from best practices and ideas spread across sports.

Theoretical contribution #2: A name generator approach may be the only realistic way to populate coach network connections. One of the measures that was unable to be fully

explored within the current network analysis was reciprocity of relationships, as several individuals cited within the network did not actually participate in the survey. Furthermore, as stated, roughly 15% of the total coach members participated in the survey. Within regional coaching networks, it may be unreasonable to expect the engagement of all members of the network and/or to expect to fully understand the reciprocity of relationships, using a simple name generator approach. However, a full roster approach is not a feasible option due to the sheer size of the network and the cognitive overload it would create in survey participants. As such, reciprocity of relationships as defined and analyzed in a full network approach may not be a feasible measure in future social network analyses conducted in samples of the full network; however, qualitatively speaking it may be a distinguishing factor of informal social networks that is not present with networks where structure is imposed (e.g., mentoring or communities of practice).

Theoretical contribution #3: The practical realities of the field may prevent full network participation, but understanding a sample of regional networks may still be critical in understanding how knowledge is accessed and spread. While only 30% of the network was represented in each regional LSC, it was very clear that the relationships that did appear within these networks were important ones that would not be at risk of disappearing or decreasing substantially in influence with the addition of network participants. As such, practically speaking, the purpose of identifying the structure of a social network to determine individuals of influence (boundary spanners and opinion leaders) was accomplished and could be replicated to get a better understanding of who to target in knowledge dissemination efforts by research partners and national governing bodies.

Theoretical contribution #4: Cultural context is important for a full understanding of relationship in coaching networks. In seeking to understand the structure of coach social networks, this study supported the conclusion within the body of literature on diffusion theory that the cultural context is important in understanding the network and diffusion of knowledge (Rogers, 2004). As exhibited in the results, looking at only the sociogram and density/centrality statistics may lead a researcher to conclude that the LSC#2 network was a tighter knit, more amicable network. However, after exploring perceptions of culture within the LSCs, it became clear that the pattern of relationships was determined in part by the history and culture of the sport within the LSC. As such, the coaching population appears to reiterate the conclusion that a mixed method approach, or a better understanding of the culture of a network, may better aid in understanding network relationships.

Theoretical contribution #5: Informal coach social networks need to be acknowledged for their own unique contribution to coach learning independent of structured relationships (e.g., communities of practice, mentoring). One of the critiques that led to this investigation was the idea that structured or forced relationships between coaches do not always result in positive results. For instance, mentoring relationships can develop into situations that lack reciprocity (and thus the growth of the mentor) and may only perpetuate one type of knowledge rather than reflection (Cassidy & Rossi, 2006; Koh et al., 2017). Similarly, when examining communities of practice, the success may depend on the individual leading it; however, coaches are often guilty of not incorporating good practices on the field because they do not perceive they have time for them. As such, viewing attending and preparing for a community of practice may not be appealing to coaches who already feel time crunched.

This study highlighted that coaches largely feel positive about the knowledge that they can get through informal opportunities to engage with coaches, and it is often these informal opportunities to engage that create reciprocal relationships that often open the door to sharing more resources with one another. Furthermore, they are indeed based on problem-focused discussions where coaches are able to get the most immediate help with their present coaching concerns. As such, it is felt that informal coach social networks provide a function that other formal, non-formal and informal resources do not to the coach. As such, supporting Occhino et al.'s (2013) findings, informal social networks of coaches need be acknowledged for their unique contribution to coach learning.

Practical considerations #1: New coaches may not always feel a part of the "in" network. Create efforts in the LSC network for those newer to the network to informally interact with other coaches. While it was not perceived to be a huge obstacle to building relationships within both LSCs, it was mentioned several times that the long-standing presence of coaches who had been in the LSC for years together may present an "intimidating" entry point for newer coaches. Some coaches felt that it may give off the perception of "an old boys/girls" network, even though they did not feel like there was much substance to that perception. As such, a concerted effort at the LSC level to connect newer coaches with seasoned coaches in the LSC may help to dispel this perception and led to initiating and growing these new relationships quicker.

Practical consideration #2: **Coaches value the opinion of those serving on LSC committees, adjust the regulations so more coaches get the opportunity to serve.** While it is acknowledged that the non-compensation structure of serving on LSC committees may be a roadblock to engaging more coaches, it does appear that some coaches conveyed a perception

that the opportunity to sit on LSC committees was not frequently made available unless a current member stepped down. As such, policy adjustments to the structure of a coach's service on LSC committees, to focus on rotating through coach members, may allow other coaches who desire a greater connection to the wider LSC network community the chance to engage easier. Since it is not known whether this lack of opportunity to sit on committees is an actual roadblock or a perceived one, an alternative to changing the structure of committee terms is to enhance communication at the national and LSC level regarding the process for serving on a committee, to dispel any misconceptions about availability of committee spots.

Practical consideration #3: Consider revising the ease of forming new clubs at the LSC level and consider creating a new LSC role focused on promoting coach relationships. As expressed in the study, coaches from both LSCs expressed frustrations with the national level policies that made it easy to start a new club within any regional area. Coaches felt that this type of policy did have its intended effect, to engage more young people in the sport in the short term, but believed it had significant negative long-term effects. Coaches believed that these policies encourage combativeness rather than collaboration within the region, which not only drives athletes out of the sport due to witnessing negative coaching behaviors and relationships, but results in stagnation of LSC level decisions that are needed to improve the performance and experience of athletes in the sport long term. As such, NGBs should consider revising these policies and transitioning the time and resources devoted to managing new clubs, into improving network relations within each LSC. One possible way to do this would be to create a new chair/committee at the LSC level focused primarily on this purpose. Without prompt, coaches commented on the desire to see the national and LSC level governance of the sport better support

and provide opportunities for coaches to interact with one another and build positive relationships.

Practical consideration #4: National governing bodies should consider using central nodes in the network to help translate elite level coach education to developmental coaches. One of the draws to the influential nodes within each LSC network was their high performance experience; however, more specifically, one of the influential nodes cited the amount of resources the NGB puts into educating coaches at the elite level, which is absent at lower levels of the sport. As such, he found it to be an unspoken responsibility of his to disseminate this information, in a way that it could be directly used by developmental level coaches. If the NGB does divert more resources to elite level education, in the hope of improving international performance, the NGBs should then purposefully work to disseminate this knowledge to the developmental level of the sport. Utilizing the influential nodes who are exposed to this elite level of knowledge, within each regional network, can help ease the burden of knowledge dissemination and increase the success of disseminating this information to the lower levels of sport. As one LSC#1 coach said:

> I was sitting in a session focused on how to prepare your swimmers for morning finals in Tokyo 2020, where Bob Bowman was discussing how he prepared Phelps, and all I could think about was…a morning swim is a morning swim, there is no reason these concepts can't be disseminated down to our developmental coaches to improve their swimmers performance.
>
> Matt (LSC#1)

Practical consideration #5: Promote a move away from the idiosyncratic view of coaching. Promote what we know about healthy coaching networks. It can be easy for NGBs, coach educators, and coach researchers to fall into the trap that coaching is idiosyncratic and thus there are no best practices that can be actively promoted. The same is true within

coaching networks and relationships. It is not simply a matter of some coaches finding them valuable and others not; nearly all coaches find value in knowledge sharing and reciprocal relationships with their peers. The variance lies in whether or not they believe there is the opportunity to create these relationships within their regional network. As such, at a national level, the NGB could actively promote what we know about LSCs with healthy coaching networks. Promote the norms and actions these LSCs deploy to promote health respect among coaches (e.g., requiring the athlete to discuss transferring clubs with all parties involved before moving). Promote the performance success seen within LSCs that have healthy networks compared to LSCs that do not exhibit health networks. It sends a powerful statement, with little cost, for the NGB to voice support for building positive coaching networks within each region.

Conclusion

It is clear that coaches deeply value the relationships they build with their coaching peers within sport and find these relationships meaningful to their growth in the profession. In an attempt to understand how informal social networks function within the sport of swimming, it is clear that even within the same sport, the culture of various regions can substantially influence the network connections seen between coaches in a knowledge shared network. Social network analysis allowed for the identification of several key players, including central nodes, who were often viewed as opinion leaders within the sport, and bridging nodes, who acted as the critical connection between otherwise disparate parts of the network. Both of these key player nodes are critical to identify if one wants to understand how knowledge disseminates across a coaching network. Coaches are not drawn to advice-giving peers within their network because of topical expertise, but rather for the broad range of topics on which they can be consulted. Furthermore, it appears the most telling attributes of those who hold influence within coaching social networks

are: (1) a presence on a regional level governance committee, (2) continuing to cultivate an honest and approachable style of communication and interaction, (3) a desire to continually learn, including being willing to experiment with current practices, and (4) the wiliness to create mutual respect and reciprocity with relationships. In understanding more about these regional coaching networks, coaching researchers and national governing bodies of sport are better able to support developing positive coaching relationships that result in higher performance and satisfaction for all.

> You don't have to be adversarial to try and create a great program. If you are competing, you are both succeeding. That is probably the best model and can turn your next-door neighbor from an enemy into the greatest ally.
>
> Stewart

APPENDICES

APPENDIX A: SOCIAL NETWORK ANALYSIS SURVEY

Eligibility Question: Have you coached in a part-time or full-time capacity in your LSC at any point in the last 6 months?

We know coaches show a strong preference for learning from other coaches. As a primary purpose of this study, we would like to better understand the network of coaches you talk to about coaching (e.g., coaching social networks) and the information you share with one another. As you respond to the following questions, it is critically important for you to provide complete answers. While some questions may appear repetitive, we would like to know the same information about the top 2-3 coaches in your LSC (local swim committee) that you go to most often for advice and information regarding coaching. This information will help us to understand similarities and differences between these individuals and how social network influence functions within the structure of a USA Swimming LSC. While we recognize that individuals outside of coaching, or coaches in other geographical areas/non-USA Swimming organizations, may be impactful in your coach development, for these questions, we ask that your response is limited only to coaches within your current LSC.

Q1: Please list the two-three coaches, in your current LSC, whom you seek out the most for advice and information regarding coaching challenges and/or your continued development as a coach. Please list their first and last names.

Q2: Thinking of only the first individual that you listed, please answer the following questions.

Q3: What is _____'s current role as a coach (e.g., head, assistant, volunteer) for his/her club?

- Head coach
- Assistant coach
- Volunteer/Sub coach

Q4: How did you come to know _____? If you did not meet directly on your own, who introduced you (list first and last name)?

Q5: How long have you known _____?

- < 6 months
- 6 months- 1 year
- 1-2 years
- 2-5 years
- 5+ years

Q6: What is the frequency of interaction between you and _____ currently?

- Interact daily
- Interact a couple times a week
- Interact a couple times a month
- Interact once a month
- Interact 1-2 times a year

Q7: What was the frequency of your interaction when you were at the prime of your relationship?

- Interact daily
- Interact a couple times a week
- Interact a couple times a month
- Interact once a month
- Interact 1-2 times a year

Q8: What of the following topics have you discuss(ed) the most with _____? You may list up to Drag and drop the topics into the boxes on right side of the screen (order does not matter)

- Social identity issues in swimming (e.g., How do I create conversations about race/ethnicity/sexuality with my team?)
- Technical knowledge (e.g., How do I fix Jenny's ineffective freestyle catch?)
- Planning for training (e.g., How do I structure training cycles for different parts of the year?)
- Mental skills for sport (e.g., How do I build mental toughness in my athletes after a bad swim?)
- Strength and conditioning (e.g., How do I design a proper dryland program that helps my athletes improve in the water?)
- Teaching life skills in sport (e.g., How do I build leadership skills in my swimmers?)
- Philosophy and establishing a team culture (e.g., How do I clarify my own values, convey those values to my team, and structure my program around those values?)
- Coaching special populations (e.g., How do I coach swimmers that may have cognitive, behavioral or physical disabilities?)
- Communication practices (e.g., How do I interact with troublesome parents or athletes?)
- Organization and administrative duties (e.g., How do I properly maintain my team's website, plan out of state/meet travel?)

Did not see one of the top 5 topics you discussed the most? Please share them with us here! (Please write in the specific topics).

Note: Coaches will respond to all of the same questions for the second and third coach listed.

Q9: In understand that coaches knowledge may come from other coaches (non-USA Swim, non-swim etc.) or individuals related to coaching (athletic directions, researchers etc.) outside your LSC, we would like to now give you a chance to briefly list other individuals you seek out most frequently for advice and information regarding coaching challenges and/or your continued developed as a coach. We encourage you, especially if you only listed 2 coaches within your LSC, to provide a response to the question below. Please list no more than 5, write their first and last name and their actual job title (e.g., Marv Dunphy, Head Volleyball Coach at Pepperdine University; Jill Kochanek, Coach Researcher at Michigan State University). Note: You will answer no further questions about these individuals aside from listing them there. This information is simply to help us understand your expanded coaching network.

Finally, we would like to get some demographic data about you as a coach and your current coaching context.

Q10. What is your full name? (This information will only be used to accurately place you within the social network you have previously described).

Q11. What is your race?
- Caucasian/White
- Black or African American
- Asian
- Native American or American Indian
- Hispanic or Latino
- Native Hawaiian or other Pacific Islander
- Mixed Race
- Prefer not to specific

Q12: What is your ethnicity? (May leave blank if desired).

Q13: What is your gender?
- Male
- Female
- Prefer not to identify

Q14: What is your age?
- 18-22
- 23-29
- 30-39
- 40-49
- 50-59
- 60+

Q15: What is the highest level of education you have completed?
- Some high school
- High school
- Some college
- Associates
- Vocational or trade training
- Bachelors
- Master
- Professional degree
- Doctorate

Q16: Please briefly describe your coaching context(s). Please provide any information that makes your coaching context unique/provides you with unique challenges.

Q17: What is the name of the city/town in which you coach?

Q18: Please list all current coaching positions and whether you serve as a head, assistant, volunteer, or sub coach. Please include the club/team name in response.

Q19: For what amount of time have you spent working within your current geographic region?
- < 6 months
- 6 months- 1 year
- 1-2 years
- 2-5 years
- 5-10 years
- 10+ years

Q20: At what level do you coach (multiple answers are acceptable, drag over all that apply).
- Elite (professional, Olympic, or college)
- Age group
- High school
- Recreation community leagues (e.g., local rec center summer league)
- Middle or elementary school

Q21: What age groups do you coach (multiple answers are acceptable, drag over all that apply).
- Adults (18+)
- 15-18
- 13-14
- 10-12
- 8-10
- Under 8

Q22: How many years have you been a swimming coach (not team specific)?
- < 6 months
- 6 months- 1 year
- 1-2 years
- 2-5 years
- 5-10 years
- 10+ years

APPENDIX B: SEMI-STRUCTURED INTERVIEW GUIDE- INFLUENTIAL NODE

Q1: Tell me a little bit about how you have come to where you are in your coaching career (e.g., how did it start and how did you end up here).

Q2: What are your hopes for your coaching career as it moves forward?

What do you view as necessary to moving forward to that goal?

Q3: What is your coaching philosophy?

Q4: Tell me a bit more about the swim culture in your LSC.

Q5: How would you describe your relationships with other coaches in your sport?

Q6: Do you have a personal approach to building relationships with other coaches in your sport?

If so, what does it involve?

Q7: Are there any barriers to building relationships or learning from coaches within your LSC?

We are now going to move into a series of questions that explores your relationships with those who cited you in the LSC, and what you believe makes you a person of influence within this network.

Q8: What characteristics do you have that you think makes you an influential individual to multiple coaches?

Q9: What coaching experiences do you have that you think help to make you influential?

Q10: It seems from other coaches' responses in your LSC, that you have built a trusting relationship with them. How do you think these relationships have developed over time?

Do you actively pursue building new relationships with coaches in the LSC? If so, what strategies do you employ to build new relationships?

Do you intentionally initiate introductions between various people you know within the LSC (so, do you create new connections between coaches)? If so, why?

Q11: The individuals that cited you as influential, said they most frequently talked to you about _____ _____. Why do you think you are a good source of advice for these individuals on these topics?

Q12: Do you view yourself as someone who is innovative as a swim coach (constantly trying new things and searching for new knowledge) or do you find yourself to be more of a coach who is refining and perfecting what they already know?

FINALLY, IF TIME:
Now, while much of this interview has been focused on you as the influential coach, we are also interested in those who you get advice from as well. So, I wanted to finish up with a short series of questions with one person in particular, _____. You and _____ cited a reciprocal advice seeking relationship.

Q13: Tell me more about how you two met.

Q14: How did your relationship continue to develop over time?

Q15: What were the ways in which you and _____ INITIALLY started helping _____ each other in your coach development?

Did these change over time? If so, how?

Q16: What is it about this relationship that makes it one you both value in terms of your continued development as a coach?

APPENDIX C: SEMI-STRUCTURED INTERVIEW GUIDE- INFLUENCED NODES

Q1: Tell me a little bit about how you have come to where you are in your coaching career (e.g., how did it start and how did you end up coaching in your LSC).

Q2: What are your hopes for your coaching career as it moves forward?

What do you view as necessary to moving forward to that goal?

Q3: Tell me a bit more about the swim culture in your LSC.

What about within _____(list their region here)?

Q4: How would you describe your relationships with other coaches in your sport?

Do you have a personal approach to building relationships with other coaches in your sport? If so, what does it involve?

Are there any barriers to building relationships or learning from coaches within your LSC?

We would like to continue by spending some time exploring why you consistently seek advice from _____(insert the central node name here).

Q5: Tell me a bit more about how you two met?

Q6: How did your relationship continue to develop over time?

Why have you maintained this relationship over time?

What do you share in common and what differences are present in the way you and ____ approach coaching?

Q7: Did _____ introduce you to or connect you with other individuals, in the LSC, who helped you in your career development?

What about outside of the LSC?

Q8. You told us that you talk about

_____

the most with _____. Tell us a bit about why you go to _____ for that information.

Q9. Do you view ____ as someone who is innovative as a swim coach (constantly trying new things and searching for new knowledge) or do find him/her to be someone who just further refines and perfects what they already know?

Now we are going to switch just a little bit. Part of what we are trying to do in this project is understand how individual coaches can come to be a central source of advice seeking for multiple other coaches within the LSC. As such, _____ is connected to coaches not only around the state but to several coaches within and outside his club. So, we would like to understand your perception of why_____ serves this central role within your LSC.

Q10: What characteristics does _____ have that you think makes him/her a good source of advice on coaching to multiple coaches?

Q11: What coaching experiences does _____ have that you think makes him/her influential?

Q12: If you had to define _____ coaching philosophy, what would you say it was?

Q13: Does _____ seem to have an approach to developing relationships with other coaches?

If so, how would you describe it?

Q14: If you had to explain how _____ has built and maintained trusting relationships with multiple coaches over time, what would you say?

Q15: How do you think _____ has developed this network where he/she is considered a credible source of knowledge to multiple coaches?

Is _____Trustworthy? Likeable? Accessible? Expertise? Listens? Is Respectful?

Q16: Has _____ served in any positions for the LSC (local, regional or national) that allowed him/her to interact with coaches around the state more frequently?

If so, what was the position?

Q17: Finally, before we discuss your relationships within the LSC, we asked coaches to identify on the survey other individuals who were influential in their knowledge development as a coach. You listed _____. Tell me briefly why you seek individuals outside of swimming or your LSC for your development.

APPENDIX D: SOCIAL NETWORK ANALYSIS SURVEY CONSENT FORM

Coach Participant Information and Consent Form

An Exploratory Examination of the Social Networks of Sport Coaches

Dr. Daniel Gould, Director of Institute for the Study of Youth Sport &
Lauren Walker, M.S., Doctoral Candidate
Department of Kinesiology, Michigan State University
Dr. Daniel Gould at (517)432-0175/drgould@msu.edu or Lauren Walker at walke678@msu.edu.

BRIEF SUMMARY

You are being asked to participate in a research study. Researchers are required to provide a consent form to inform you about the research study, to convey that participation is voluntary, to explain risks and benefits of participation including why you might or might not want to participate, and to empower you to make an informed decision. You should feel free to ask the researchers any questions you may have.

You are being asked to participate in a research study being conducted by Dr. Dan Gould and doctoral student Lauren Walker of Michigan State University. Sport is one of the most popular recreational activities in the world, and it offers the potential for the growth and development of young people. Coaches serve as a primary stakeholder in developing young athletes, and as such it is critically important to understand how to best support them in this role. Literature regarding how coaches learn to coach has reflected that coaches show a clear preference for learning from their peers (e.g., other coaches) due to the contextually specific knowledge they can gain. However, we do not currently know what knowledge is shared in these social networks of coaches and what the structure of these knowledge sharing networks may look like.

PURPOSE OF RESEARCH

The purpose of this study is two-fold: (1) to understand and map the structure of sport coaches' social networks, and (2) to understand what information and knowledge is shared within this network that contributes to coach learning and development.

WHAT YOU WILL BE ASKED TO DO

You have been selected as a possible participant in this study, because you are part of the national governing body for your sport.

If you agree to be in this study, you will be asked to do the following things: (1) complete an online survey regarding your social networks within the profession of coaching, which should take roughly 15 minutes to complete, and (2) express your willingness to be contacted for a second part of this study. The survey is available online through the survey link you clicked on in your e-mail to reach this page. During this survey you will be asked basic demographic questions about yourself, including your information on your current coaching position. You will also be asked to identify individuals within your social network that have been influential to your development as a sport coach and the information that is shared in each of these relationships

that helped you develop. You may choose to skip specific questions or to stop participating at any time without any negative consequences.

By agreeing to this consent form, you are voluntarily agreeing to participate in this research study.

POTENTIAL BENEFITS

You may benefit directly from your study participation due to gains in reflective ability and awareness of the importance and value of your professional network within coaching. This research study may provide valuable information to coaches and national governing bodies of sport about ways to better support developing valuable peer relationships in coach networks.

POTENTIAL RISKS

There are no foreseeable risks associated with participation in this study.

PRIVACY AND CONFIDENTIALITY

It is important to note that due to the methodology used in this study, identifying the individuals within your network by name, anonymity cannot be guaranteed. However, the data for this project will be kept confidential. As such, your responses will not be communicated to the individuals within your coaching networks. The data will be linked to the individual participants during the collection of data in the study; however, the only individuals who are able to view the data will be the Researchers and Research Staff involved in the study and the Human Research Protection Program (HRPP) at Michigan State University. To protect your privacy and ensure confidentiality, the data will be de-identified at the conclusion of data collection. The results of this study may be published or presented at professional meetings, but the identities of the all research participants will remain anonymous.

The data will be kept for at least three years, on a password protected computer, after the project closes. Data will be kept at MSU.

YOUR RIGHTS TO PARTICIPATE, SAY NO, OR WITHDRAW

You have the right to say no to participate in the research. You can stop at any time after it has already started. There will be no consequences if you stop and you will not be criticized. You will not lose any benefit you normally receive. Your participation will have no effect on your evaluation or status as a coach on any athletic team.

COSTS AND COMPENSATION FOR BEING IN THE STUDY

As a thank you for completing the study, you will receive a $15 Amazon gift card. You will be asked to enter your preferred e-mail contact at the end of the survey for the receipt of this gift card.

FUTURE RESEARCH

Your identifiable information (e.g., details about your coaching career, names of individuals within your coaching network), collected as part of this research, even if information that identifies you is removed, will not be used or distributed for future research studies.

CONTACT INFORMATION

Your participation in this research study would be greatly appreciated. If you have any questions concerning your participation in this study, such as scientific issues, how to do any part of it, or to report an injury, please contact the principal investigator, Dr. Daniel Gould at (517)432-0175/drgould@msu.edu or Lauren Walker at walke678@msu.edu.

If you have questions or concerns about your role and rights as a research participant or would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 4000 Collins Rd, Suite 136, Lansing, MI 48910.

DOCUMENTATION OF INFORMED CONSENT.

By printing your name in the box below and checking the box, you voluntarily agree to allow yourself to participate in this research study and are acknowledging this serves as your digital signature. You will be e-mailed a copy of this form to keep.

_____ _____

Signature Date

APPENDIX E: SEMI-STRUCTURED INTERVIEW CONSENT FORM

Coach Participant Information Consent Form

An Exploratory Examination of the Social Networks of Sport Coaches

Dr. Daniel Gould, Director of Institute for the Study of Youth Sport &
Lauren Walker, M.S., Doctoral Candidate
Department of Kinesiology, Michigan State University
Dr. Daniel Gould at (517)432-0175/drgould@msu.edu or Lauren Walker at walke678@msu.edu.

BRIEF SUMMARY

You are being asked to participate in a research study. Researchers are required to provide a consent form to inform you about the research study, to convey that participation is voluntary, to explain risks and benefits of participation including why you might or might not want to participate, and to empower you to make an informed decision. You should feel free to ask the researchers any questions you may have.

You are being asked to participate in the second part of a research study being conducted by Dr. Dan Gould and doctoral student Lauren Walker of Michigan State University. Sport is one of the most popular recreational activities in the world, and it offers the potential for the growth and development of young people. Coaches serve as a primary stakeholder in developing young athletes, and as such it is critically important to understand how to best support them in this role. Literature regarding how coaches learn to coach has reflected that coaches show a clear preference for learning from their peers (e.g., other coaches) due to the contextually specific knowledge they can gain. However, we do not currently know what knowledge is shared in these social networks of coaches and what the structure of these knowledge sharing networks may look like.

PURPOSE OF RESEARCH

As you may recall, the first part of this study served to assist the researchers in identifying the structure of a coaching peer network. Now knowing the structure of the network, it is critically important to understand why certain individuals how a position of influence within the network. Therefore, the purpose of this study is two-fold: (1) to understand more about your relationship with the most influential individuals within your sport coaching network, and (2) to understand what information and knowledge is shared within this relationship that contributes to coach learning.

WHAT THE STUDY WILL ENTAIL

You have been selected as a possible participant in this study, because you were identified by multiple individuals as an influential member of a coach social network or you were one of the individuals who identified having a strong relationship with an influential member of a coach social network. In either case, identification occurred through your participation in the social network analysis online survey.

If you agree to be in this study, you will be asked to complete a 45-60 minute phone interview regarding your relationships and role within a social network of coaches. During the interview, we will ask you about your career as a coach, your relationship with individuals you cited as influential or who cited you as influential, and the knowledge your share within your own personal sport coaching networks. You may choose not to answer specific questions or to stop participating at any time without any negative consequences.

Participants in this study will be audiorecorded when interviewed, to ensure the accuracy and authenticity of data gathered. This is a requirement of the study. All audio is recorded with a USB recorder. The researchers listed above will be the only individuals who have access to this audio USB at all times. At the conclusion of an interview, the researchers will upload the audio recording to a password protected computer and immediately erase it from the USB recorder. All audio recordings will remain on the password protected computer for the duration of the study.

By agreeing to this consent form, you are voluntarily agreeing to participate in this research study.

POTENTIAL BENEFITS

You may benefit directly from your study participation due to gains in reflective ability and awareness of the importance and value of your professional network within coaching. This research study may provide valuable information to coaches and national governing bodies of sport about ways to better support developing valuable peer relationships in coach networks.

POTENTIAL RISKS

There are no foreseeable risks associated with participation in this study.

5. PRIVACY AND CONFIDENTIALITY

It is important to note that due to the methodology used in this study, identifying individuals within your network by name, anonymity cannot be guaranteed. However, the data for this project will be kept confidential. As such, your responses will not be communicated to the individuals within your coaching networks. The data will be linked to the individual participants during the collection of data in the study; however, the only individuals who are able to view the data will be the Researchers and Research Staff involved in the study and the Human Research Protection Program (HRPP) at Michigan State University. To protect your privacy and ensure confidentiality, the data will be de-identified at the conclusion of data collection. The results of this study may be published or presented at professional meetings, but the identities of the all research participants will remain anonymous.

Data, including audio recordings of the interviews, will be kept on a password protected computer. Audio recording will not be used for any other purpose than to create interview transcripts which will be de-identified after the analysis of the data. The data will be kept for at least three years, on a password protected computer, after the project closes. Data will be kept at MSU.

YOUR RIGHTS TO PARTICIPATE, SAY NO, OR WITHDRAW

You have the right to say no to participate in the research. You can stop at any time after it has already started. There will be no consequences if you stop and you will not be criticized. You will not lose any benefit you normally receive. Your participation will have no effect on your evaluation or status as a coach on any athletic team.

COSTS AND COMPENSATION FOR BEING IN THE STUDY

As a thank you for completing the study, you will also receive a $30 Amazon gift card. You will be asked to provide your preferred e-mail to the researcher at the end of the interview if you wish to receive this incentive.

FUTURE RESEARCH

Your identifiable information (e.g., details about your coaching career, names of individuals within your coaching network), collected as part of this research, even if information that identifies you is removed, will not be used or distributed for future research studies.

CONTACT INFORMATION

Your participation in this research study would be greatly appreciated. If you have any questions concerning your participation in this study, such as scientific issues, how to do any part of it, or to report an injury, please contact the principal investigator, Dr. Daniel Gould at (517)432-0175/drgould@msu.edu or Lauren Walker at walke678@msu.edu.

If you have questions or concerns about your role and rights as a research participant or would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 4000 Collins Rd, Suite 136, Lansing, MI 48910.

DOCUMENTATION OF INFORMED CONSENT.

By printing your name in the box below or signing, you voluntarily agree to allow yourself to participate in this research study and are acknowledging this serves as your digital signature. You will be e-mail a copy of this form to keep.

_____ _____

Signature Date

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REFERENCES

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