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ICE HOCKEY COACHES' BELIEFS AND PERCEPTIONS OF COACH EDUCATION

by

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A dissertation in practice submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the College of Education and Human Performance
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ABSTRACT

The purpose of this descriptive study was to provide insight into ice hockey coaches' beliefs and perceptions of coach education programs. USA Hockey is the governing body for all hockey in the United States and requires education through the USA Hockey Coaching Education Program. Gaining a better understanding of how hockey coaches perceive coach education programs provided information that can be used in the evaluation and development of future programs. The theoretical framework used in this study was expectancy-value theory. USA Hockey youth coaches ($N = 410$) were surveyed using the Coaching Education Questionnaire, a 55-item instrument used to collect quantitative data.

The study's findings indicated that coaches found communication with athletes ($M = 4.27$, $SD = 0.90$), advanced instructional drills ($M = 4.03$, $SD = 0.96$), and motivational techniques ($M = 4.02$, $SD = 0.98$) to be topics that are most helpful in a coach education program. Coaches were most likely to pursue further education if the program contained relevant topics ($M = 4.01$, $SD = 0.91$), had online availability ($M = 3.97$, $SD = 1.04$), and was convenient ($M = 3.80$, $SD = 1.08$). Coaches rated items related to coaching education pursuit ($M = 2.60$, $SD = 0.48$) higher than items related to coaching education beliefs ($M = 2.77$, $SD = 0.38$) by coaches.

These findings revealed the need for a more robust evaluation program for USA Hockey's Coaching Education Program. Additionally, the findings suggest the formal education program offered by USA Hockey may not be sufficient in developing effective coaches; a formal mentoring program should be developed to complement the current program.

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CHAPTER 1: INTRODUCTION

Background

In the United States, participation in youth athletics has surpassed 40 million children, leading to an increased demand for effective coaches (Langan, Blake, & Lonsdale, 2013; Petitpas, Cornelius, Van Raalte, & Jones, 2005). The term coach is broad and has taken on multiple meanings across several domains. For the purpose of this paper, the term coach will refer to any individual involved in the direction, instruction, and training of an athletic team or individual athletes (International Council for Coaching Excellence [ICCE], Association of Summer Olympic International Federations [ASOIF], & Leeds Metropolitan University [LMU], 2013). Côté and Gilbert (2009) presented an integrated definition of athletic coaching, suggesting the effectiveness of a coach is dependent on a combination of several factors, including the environment created by the coach, the knowledge base of the coach, and the development of the athletes. However, an effective coach can be defined as an individual who applies knowledge to improve athletes' self-efficacy, confidence, and character while also improving athletic performance (Côté & Gilbert, 2009). Unfortunately, many youth athletic coaches have not received coach-specific training or education and may lack several of the aforementioned characteristics (Gould, Giannini, Krane, & Hodge, 1990; Vargas-Tonsing, 2007). Therefore, they may be ill-prepared to teach and develop athletes. Furthermore, a common belief exists in the United States that anyone can coach youth athletics, leading to selection based primarily on availability and willingness (McCallister, Blinde, & Kolenbrander, 2000).

The increase in demand for effective coaches resulted in an increase in academic research focused on coach education over the last two decades (Kubayi, Coopoo, & Morris-Eyton, 2016; Vargas-Tonsing, 2007). As more studies have been published demonstrating the significant impact coaches have on young athletes, researchers have begun creating educational interventions for coaches to help in a number of areas, including motivation, self-efficacy, and positive athlete development (Cassidy, Potrac, & McKenzie, 2006; Langan et al., 2013; McCullick, Belcher, & Schempp, 2005). Though a number of these interventions have been shown to be effective in a research setting, it is important to determine if those who participate in coaching value the educational programs that are offered. The importance of researching ways to increase the value of coach education and ultimately yield more effective coaches is associated with the significant impact coaches can have on their athletes. Participation in athletics has been shown to provide numerous positive outcomes, including increased physical activity, self-efficacy, intrinsic motivation, and academic achievement (Frederick & Ryan, 1995; Langan et al., 2013; Ntoumanis & Biddle, 1999). Although the benefits above can occur under the right circumstances, adverse conditions and environments can lead to negative outcomes, such as disengagement, decreased motivation, and dropping out of the sport (Jõesaar, Hein, & Hagger, 2012; Molinero, Salguero, Tuero, Alvarez, & Márquez, 2006). It is important to understand the difference between effective and non-effective coaches. Effective coaches constantly develop their skillset to help athletes grow and develop, both in and out of the arena of play (Erickson, Côté, & Fraser-Thomas, 2007). Effective coaches create environments that foster positive outcomes for athletes and play the role as a mentor, leader, and teacher (Côté & Gilbert, 2009).

Non-effective coaches create environments associated with the negative outcomes mentioned previously and do not act to develop their skillset (Côté & Gilbert, 2009).

To effectively implement or redesign a successful coach education program, it is important to understand the beliefs, needs, and barriers for attending education programs faced by coaches. Without this knowledge, it is hard to gain support and buy-in from the coaches (McCullick et al., 2005). Even with a theory-based program in place, coaches' willingness to implement new knowledge will ultimately influence the program's effectiveness. When disinterested coaches are required to participate in education, they will merely complete the minimum requirements to obtain the certification, which reduces the likelihood of the training influencing the way that they coach (Erickson, Bruner, MacDonald, & Côté, 2008; Piggott, 2012). Creating new coach education interventions based on the latest research can be appealing, but failure to consider the potential audience can render an effective program ineffectual (Cassidy et al., 2006; McCullick et al., 2005; Piggott, 2012).

Problem Statement

In this dissertation, I sought to examine the beliefs and perceptions of ice hockey coaches about coaching education. Ice hockey coaches' beliefs and perceptions of coach education were collected using the Coaching Education Questionnaire. The resulting data were used to evaluate USA Hockey's Coaching Education Program and suggest adjustments as a means of adding value to the program and improving the overall outcome of the athlete.

Previous studies have investigated the perceptions and preferences of education programs from coaches of various sports and demographics (Forester, Holden, Keshock, & Heitman, 2014;

Kubayi et al., 2016; Piggott, 2012; Vargas-Tonsing, 2007). While such studies have provided a glimpse into the minds of athletic coaches, no research to date has focused specifically on ice hockey coaches in the United States. Collecting data from this homogenous group provides insight into the beliefs and perceptions ice hockey coaches have of USA Hockey's required Coaching Education Program.

Athletes exposed to effective coaches have been shown to progress further in their respective sport when compared to athletes with less effective coaches (Ford, Ward, Hodges, & Williams, 2009; Ward, Hodges, Starkes, & Williams, 2007). One of the largest influences of the potential positive or negative outcomes is the coach, likely due to the extensive personal interaction and the relationship with the athletes, as well as the coaching style (Camiré, Trudel, & Forneris, 2014). Research in the field of athletic coaching highlights the vital role that a coach can have in the athletic and personal development of their athletes, but the ideal method for training coaches is less clear (Allison, Abraham, & Cale, 2016; Bruner, Hall, & Côté, 2011; Erickson et al., 2008). The gap created between the number of effective coaches with the demand for such coaches exposes a need for coach education programs that coaches will support.

Organizational Context

The United States has fallen behind the international trend of providing a standard robust coach education program and framework (McCullick et al., 2009). Each sport is regulated by an individual national organization, which oversees the development of their coaches. Many national sports organizations have developed coach education programs that include several topics to help improve the effectiveness of coaches, but most programs do not address the needs

of coaches (McCullick et al., 2009). It is vital, in the absence of a nationally standardized program, that each national sports organization has a coach education program in place that addresses the needs of their coaches.

The United States lacks a uniform standard for coaching education and certification making it difficult to view coach education as a single entity (McCullick et al., 2009). Additionally, while many national sports organizations are taking steps to establish and mandate a structured education for their coaches, other countries, especially in Europe, have already begun investing substantial time and resources into the development of their coaches (Allison et al., 2016). This project focused specifically on ice hockey coaches who fall under USA Hockey, providing a deeper understanding of the coaching requirements issued by USA Hockey.

USA Hockey was founded in 1937 and has a primary focus to support and develop grassroots hockey programs, athlete development through the American Development Model, and player safety ("USA Hockey," n.d.-a). The American Development Model is composed of five principles that aim to create an active lifestyle while creating opportunities for athletes to maximize their full potential. The five principles include: (1) universal access to create opportunity for all athletes, (2) developmentally appropriate activities that emphasize motor and foundational skills, (3) multi-sport participation, (4) fun, engaging, and progressively challenging atmosphere, and (5) quality coaching at all age levels ("USA Hockey," n.d.-a). USA Hockey is the national organization for hockey in the United States, encompassing nearly 60,000 coaches that range from youth to Olympic level. Coach education falls under the hockey operations umbrella within USA Hockey ("USA Hockey," n.d.-b). The United States is divided into twelve

districts, and each district is assigned a coach-in-chief. The coach-in-chiefs are responsible for scheduling coaching clinics, managing a staff of volunteer instructors, communicating with local clubs regarding the certification process, working with the director of coach education on all budget issues, and is the point of contact for all local coaching issues ("USA Hockey," n.d.-b). Although the major decisions are made by USA Hockey's Coaching Education Director and a coach education board, the coach-in-chiefs implement the coaching clinics.

To coach ice hockey in the United States, individuals must register through USA Hockey and attend coaching clinics and age-specific modules through the Coaching Education Program ("USA Hockey," n.d.-b). These coach clinics include several topics, including, leadership, communication, teaching skills, skill analysis, lesson organization, and principles of safety. Coaches are required to maintain a coaching certification, which is completed through annual coach education clinics and age-specific modules ("USA Hockey," n.d.-b). Even with such a robust coach education program in place, understanding how coaches view the program may help improve future hockey education curriculum, which could then be incorporated to additional sports. Working with USA Hockey provided an opportunity to make changes within an organization and add value to the education program.

History and Conceptualization

Evolution of Youth Athletics

Youth athletics encompass a variety of organizations, clubs, and teams. Ultimately, youth athletics is a term used to describe all athletic programs involving athletes eighteen years

of age and younger (Fraser-Thomas, Cote, & Deakin, 2008). Over the last century, youth athletic programs have evolved tremendously. In the early 1900s, children participating in athletics typically came from families in the lower socioeconomic class. In contrast, other children participated in more non-direct competitive activities such as dancing and the musical arts (Friedman, 2013). Following World War II, Little League Baseball was established as a fee-based program, laying the foundation for youth athletics. Athletics began to be viewed as an avenue for teaching American values to youth, causing an increase in the number of leagues, such as Bidy Basketball, Pee Wee Hockey, and Pop Warner Football (Friedman, 2013). Over the next several decades, the growth of fee-based youth leagues ultimately led to the elimination of most elementary school sponsored teams. At the end of the 1990's, competition for admission into college became more difficult, leading parents to seek extracurricular activities for their children, including athletics, to increase their probability of admission to college (Friedman, 2013). It was during this time that an influx of club sports, unassociated with graded school, became available for middle and high school athletes with the promise of exposure to collegiate coaches (Friedman, 2013).

Historically, athletes had little choice in the selection of teams wherein to compete, as most were run through middle schools and high schools. As the popularity of club athletics increased across the country, the coaching demographic also changed. High school athletic teams were traditionally coached by teachers and school employees who had had been certified to create educational and motivational environments (Martens, 2001).

The growth of club teams has increased the demand for competent and effective coaches in the United States (Erickson et al., 2008). As more clubs were established outside the realm of high school sports, the level of training and qualification for coach education became less defined (Forester et al., 2014). In the United States, coaching standards are often regulated by a national organization such as USA Hockey, USA Baseball, and USA Football. These individual organizations for each sport oversee the different leagues across the country, including club and high school athletics at all levels. At the state-level, many high school athletic associations govern all school-sanctioned teams, and state-level organizations exist to manage the club athletics (Forester et al., 2014). In some states, regional organizations govern the leagues within their geographic locale. Finally, individual leagues and teams may have their rules and regulations (Martens, 2001). The varying and inconsistent structure of each sport highlights the difficulty in regulating coach education geographically, between the type of sports, and type of team (club vs. school). Although many of these separate national organizations require varying levels of education for coaches, many focus their efforts on player safety alone and ignore coaching theory or motivational strategies (Erickson et al., 2008). For example, USA Football requires all coaches to complete a Heads Up Football Certification which includes the following components: Concussion Recognition and Response, Heat Preparedness and Hydration, Sudden Cardiac Arrest, Proper Equipment Fitting, Heads up Tackling, and Heads Up Blocking ("USA Football," n.d.). Though these are significant concerns to help promote safe environments and protect the physical well-being of young athletes, educational programs focused on protecting the psychological well-being of athletes are unfortunately less prominent, though of substantial

importance (Gilbert, Côté, & Mallett, 2006; Kubayi et al., 2016). This is not to say that all organizations lack a comprehensive education program. USA Hockey is one of the more progressive organizations, requiring all new coaches to complete a coaching safety course as well as a Level 1 Coach Education Program ("USA Hockey," n.d.-b). As time passes, coaches must continue their education and can work up to a Level 5 coach through coaching clinics. This education program comprehensively covers the roles of the coach, talent development, skill development, and risk management ("USA Hockey," n.d.-b). Ice hockey coaches must possess a number of competencies to be effective, including communicating with athletes, working with athletes of varying skill levels, increasing sport-specific skills, creating effective and fun practices, establishing safe environments, enhancing teambuilding, and teaching a deeper understanding of the sport of ice hockey (Bhardwaj, 2014; Côté & Gilbert, 2009). These skills highlight the complexity of ice hockey coaching and the difficulty of creating an all-encompassing educational program that is also practical and realistic for coaches to attend. However, because many youth coaches are volunteer positions, it is harder to find the time and resources to attend education programs (Vargas-Tonsing, 2007). Even with a program in place, USA Hockey can improve their coach education to increase the value perceived by its coaches. The effect of not improving coach education can be observed through athlete development. Research has suggested that athletes who have a negative experience with a coach or teacher can develop a negative lifelong attitude toward physical activity (Strean, 2009). Improving the effectiveness of coaches, through a more robust coach education program, may help athletes have more positive experiences in their respective sports leading to increased self-efficacy,

intrinsic motivation, and academic achievement (Frederick & Ryan, 1995; Langan et al., 2013; Ntoumanis & Biddle, 1999).

Coach Education

Coach education is not a new concept in athletics. The National Education Association's Education Policies Committee recommended certification of interscholastic sports coaches in the 1960s (National Association for Sport and Physical Education, 2008). The recommendation launched an initiative, over the next several decades, for a high school coaching certification. A national requirement for coach certification has yet to be established, but many school districts are beginning to implement requirements for coach education (Forester et al., 2014). Although strides have been made in high school athletics, coaches of club athletic teams are not held to the same standard (Forester et al., 2014). The growth and expansion of youth athletics have led to the development of several governing bodies to help organize the leagues of each sport. Such governing bodies regulate the educational requirements for coaches that fall under their jurisdiction (Allison et al., 2016).

Coach education encompasses a broad spectrum of topics and can vary because of the differences in learning capabilities of the coaches. As mentioned previously, most national sports organizations have at least some form of coach education in place, though the topics and format of learning vary between sports (Forester et al., 2014). In addition to programs offered by national sports organizations, more independent coach education programs are available for coaches interested in increasing their skillset (McCullick et al., 2009). The design of the educational intervention can also influence the effectiveness and the number of coaches willing

to participate. Nelson, Cushion, and Potrac (2006) described three frameworks for coach education: formal, non-formal, and informal. Formal education is typically classroom-based and is taught by a trained teacher. This type of setting provides an ideal environment for learning but can be unrealistic for those with careers outside of coaching. Informal education takes place outside the classroom setting and consists of situations where the coach learns from daily experiences and resources within their environment. This type of education does not follow a set curriculum, which can make it difficult to track and monitor (Nelson et al., 2006). Non-formal education consists of any organized educational activity that falls outside of the established system. Although outside the traditional educational setting, non-formal education follows established learning objectives. Non-formal education is the most prevalent among coach education programs, such as continuing education credits (CECs) for certifications, conference education, and self-guided education (McCullick et al., 2009; Nelson et al., 2006). The availability, duration, and cost make this an ideal format for youth athletic coaches while still following established learning outcomes. In addition to formal, non-formal, and informal, coach education can be subdivided into participation and acquisition learning. Participation learning refers to learning through experience and acquisition learning consists of learning through more structured education programs (Werthner & Trudel, 2006). Though learning through the involvement or experience has been shown to be a key component in the development of coaches, coaches have shown a preference to complementing participation with guided learning opportunities (Erickson et al., 2008). It appears a balance is preferred when coaches show an interest in coach education programs. Many coaches are not satisfied with the current offerings

of coach education programs, expressing a lack of interest, lack of application following attendance, and an inability to encompass the complexity of coaching in a short period (Erickson et al., 2008).

The frameworks above are present in some learning opportunities for coaches, including formal education programs, experience observation, mentoring, and self-reflection (Cushion, Armour, & Jones, 2003; Erickson et al., 2008; Kubayi et al., 2016). Formal coach education has increased in numerous athletic organizations to help improve the effectiveness of coaches through increased coaching efficacy, better facilitation of social development of athletes, and improved environments (Erickson et al., 2008; Kubayi et al., 2016). Though more organizations are developing and requiring educational programs, many coaches are hesitant to support the change when they do not value the programs in place (Nelson & Cushion, 2006; Vargas-Tonsing, 2007). Many formal education programs place little emphasis on the coaching process, missing an opportunity to develop coaches (Vargas-Tonsing, 2007). Including topics such as communication, motivational environment, self-regulation, sports psychology, and perseverance has the potential to develop effective coaches (Vargas-Tonsing, 2007). Furthermore, it is important to understand what coaches want from an education program to increase the value and ultimately gain support.

The lack of application following the attendance of coach education programs appears to be the gap between the national sports organizations and the coaches (Erickson et al., 2008). Merely having a coach education program in place is not the solution to improve the effectiveness of hockey coaches, but rather a program that is valued and implemented by the

coaches (Erickson et al.,2008; McCullick et al., 2005; Piggott, 2012). From an organizational perspective, the problem of coach education within youth athletics can be termed a structural problem (Bolman & Deal, 2013). Developing a comprehensive understanding of coach education for youth athletics can be a challenging endeavor due to the variation of coach education among different sports. The United States is the only major country in the world that does not have a national coaching education system (McCullick et al., 2009). Without such a governing body, the organizational structure of youth athletics varies between sports, the type of league, and the geographical location. Focusing on ice hockey coaches through USA Hockey provided the opportunity to recommend a possible solution for ice hockey that can be extrapolated to other sports.

In addition to the prevalent structural problem that exists within youth athletics, it is possible that the coaches are a part of the problem (Bolman & Deal, 2013). Coaches' assumptions about coach education can often become self-fulfilling prophecies. If coach education is viewed strictly as an item to check off the list when coaches attend they will likely overlook important principles (Bolman & Deal, 2013). USA Hockey leaders could easily place blame on the individual coaches for their assumptions, but the problem may originate at a much higher level. Until coaches' beliefs and needs are understood and taken into consideration, it is unlikely that coaches will be supportive of changes made to coach education programs. Successful organizations invest in their people by taking the time to comprehend and adjust to the needs of their coaches. This investment can lead to an increase in motivation among current

coaches and may help to attract coaches who fit the culture of the organization in the future (Bolman & Deal, 2013).

Conceptual Framework

For a coach education program to maximize its effectiveness, coaches must find value in the content, delivery, and apply the information in practice (Langan et al., 2013). The motivation for coaches to attend and implement the new information acquired through educational programs can be explained by the extent to which they value the education program and information that is acquired (Wigfield & Eccles, 2000). USA Hockey's requirement of its Coaching Education Program may reduce the need to motivate coaches to attend, providing value to the program may increase buy-in and support. Expectancy-value theory was selected as the theoretical framework for this study, based on the work of Atkinson (1964) and further expanded on by Wigfield (1994) and Wigfield & Eccles (2000). Expectancy-value theory is rooted in the concept that the more an individual values an activity or task, the more likely he or she is to choose, persist, and engage in it (Wigfield & Eccles, 2000). The theory is composed of four dimensions, including attainment value, intrinsic value, utility value, and cost (Eccles & Wigfield, 2002). Attainment value refers to the importance one places on a task, intrinsic value refers to the enjoyment one experiences when participating in the task, utility value refers to how useful one perceives the task, and cost value relates to the expense of the job in terms of time, effort, and money (Eccles & Wigfield, 2002). Each of these dimensions can influence the overall value one places on a task.

The concept of valuing education programs is important when such programs are mandated by the national sports organizations (e.g., USA Hockey). When education programs are mandated, it will lead to high attendance, but when coaches attend only to obtain a certificate or satisfy an organizational requirement, they are less likely to retain information presented and to apply techniques and strategies in practice (Erickson et al., 2008). This highlights a problem for national sports organizations that require education protocols for coaches. Even with a robust program in place, coaches may be apprehensive to apply acquired knowledge to their coaching practices (Erickson et al., 2008).

The issue of valuing education programs must be addressed by the national sports organizations. Until these organizations understand what coaches seek, coaches will continue to focus their energy on acquiring coaching knowledge from experience and personal interactions or attend coach education programs only to satisfy a requirement (Nelson et al., 2006). Though self-directed activities, such as experience, observation, and mentorship, can lead to meaningful learning, coach education should consist of a combination of learning opportunities and cannot focus on just one facet (Werthner & Trudel, 2006; Wright, Trudel, & Culver, 2007). Though many coach education programs fall under the category of formal and non-formal education, focusing solely on these types of education may limit the development of coaches (Lemyre, Trudel, & Durand-Bush, 2007; Werthner & Trudel, 2006). This dissertation will focus primarily on programs that fall under the category of formal education.

Purpose of Study

USA Hockey's coach education program includes numerous clinics ranging in topics ("USA Hockey," n.d.-b). USA Hockey has implemented a theory-based formal education program, but the program cannot reach its potential if coaches do not find value in it (Wigfield & Eccles, 2000). The purpose of this study was to determine what ice hockey coaches are looking for in coaching education programs. Additionally, understanding how coaches perceive the education program, and their beliefs regarding coaching education will help evaluate and, ultimately, improve USA Hockey's program. Many coaches rely on previous experiences during their playing days or past coaches to form beliefs on what it takes to be a successful coach (Erickson et al., 2008). Coaches who develop beliefs associated with not valuing education programs will likely not incorporate the information into everyday practice (Erickson et al., 2008; Wigfield & Eccles, 2000). Developing an understanding of how ice hockey coaches perceive USA Hockey's coach education program provided information to help make recommendations to increase support and buy-in of future education programs.

Research Questions

The research questions that guided this study were developed through a review of the literature as well as an examination of the problem in practice. The research questions are:

1. What topics do ice hockey coaches believe to be most helpful in a coach education program?

- a. My hypothesis was that coaches are interested in physical aspects of coaching more than interpersonal coaching skills and advanced aspects of coaching.
2. What are reasons and barriers for attending or not participating in a coach education program?
 - a. My hypothesis was that the barriers for not attending outweighed the reasons for participating in coach education program.
3. What are ice hockey coaches' beliefs about coach education?
 - a. My hypothesis was that coaches believe coach education is important.

Key Terms and Concepts

Athletic Coach: Any individual involved in the direction, instruction, and training of an athletic team or individual athletes (ICCE et al., 2013).

Coach Education: Any form of education that enables coaches to construct and develop the knowledge needed to be an effective coach. This can include a mix of formal, non-formal, and informal directed and/or self-directed learning experiences (Cushion et al., 2010).

Expectancy-Value Theory: The motivation for coaches to implement the new information acquired through the education program can be explained by the extent to which they valued the education program and acquired information (Wigfield & Eccles, 2000).

Formal Education: Education which is typically classroom-based and taught by a trained teacher. This type of setting provides an ideal environment for learning but can be unrealistic for those with careers outside of coaching (Nelson et al., 2006).

Informal Education: Education which takes place outside the school setting and consists of situations where the coach learns from daily experiences and resources within their environment. This type of education does not follow a set curriculum, which can make it difficult to track and monitor (Nelson et al., 2006).

National Sports Organization: Organization for individual sports that oversee the different leagues throughout the country, including club and high school athletics at all levels (Forester et al., 2014).

Non-Formal Education: Education which consists of any organized educational activity that falls outside of the sports organization. Although outside the traditional educational setting, non-formal education follows established learning objectives (Nelson et al., 2006).

Self-Directed Learning: “A process in which students take the initiative with or without the help of others in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes” (Abraham, Upadhya, & Ramnarayan, 2005, p. 135).

USA Hockey: The national organization for all levels of hockey in the United States, encompassing nearly 60,000 coaches that range from youth to Olympic level (“USA Hockey,” n.d.-a).

Youth Athletics: A term used to describe all athletic programs that include athletes under the age of eighteen.

CHAPTER 2: REVIEW OF LITERATURE

Introduction

Athletic coaches play a crucial role in the development of individual athletes as well as the team (Mageau & Vallerand, 2003). The close interaction between coach and athlete creates an opportunity for a coach's approach to positively or negatively influence their athletes (Langan et al., 2013). Positive outcomes include increased self-efficacy, intrinsic motivation, academic achievement, and athletic performance along with decreased anxiety, depression, and fear of failure (Coatsworth & Conroy, 2009; Frederick & Ryan, 1995; Langan et al., 2013; Ntoumanis & Biddle, 1999). Negative outcomes, often caused by emotional and physical abuse, include depression, anxiety, eating disorders, decreased self-efficacy, decreased motivation, and difficulty with interpersonal relationships (Langan et al., 2013; Stirling & Kerr, 2014). As the number of athletes has grown in the United States, so too has the need for effective coaches and research within the field of coach education (Allison et al., 2016; Vargas-Tonsing, 2007). The term *effective coach* is used to describe coaches that consistently apply a combination of professional, interpersonal, and intrapersonal knowledge to improve the competence, confidence, connection, and character of athletes (Gilbert et al., 2006).

The purpose of this review was to systemically investigate the previous research conducted on coach education and the most prominent coach education frameworks. To effectively educate and develop coaches in the United States, it is important to have a comprehensive understanding of the role of the coach, the different ways coaches learn, how

coach education differs between the United States and other countries, and how coach education can be supported.

Role of the Coach

The title of a coach is a term that has taken on multiple meanings within several domains. For this paper, the term “coach” will refer to any individual involved in the direction, instruction, and training of an athletic team or individual athletes (ICCE et al., 2013). The term coach falls under the domain of athletic coaching, a process of guiding the development of athletes and teams (South African Sports Confederation and Olympic Committee [SASCOC], 2011). Coaching is not isolated; it is relational, and coaches must understand the influence they have within this setting (ICCE et al., 2013). To be effective, coaches must possess many skills, including communicating and working with athletes of varying skill levels, increasing sport-specific skills, creating effective and fun practices, establishing safe environments, enhancing teambuilding, and teaching a deeper understanding of their respective sport (Bhardwaj, 2014; Côté & Gilbert, 2009). These skills reveal the multi-faceted structure of athletic coaching and highlight the difficulty involved with creating an educational program that is not only effective but also practical and realistic for coaches to complete.

Many coaches have not received traditional, formal education in coaching, leaving them to rely on other methods to acquire the knowledge needed to be an effective coach (Martens, 2001). Côté and Gilbert (2009) presented an integrative definition of coaching effectiveness, dependent on the environments created by the coach, the knowledge of the coach, and the athletes’ outcome. Though these factors all contribute to the effectiveness of a coach, the

foundational knowledge base of a coach can be directly influenced through coach education (ICCE et al., 2013). The following section will briefly discuss the effects of environments on athletes' outcomes.

Athlete Outcomes

Athlete outcomes play a major role in coaching, as many coaches define success through wins and losses (Mallett & Côté, 2006). Athlete outcomes can be divided into two broad categories: performance results and positive psychological responses (Côté & Gilbert, 2009). The results that have been researched most frequently are attrition, fear of failure, goal orientation, anxiety, and self-esteem (Langan et al., 2013; McCullick et al., 2009). These outcomes have been the focus of several educational interventions created with the expectation of improving coach effectiveness.

Langan et al. (2013) completed an extensive review of the literature on the effectiveness of several coach educational protocols. They concluded that the diversity of athlete outcomes makes it difficult to categorize all interventions into one group. Still, coach education interventions can be effective in several domains including motivational environment, self-esteem, and self-regulation (Langan et al., 2013). Many coach education programs lack a theoretical basis for the curriculum, which may impact the effectiveness of the program (Langan et al., 2013). Protocols that have a strong theoretical basis using self-determination theory and achievement goal theory were found to be most effective (Coatsworth & Conroy, 2009; Smith, Smoll, & Cumming, 2007).

Much of the research on coach education focuses on outcomes related to athlete development such as motivation, self-efficacy, and positive athlete development (Langan et al., 2013). Additionally, athletes with a mastery-oriented approach have more enjoyable feelings toward their respective sport (Cumming, Smoll, Smith, & Grossbard, 2007). Although these are important outcomes, a driving force in athletics is performance, and linking education with improved performance may help more coaches to engage in such programs.

Environment

The environment of an athletic team can have a tremendous impact, both positive and negative, on the athletes. Coaches have a tremendous influence on the environment created for their athletes based on the coaching style implemented, how they define success and failure, and how they handle rewards and punishments (Camiré et al., 2014). Environments created by coaches have been researched regarding the motivational tendencies of the athletes. These environments have been designated as *motivational environments* or *climates* (Coatsworth & Conroy, 2009). The motivational environment or climate can be described as the situation created by a coach that can predispose athletes toward a particular goal state, such as mastery or ego (Smith et al., 2007). Ames (1992a, 1992b), in her classic research, described that in a mastery climate success is defined regarding of mastering a task, self-improvement, and effort, whereas ego-involved climates define success based on the comparison of others. Mastery environments have been associated with positive motivational outcomes for athletes (Harwood, Keegan, Smith, & Raine, 2015; Ntoumanis & Biddle, 1999). Therefore, coaches who possess the knowledge to create mastery environments can promote motivation and self-regulation for

their athletes (Côté & Gilbert, 2009; Fraser-Thomas et al., 2008; Toering, Elferink-Gemser, Jordet, & Visscher, 2009). Many coach education programs aim to help coaches improve the environment of their team (Langan et al., 2013).

Knowledge Base of the Coach

The knowledge a coach possesses plays a tremendous role in their overall effectiveness (Côté & Gilbert, 2009). Though environment and athlete outcomes are important components in the effectiveness of a coach, both can be influenced by the knowledge base of the coach (Côté & Gilbert, 2009). Coaches acquire information and knowledge from several sources, including formal education programs, experience observation, mentoring, and self-reflection (Cushion et al., 2003; Erickson et al., 2008; Kubayi et al., 2016). Each of the sources above plays a role in the overall development of coaches, and successful coach education should not focus on just one method (Lemyre et al., 2007). Research suggests that expert coaches rely on education, organizational skills, experience, work ethic, and knowledge to reach the highest levels (Carter & Bloom, 2009; Cushion et al., 2003; Erickson et al., 2008). How coaches acquire knowledge can be categorized into three distinct learning situations: mediated (e.g., attending clinics), unmediated (e.g., observing other coaches), and internal (e.g., reflecting on their experience) (Werthner & Trudel, 2006).

Mediated learning situations are directed by another person, such as a formal educational program or traditional classroom learning (Werthner & Trudel, 2006). This type of learning has become popular among national sports organizations, like USA Hockey, because of the ability to document and track (Lemyre et al., 2007). Unmediated learning situations do not have an

instructor or teacher. Instead, the coach takes the initiative to decide what, where, and when to learn (Werthner & Trudel, 2006). Internal learning situations occur in the mind of coach and involve applying the coach's ideas to the coach's cognitive structure (Werthner & Trudel, 2006). Unmediated and internal situations can be extremely beneficial for coaches but are difficult to monitor or track.

Misconceptions of the best way for coaches to acquire knowledge exist and need to be addressed. The most common misconception is that good athletes make good coaches (Carter & Bloom, 2009). Though playing a sport provides a guided experience that can help increase sport-specific knowledge, strategy, and provides the ability to observe a coach in action, it does not necessarily correlate with becoming a successful coach (Lemyre et al., 2007). Another misconception that exists within the realm of coaching is the idea that the method by which the coaches learn should be used to educate coaches of all levels (Lemyre et al., 2007). This is an important concept when developing and evaluating coach education programs.

Coach Education

Understanding the different ways coaches acquire knowledge is a critical component in the development of effective coaches. It is equally important to provide opportunities for coaches to learn. The term *coach education* encompasses a broad spectrum of protocols that can vary from informal to formal protocols. The design of the educational intervention can also influence the effectiveness and the number of coaches willing to participate. Nelson et al., (2006) described three frameworks for coach education: formal, non-formal, and informal.

Formal education is typically classroom-based and is taught by a trained teacher. This type of setting provides an ideal environment for learning but can be unrealistic for those with careers outside of coaching (Nelson et al., 2006). Informal education takes place outside the school setting and consists of situations where the coach learns from experiences and resources within their environment. This type of education does not follow a set curriculum, which can make it difficult to track and monitor (Nelson et al., 2006). Non-formal education consists of any organized educational activity that falls outside of the established system. Although outside of the traditional educational setting, non-formal education follows established learning objectives. Non-formal education is the most prevalent among coach education programs, such as continuing education credits (CECs) for certifications, conference education, and self-guided education (McCullick et al., 2009; Nelson et al., 2006). The framework of a coach education program can influence how coaches acquire knowledge and how likely they are to pursue educational opportunities (Erickson et al., 2008).

The availability, duration, and low cost of non-formal educational protocols for youth athletic coaches allow for a less structured program while still following established learning outcomes. Coach education programs have become more prominent in recent years, but many of these programs have not been empirically tested (Langan et al., 2013). Becoming an educated and effective coach requires a combination of time, motivation, application, practice, and desire (ICCE et al., 2013). Like athletes, coaches grow and develop through exposure to learning situations over the course of time. Coaches maximize their development when learning

experiences include a combination of formal, non-formal, and informal opportunities (Nelson et al., 2006).

The topic of coach education has received lots of attention within the research community over the last two decades (Langan et al., 2013; McCullick et al., 2009). An online search of the terms “coach + education + sport” produced 11,424 journal articles between 1996-2016. Studies on coach education focus on several topics within the field, such as athlete outcomes (Langan et al., 2013), proposed education interventions (Langan et al., 2013), coach efficacy (Malete & Feltz, 2000), and the influence a coach plays in the experience of athletes (Fraser-Thomas & Côté, 2009).

McCullick et al. (2009) conducted a review of the literature to determine the research methods used for coach educational programs and the common themes and trends within the educational programs. Although this review was published in 2009, it provided an exhaustive review of educational programs between 1995 and 2007 (McCullick et al., 2009). The authors found 46 articles that were published between 1995-2007 that were classified as data-based investigations, reviews, and position papers on how coaches prepared and were certified (McCullick et al., 2009). Of the 46 reviewed articles, a majority ($n = 28$) were published in or after 2005, showing a significant increase in publications in the last three years of the timeframe (McCullick et al., 2009). The review discovered four major themes within the literature: the methods of data collection have shifted to more of a qualitative approach, coaches' views and concerns have been considered more frequently, focus shifted from the content to the processes of coach education, and few evaluations of coach education programs have been conducted

(McCullick et al., 2009). The authors stressed the need for more research on coach education even though an increase in literature has occurred. Understanding the strengths of such programs and improving on the weaknesses may be a possible solution. In order to accomplish this, it is vital that evaluations be conducted on coach education programs (McCullick et al., 2009).

Langan et al. (2013) completed a review of the literature on the effects of coach educational interventions on athlete outcomes. A review of 51 potential articles produced only four with strong coach educational interventions. The interventions reviewed several outcomes, including self-esteem, anxiety, fear of failure, motivational climate, achievement goal orientation in sport, achievement goal orientation in academics, the perception of coach behavior, reaction to participation and ability related perception, and attrition (Langan et al., 2013). Of the four selected interventions, one was based on achievement goal theory, and the other three were developed using Coach Effectiveness Training (CET). The CET interventions did not significantly increase athlete self-esteem or reduce the fear of failure (Langan et al., 2013). The intervention rooted in achievement goal theory resulted in an increase in athlete mastery orientation and a decrease in athlete ego orientation. Results suggested that providing coaches guidelines for creating a mastery climate can be effective in positive change in athlete orientation (Langan et al., 2013). Specifically, improving coaches' interpersonal communication skills may lead to positive athlete outcomes. This was the first review conducted on non-formal coach educational interventions (Langan et al., 2013). Though research on coach education is growing, few randomized controlled studies have been performed with a coach educational intervention

(Langan et al., 2013). Additionally, the authors found it difficult to draw firm conclusions on the effectiveness of the interventions due to the diversity of athlete outcomes and intervention design (Langan et al., 2013).

Though several studies have investigated different coach educational programs, the research has failed to keep pace with the growth of youth athletics and demand for effective coaches (Cassidy et al., 2006; Langan et al., 2013). Developing a program that is not only effective but also efficient is important to assure that coaches have the ability to take advantage of the program. The most realistic approach would be a program that can be offered with multiple delivery methods, allowing more coaches to participate. Although online learning may be the most effective way to reach a large number of coaches, it is important to develop a learning environment that encourages interaction between the coaches, as well. Cassidy et al. (2006) implemented a coach education program and found that coaches valued the ability to discuss, debate, and share ideas throughout the training. Understanding what coaches value in an educational program can help in the development of future interventions. Further research in coach beliefs and what coaches value is necessary to develop a more robust understanding (Cassidy et al., 2006; Langan et al., 2013).

The effectiveness of different coach education programs has been questioned by coaches and researchers alike (Erickson et al., 2008; Langan et al., 2013). Trudel, Gilbert, and Werthner (2010) reviewed studies conducted between 1998-2007 on the effectiveness of small-scale, university-based, and large-scale coach education programs. They concluded that there was no substantial evidence to support long-term effectiveness of coach education programs (Trudel et

al., 2010). Additionally, the lack of a true experimental design of many of the studies makes it difficult to draw any firm conclusions of the interventions (Trudel et al., 2010). Nevertheless, the authors drew two conclusions based on the reviewed literature. They recommended that national governing bodies should not expect to control the learning and development of coaches. They also recommended that learning activities be innovative and creative (Trudel et al., 2010). National governing bodies should provide guidance for coach education, but ultimately allow individual sports organizations create coach education programs based on a standardized national framework.

The concept of learning through experience and observation has been cited as the primary format for knowledge acquisition among coaches (Erickson et al., 2008; Gilbert & Trudel, 2001; Wright et al., 2007). Coaching environments can be viewed as an opportunity for growth and development for not only athletes but also for coaches (Cushion et al., 2003; Gilbert & Trudel, 2001). However, learning through experience has been criticized due to a lack of empirical research and the idea that experience does not always lead to competency (Gilbert & Trudel, 2001; Jones, Harris, & Miles, 2009). Such criticisms expose the need for more empirical research on mentoring and a more conceptualized and structured framework (Allison et al., 2016; Jones et al., 2009). Structured mentoring programs have increased in commonality within the field of athletics, particularly outside the United States (Allison et al., 2016; Jones et al., 2009).

Relevant Topics for Coach Education Programs

Understanding what methods are most effective for coach education programs is important when researching coach education, but an area of greater importance may be the

curriculum. Selecting topics that are rooted in theory and have been shown to be effective using sound research methods is important, but understanding what coaches want to learn may lead to more support and buy-in of programs (Erickson et al., 2008). For the purpose of this review, topics were divided into three categories: advanced topics, interpersonal coaching skills, and physical aspects of coaching.

Advanced topics.

Advanced topics play an important role in coaching, but may not be necessary for entry-level coaching courses. These topics included stress management, sport psychology, addictive behavior, gender differences, drugs in sports, and sport nutrition. Previous research indicated that coaches expressed the least interest in the advanced topics when compared with interpersonal coaching skills and physical aspects of coaching (Kubayi et al., 2016; Vargas-Tonsing, 2007). Interest in such topics may be dependent on the level of the coach. The lower levels of interest seen in previous research may support the idea of having educational programs based on the level of the coaches being taught.

Interpersonal coaching skills.

Interpersonal coaching skills included how coaches communicate with athletes and parents, athlete goal setting, motivational techniques, character building, and trust building (Vargas-Tonsing, 2007). Such skills can create coach-athlete interactions that lead to positive performance outcomes, decreased athlete anxiety, and increased athlete enjoyment (Hodge, Henry, & Smith, 2014; Jaakkola, Ntoumanis, & Liukkonen, 2016; Langan et al., 2013). Communication influences several areas of coaching including, the type of environment created,

the delivery of feedback, and how athletes perceive their coach (Hodge et al., 2014). Athletes have been shown to have more of a mastery approach to goal setting when coaches create mastery environments (Langan et al., 2013). Previous research indicated that coaches expressed interest in learning more about communication with athletes and parents (Vargas-Tonsing, 2007; Wiersma & Sherman, 2005). Providing athletes with a trusting environment that nurtures character development has been identified as a critical component to be an effective coach (Côté & Gilbert, 2009).

Physical aspects of coaching.

Physical aspects of coaching included topics that are more commonly associated with athletic coaching such as, advanced instructional skills, conditioning drills, and advanced first aid. Coaches were interested in learning more about advanced instructional and conditioning skills in previous research (Kubayi et al., 2016; Vargas-Tonsing, 2007). Such topics are important for coaches and may vary between sports. A vast knowledge base of the specific sport being coached is an integral part to being an effective coach (Côté & Gilbert, 2009).

Coach Education for Ice Hockey in the United States

The United States is the only major country in the world without a national coaching education and certification program (McCullick et al., 2009). This has created variations of educational structure and content between different sports in the United States (McCullick et al., 2009). Despite the absence of a national coaching educational program, the United States has begun unifying the national sports organizations through the American Development Model (ADM) (United States Olympic Committee [USOC], 2016). The ADM was created in 2014

through the collaboration of the United States Olympic Committee and several national sports organizations to provide a more consistent vision between sports (USOC, 2016). The ADM's framework is based on five key principles: universal access to create an opportunity for all athletes, developmentally appropriate activities that emphasize motor and foundational skills, multi-sport participation, engaging and progressively challenging atmosphere, and quality coaching at all levels ("United States Olympic Committee [USOC],"n.d.). Currently, 23 national sports organizations have agreed to endorse the ADM, providing applicable resources to athletes, coaches, administrators, and parents ("USOC,"n.d.). Although the ADM is focused on athlete development, coaches play an integral role in providing an opportunity for positive development (Langan et al., 2013). The ADM provides coaches a roadmap for national sports organizations to develop coach educational programs that maximize the effectiveness of the coach and the development of the athletes (USOC, 2016).

The ADM specifies the importance of having effective coaching at all age levels, stating that coaches must not only be highly knowledgeable in sport-related information, but also in effective communication, practice planning, and athlete development (USOC, 2016). The ADM stresses the importance of the coaches being ongoing learners (USOC, 2016). Although coach development is highlighted in principle five, the overall focus of the ADM is athlete development (USOC, 2016). Other countries, which will be discussed in the following section, place a greater emphasis on the development of the coach (ICCE et al., 2013).

USA Hockey's coach education program is built within the framework of the American Development Model (ADM) to help apply principles to promote long-term athlete development

(USOC, 2016; “USA Hockey,” n.d.-b). USA Hockey requires coaches to participate in the Coaching Education Program to help develop effective coaches (“USA Hockey,” n.d.-b). To become a USA Hockey coach, individuals meet criteria in two categories: USA Hockey requirements and Coaching Education Program requirements. The USA Hockey requirements include USA Hockey membership, a background screening, and Safe Sport™ training module (“USA Hockey,” n.d.-b). The coaching education program requirements include clinics that must be completed based on years of coaching within USA Hockey and an age-specific component based on the level of athletes being coached (“USA Hockey,” n.d.-b). Coaching clinics are offered in a classroom setting whereas the age-specific modules are online. In the first three years, coaches are required to progress through the first three levels of certification. After three years, coaches are not obligated to progress until year nine, other than refresher courses every other year (“USA Hockey,” n.d.-b).

The curriculum for the Coaching Education Program was developed using the ADM principles, which are based on the long-term athlete development model (“USA Hockey,” n.d.-b). Long-term athlete development (LTAD) was implemented to nurture talent acquisition of youth athletes (Ford et al., 2011). Balyi and Hamilton (2004) created LTAD model to be used as a framework for coaches to maximize athletic development. The LTAD model places emphasis on long-term development rather than winning (Balyi & Hamilton, 2004). USA Hockey’s adaptation of the LTAD model consists of seven developmental stages an athlete must complete (“USA Hockey,” n.d.-b). Focusing on the long-term rather than immediate development of athletes may enhance athletic growth. Nevertheless, limitations exist within the framework

(Ford et al., 2011; Lloyd & Oliver, 2012). The LTAD model focuses primarily on the physical growth of athletes but lacks consideration of mental and psychological development (Ford et al., 2011). Another limitation is the lack of longitudinal empirical evidence supporting the model, though the model has been based on empirical observations (Ford et al., 2011).

International Coaching Education

A review of the research in coach education at a global perspective is beyond the realm of this project. However, it is important to highlight the prominent frameworks. The most prominent coaching frameworks revealed in the research are the International Sport Coaching Framework (ISCF), the South African Coaching Framework, and the United Kingdom (UK) Coaching Framework. Although separate entities, the South African Coaching Framework, and the UK Coaching Framework are based on many of the concepts within the ISCF (ICCE et al., 2013). These frameworks have a strong emphasis on the coach, demonstrating a strong commitment and investment of the organizations to improve the effectiveness of coaches. These organizations understand the importance of alignment between individual sport, national, and international coach educational programs (ICCE et al., 2013). Alignment between the varying coach education programs provide better experiences for coaches, increased flexibility of application, and, at the international level, increased national funding (ICCE et al., 2013).

International Sport Coaching Framework

The ISCF was developed through the collaboration of the International Council for Coaching Excellence (ICCE) and the Association of Summer Olympic International Federations

(ASOIF) to provide sports organizations a framework to support the design, benchmarking, and refinement of coach education programs (ICCE et al., 2013). A partnership with Leeds Beckett University has provided the means to foster research in sport coaching and coach development (ICCE et al., 2013). It is important to understand that the ISCF is not a coach education program but a framework to help national sports organizations develop effective and consistent programs tailored to the coaches of each sport (ICCE et al., 2013).

The ISCF was developed due to challenges that existed within coach education, including inconsistent language and a lack of criteria to measure the development and qualification of coaches (ICCE et al., 2013). During the development and planning of the ISCF, it was vital to consider the diversity that exists between sports. Each sport has unique rules, structures, and traditions. A framework that could be applied between sports would be both practical and flexible (ICCE et al., 2013). This would allow national sports organizations in different sports to adapt the ISCF to their sport-specific coach education programs, providing consistent standards for coaches. A major focus of the framework was to develop competencies of coaches within six primary functions: set vision and strategy, shape the environment, build relationships, conduct practices and prepare for competition, read and reach to the “field”, and learn and reflect (Côté & Gilbert, 2009; ICCE et al., 2013).

A major component of the ISCF is the idea of coach development, which is more than an accumulation of knowledge (Moon, 2004). This highlights the importance of coach education programs that meet the individual needs of coaches. Through the lens of the ISCF, coach development consists of a combination of athletic experience, coaching experience, and formal

and informal education (Côté, Erickson, & Duffy, 2013). Understanding that coaches fall under the domain of adult learners, the ISCF classified its curriculum into two types of learning: situations mediated and unmediated (ICCE et al., 2013). Mediated learning refers to any learning that is assisted by another person or through a medium that simplified the content (Moon, 2004). Mediated learning can be further categorized as formal education and non-formal education (Nelson et al., 2006). Unmediated learning refers to any learning that is initiated by the coach (Moon, 2004).

The ISCF was developed with a strong focus on adult learning theory (ICCE et al., 2013). The ISCF stresses the importance of maximizing the learning opportunity of coaches. The framework suggests that coaches learn best when new knowledge is built on previous experience and abilities, relevant learning materials are utilized, they are encouraged to take responsibility for their learning, the learning environment is positive and supportive, they are given plenty of opportunity to practice and apply new information, and they experience some success and receive feedback to build competence (ICCE et al., 2013; Knowles, Holton III, & Swanson, 2014).

The ISCF acknowledges that many national sports organizations are approaching coach education through more mediated and formal learning situations but are not focusing on experiential learning (Carter & Bloom, 2009). Experiential learning is more complex than strictly learning from experience. It is intentional and can be mediated and unmediated (Moon, 2004). Mentorship has been shown to be an effective method in enhancing the skills, knowledge, creativity, resilience, and understanding of the mentee (Jones et al., 2009). The

value of mentoring within the realm of sport coaching and education has received more attention; however, there is still much to learn about its potential (Allison et al., 2016; Cushion et al., 2003).

The ISCF recommends that each sport and nation develop a clear picture of what long-term coach education looks like in the context of their situation. The framework was designed to be a roadmap for use by national governing bodies in the development of specific coach educational programs (ICCE et al., 2013).

UK Coaching Framework

The UK Coaching Framework was launched in 2008 to create a cohesive, ethical, inclusive, and valued coaching system to support and develop athletes in the UK (The National Coaching Foundation [TNCF], 2009). The aim of the UK Coaching Framework is to elevate coaching the United Kingdom to be the premier program in the world in terms of coach development (TNCF, 2009). A key to the UK's ability to provide an in-depth coach education program is the national funding of sports organizations. UK Sport is an organization that strategically allocates finances from the National Lottery and government funding (Cushion et al., 2003). UK Sport is focused on the development of sport in the United Kingdom, with a large focus on coach education (Cushion et al., 2010).

The UK Coaching Framework was used by the English Football Association (FA) to develop a coach educational and developmental program for its coaches, called The FA Coaching Strategy (Allison et al., 2016). The FA Coaching Strategy is based on five strategic

pillars: coaching leadership and strategy, coaching workforce, coach education and development, coaching as a profession, and research and benchmarking (Allison et al., 2016).

The FA committed to furthering coaching research to build a foundation for its coach education program. The primary focus of the FA's coaching research is to: support the coaching strategy with quality, evidence-based research, generate research that can be easily understood and effectively communicated, inform and shape policy to assist in the development and improvement of coaches and players, and provide research that can be practically applied across the sport of football (Allison et al., 2016). Research can be viewed through a model termed the Coaching Research Strategy Cycle, which increases the effectiveness of coaches through the benchmarking and practical application of research (Allison et al., 2016).

The FA coach education and development programs were built on the premise that coach education must be clearly connected to the context and requirements of the coach (Allison et al., 2016). With that, objectives of the coach education program were constructed, including the integration of reflective practice among coaches and a strong link between theoretical research and practical evidence (Allison et al., 2016). The program also focuses on the identification and recruitment of athletes who fit the criteria for coaching. The program aims to create learning environments that fall into the categories of formal, informal, and non-formal learning (Nelson et al., 2006). Many coach education programs are focused on formal learning and miss the opportunity for coaches to learn in environments outside the classroom, which can promote to the transfer of theory to practice (Cassidy, Jones, & Potrac, 2008). To achieve this, the FA coach educational and developmental programs identified the need for youth coaches to be educated

differently than higher-level coaches, a mentoring program offering practical support for coaches, and a structured coach development aspect (Allison et al., 2016).

The FA Youth Coach Educator (FAYCE) position was developed to support the development of youth level coaches, while integrating both formal and informal education (Allison et al., 2016; Nelson et al., 2006). The FAYCE position offers support through formal coach educational courses, on-field support during practices, and mentoring.

South African Coaching Framework

The South African Coaching Framework (SACF) is an adaption of the ISCF with a focus on long-term coach development in South Africa (SASCOC, 2011). The primary objective of the framework is to provide a systematic approach for the identification, recruitment, deployment, support, and recognition of coaches to create a stronger South African sport system (SASCOC, 2011). The SACF developed areas of focus to ensure effective long-term coach development: addressing the needs of coaches at each stage of their development, reflection on the processes by which coaches build their knowledge base and expertise, and provide coaches with the knowledge and skills needed to meet the needs of children, players, athletes, and adults at all stages of their development (SASCOC, 2011). The SACF provides a framework for each sport to develop an education program that is specific for its coaches.

The SACF was designed on the premise that both the coach and athlete must go through stages of development to build a stronger South African sport system (SASCOC, 2011). To achieve this, the SACF created a structure to recognize coaching competence and qualification. This model, based on the ISCF, divides coaches into three categories: pre-coach, volunteer

coach, and professional coach (SASCOC, 2011). Developing these three categories allowed the SACF to create standards for each level, as well as coach educational topics unique to the level of the coach. In addition to the three categories, the SACF created four levels of coaching: assistant coach, coach, senior coach, and master coach (SASCOC, 2011). These levels are determined based on completion of education and training.

Coach development is written into the roles of each category of the coach, offering several pathways for coaches to progress. Although the SACF does not specifically create a curriculum for coach development, it provides a framework for individual sports organizations. The SACF provides a model for delivery of education to ensure continuity between sports (SASCOC, 2011). Consistent with ISCF, the SACF recommends a combination of formal, non-formal, and informal learning, which is accomplished through the development of formal educational courses, support systems, coaching networks, and mentorships (SASCOC, 2011).

Expectancy-Value Theory

Athletic coaches come from diverse backgrounds with varying levels of formal education (Vargas-Tonsing, 2007). This diversity makes it difficult to form assumptions regarding previous education and experience. An understanding of how individuals are motivated can help national sports organizations create and implement educational programs that are valued and supported by coaches. The expectancy-value theory was used as a theoretical framework to explain coaches' beliefs about coach education programs and what they value to increase effectiveness and buy-in of such programs. The expectancy-value theory is based on the premise that an individual's choices, persistence, and performance can be explained by how well they

believe they will do the activity and how much they value the activity (Atkinson, 1964; Wigfield, Tonks, & Klauda, 2009). An individual's expectancies (i.e., beliefs about the future) and values (i.e., the perceived value of the task) are the driving constructs of the theory (Higgins, 2007; Rose & Sherman, 2007). Research on expectancy-value theory has shown that an individual's task value predicts task choice (Durik, Vida, & Eccles, 2006; Gorges, Schwinger, & Kandler, 2013). Understanding what coaches value is a major step in determining ways to increase support for coach education programs.

The first formal model of the expectancy-value theory was developed to help explain achievement-based behaviors (Atkinson, 1957, 1964). In his theory, Atkinson proposed that achievement behaviors be driven by motives, expectancies for success, and incentive values (Atkinson, 1957; Wigfield et al., 2009). The modern expectancy-value theory shares the foundational framework of Atkinson (1957) in that it links achievement performance, persistence, and choice to an individual's expectancy and value beliefs (Eccles et al., 1983; Wigfield et al., 2009). Though the foundational framework is similar, two major differences exist: the modern theory has a more robust definition of expectancy and value, allowing the theory to be linked to a wider array of determinants; and it has been tested in real-world scenarios (Wigfield et al., 2009).

Focusing on the two major constructs of expectancy-value theory can help provide a better understanding of the framework. Eccles et al. (1983) distinguished between expectancy for success and an individual's beliefs about their competency and ability. Expectancy for success refers to an individual's expectations for how well they will do on a future activity. An

individual's ability beliefs refer to their evaluation of the current ability and how they compare to others in a given task (Eccles et al., 1983; Wigfield & Eccles, 2000). These ability beliefs play a vital role in expectancy-value theory and exist in several motivational theories (Wigfield & Eccles, 2000). The term value is defined as the importance an individual attaches to a task or activity (Wigfield & Eccles, 2000). Values can be considered subjective because individuals assign a different value for the same activity or task. Wigfield and Eccles (2000) outlined four dimensions of task value: attainment value, intrinsic value, utility value, and cost. Attainment value refers to the personal importance one associates with doing well on a task or activity (Eccles & Wigfield, 2002). Intrinsic value refers to the enjoyment that an individual experiences from doing the task or activity (Eccles & Wigfield, 2002). Utility value refers to how useful an individual perceives a task or activity regarding achieving current or future goals (Eccles & Wigfield, 2002). Finally, cost refers to the negative aspects of engaging in a task or activity, usually regarding effort, time, and emotional cost (Eccles & Wigfield, 2002). The overall value one attaches to a task or activity is composed of a combination of these four dimensions.

Expectancies and values have been shown to be influenced by some factors: task-specific beliefs, ability beliefs, the perceived difficulty of a task, as well as an individual's goals, self-concept, and affective memories (Wigfield & Eccles, 2000). Additionally, competence and expectancy beliefs have been shown to relate positively to an individual's subjective values (Eccles & Wigfield, 1995; Wigfield & Eccles, 2002). The relationship between competency and expectancy with subjective value suggests that individuals value tasks more when they expect that they can succeed in the task (Wigfield & Eccles, 2002). Research has shown subjective task

value to be a predictor of both intentions and decisions to persist at activities in several domains (Durik et al., 2006; Eccles et al., 1983; Wigfield et al., 2009). This can be applied in the realm of coach education to help coaches find value in the education programs. From the perspective of coach education, expectancies and values can be applied to help understand what motivates coaches to begin an activity and their persistence that is shown over the course of time (Gorges & Kandler, 2012).

It is important to consider other factors that can influence an individual's expectancies, ability self-concepts, and subjective task values. Gender has been shown to affect the choice of individual's expectancies and values. Male athletes have been shown to have higher levels of goal setting, mental preparation, and used competitive strategies more than their female counterparts (Koh & Wang, 2015). Gender likely influences the way members of different gender groups view themselves and establish their values (Eccles et al., 1983). Though this research focused on the participation in sports, it may indicate gender differences within the realm of coaching.

Another factor that should be considered regarding expectancy and value is an individual's culture. Similar to gender, an individual's cultural socialization can influence their expectancies, values, and goals (Eccles, 2004). Culture has been shown to be a strong indicator of how much individuals' value education and learning (Hoffman, 2015). The choice is another component that can be influenced by culture. Western cultures tend to have more of an individualistic orientation, pursuing individual interests, whereas eastern cultures have more of a collectivist orientation, emphasizing the group before the individual (Hoffman, 2015; Triandis &

Suh, 2002). Gender and cultural socialization appear to influence an individual's expectations and values, which could have a direct impact on how they perceive coach education (Eccles et al., 1983).

Adult Learning

Though much of the research on the modern expectancy-value theory has been conducted inside the classroom with children and adolescents, the theory has been shown to predict domains outside the classroom with adults (Eccles & Wigfield, 2002; Gorges & Kandler, 2012). Learning and development are lifelong processes with continuous cognitive and non-cognitive development, though a traditional separation exists between the educational phase of childhood and a non-educational phase throughout adulthood. The concept of lifelong learning suggests that individuals develop their values, habits, and motivation over the course of their lives and in multiple educational settings (Gorges et al., 2013). Values, habits, and motivation are not fixed before reaching adulthood. Adult development is a progression but is not an extension of child development (Kanfer & Ackerman, 2004). Although learning habits are not fixed in childhood, the previous educational experience is a critical factor regarding participation in continuing education (Gorges et al., 2013). Before looking at studies that linked expectancy-value theory to adult learning, it is important to understand the major differences in development and motivation among children and adults. Adults are more likely to have better established and ingrained expectancies and values based on previous learning experiences from school and other learning contexts (Gorges & Kandler, 2012). Additionally, adults have completed more cognitive development and are typically more self-determined than children (Bardi, Lee, Hofmann-

Towfigh, & Soutar, 2009). When it comes to learning, adults tend to challenge new information more frequently than children (Gorges & Kandler, 2012). This behavior has been seen in soccer coaches when attending coach education programs (Allison et al., 2016). Even with differences in motivation, the expectancy-value theory can be applied to adult learners (Gorges & Kandler, 2012).

Expectancy-value theory has been used to explain adults' motivation to pursue new learning opportunities (Gorges & Kandler, 2012). Similar to findings with children, adult learners were motivated by the expectancy of success and the value in educational contexts (Gorges & Kandler, 2012). Expectancy-value theory has been applied to a college-aged population in a beginning weight training classes to understand motivation, behaviors, and achievement outcomes (Gao, 2008). Results indicated that importance and interest were significant predictors of an individual's desire to engage in weightlifting (Gao, 2008). Though this domain is not unique to coach education, interest and engagement are important factors when considering a coach's motivation to pursue and engage in education.

Limitations of Expectancy-Value Theory

Although the expectancy-value theory has been shown to be a useful approach in helping to understand individual's choice, persistence, and performance, it does come with some limitations. The most prominent limitation cited in the literature is the heavy reliance of individual self-reporting when determining the valuation of expectancies and outcomes (Eccles & Wigfield, 2002; Hoffman, 2015; Wigfield et al., 2009). Individuals have been shown to misinterpret their motives and often expose a personal bias (Wigfield & Eccles, 1992).

Additionally, norms and social standards may influence how some individuals respond to a self-report instrument (Wigfield, Cambria, & Eccles, 2012).

Coach Beliefs

Expectancy-value theory can help to provide an understanding of what motivates coaches to pursue coach education programs but may not provide insight into the lasting impact of the program (Hassanin & Light, 2014). Understanding coaches' beliefs and perceptions of how they learn can help gain an insight into the effectiveness of coach education programs (Hassanin & Light, 2014). Coaches who believe educational programs are valuable are likely to pursue coach education programs as a means to expand their knowledge (Durik et al., 2006; Eccles et al., 1983; Wigfield et al., 2009). With more national sports organizations requiring the completion of some form of coach education, the motivation behind a coach's engagement may become unclear. Requiring coaches to attend USA Hockey's coach education programs may help provide useful information to coaches but does not necessarily correlate to the lasting change in coach behavior (Hassanin & Light, 2014). Coaches' beliefs may be a key component to understanding if mandatory education programs are eliciting behavioral change (Erickson et al., 2008; Hassanin & Light, 2014; Lauer, Christopher, Firpo-Triplett, & Buchting, 2014).

Previous research has shown that experience and learning by doing is valued more than formal coach education (Erickson et al., 2008; Hassanin & Light, 2014). Such beliefs and values may influence coaches' attitudes toward formal coach education and may create a barrier to supporting such initiatives (Abraham & Martindale, 2006; Cushion, 2007). Adults have been shown to have established values and beliefs regarding education based on previous experiences

(Guo, Parker, Marsh, & Morin, 2015). In addition to past experience, culture has an impact on a coach's beliefs about coaching and coach education (Hassanin & Light, 2014).

Effective coach education programs change coaches' beliefs and perceptions which can lead to a change in the way they coach (Lauer et al., 2014). USA Hockey's Coaching Education Program may not elicit behavioral change in ice hockey coaches if their beliefs about coach education are negative (Hassanin & Light, 2014; Lauer et al., 2014). Coaches with a negative view of USA Hockey's may attend courses with a fixed mindset and be less likely to view information as valuable or pertinent (Yeager & Dweck, 2012).

Conclusion

This review highlighted several important considerations of coach education: providing an understanding of the role of the coach, an overview of coach education, and the prominent frameworks used within USA Hockey and internationally allows for the ability to make recommendations for future research. These considerations include the diversity of research on coach education protocols, the focus of coach educational frameworks in the United States and internationally, and the lack of program evaluation within the realm of coach education programs.

Though research within the realm of coach education has become more prominent in recent years, the broad range of focus makes it difficult to draw firm conclusions when reviewing multiple studies (Langan et al., 2013). Much of the research on coach education focuses on athlete outcomes of coach educational interventions, the benefit of effective and quality coaches,

and the lack of consistency of coach education programs (Côté & Gilbert, 2009; Langan et al., 2013; McCullick et al., 2009). Without true experimental designs or comparisons to other coach educational interventions, it is hard to draw any firm conclusions about the effectiveness of coach education programs (Trudel et al., 2010). More research on the impact of educational interventions on the outcomes of coaches may provide a better understanding of the effectiveness of such programs. Additionally, comparison studies between different coach educational interventions would help rule out that the intervention alone caused change (Trudel et al., 2010).

The concept of coach education programs and initiatives has become more prominent at both the national and international levels within the realm of athletics (Trudel et al., 2010). Although coach education programs are present at both the national and international levels, differences exist between the focus of American and international frameworks. Within the American Development Model, used by USA Hockey, coach education is one of the five principles that make up the framework. However, the overall focus is placed on athlete development (USOC, 2016). The reviewed international frameworks reviewed were developed on the premise of coach education. The International Sport Coaching Framework (ISCF), the South African Coaching Framework, and the United Kingdom (UK) Coaching Framework all focus on coach education as a pathway to athlete development and success (Allison et al., 2016; SASCOC, 2011; ICCE et al., 2013).

The reviewed frameworks were developed using research-based concepts and theories to provide a consistent foundation within each frame (Allison et al., 2016; SASCOC, 2011; USOC, 2016; ICCE et al., 2013). Though these frameworks were developed on sound theory, they have

not been evaluated following implementation. Evaluation is a process used to determine or fix the value of an educational program (Fitzpatrick, Sanders, & Worthen, 2004). Without a proper assessment process in place, it is hard to determine if the program is accomplishing what it set out to accomplish. The FA coach educational and developmental program has taken a proactive approach by not only promoting research in the field of coach education but also the idea of program evaluation (Allison et al., 2016). The rationale for not conducting evaluations of coach education programs may be diverse, but it has been suggested that financial concerns and program evaluations by *academics* have acted as barriers (Allison et al., 2016). A program can be based on a strong theoretical framework, but, without an evaluation process in place, its effectiveness cannot be determined (Fitzpatrick et al., 2004).

CHAPTER 3: METHODS AND PROCEDURES

Introduction

The primary goal of this descriptive study was to understand the beliefs of ice hockey coaches about coach education. To accomplish this, it was important to determine the topics that coaches find relevant, the reasons for pursuing or not pursuing coach education, the interest in pursuing additional coach education, and the beliefs of coach education that hockey coaches have. Understanding the beliefs coaches place on coach education programs provided information that can be used to evaluate and improve future programs.

Selection of Participants

Participants for the study were selected using purposive sampling. Purposive sampling provided the opportunity to investigate ice hockey coaches registered through USA Hockey. The use of purposive sampling allowed questionnaires to be distributed exclusively to hockey coaches who have attended a coach education clinic or training through USA Hockey.

USA Hockey divides the United States into thirteen districts, which include Atlantic, Alaska, Central, Massachusetts, Michigan, Mid-American, Minnesota, New England, New York, Northern Plains, Pacific, Rocky Mountain, and Southeastern ("USA Hockey," n.d.-a). Each district is assigned a coach-in-chief, a volunteer responsible for administering USA Hockey's coaching clinics. In addition to the district-level coach-in-chiefs, a national coach-in-chief oversees the collection of districts. USA Hockey's manager of the Coaching Education Program verbally committed to distributing the survey to all USA Hockey coaches but was not permitted

to follow-through after talking with USA Hockey executives. Following the change in protocol, the manager of Coaching Education Programs connected the researcher with coach-chiefs to help distribute the survey. Coach-in-chiefs distributed the survey to ice hockey coaches. An email explaining the research study was sent to each of the thirteen district coach-in-chiefs and also the national coach-in-chief. In total, seven coach-in-chiefs agreed to distribute the survey to coaches under their jurisdiction. The survey has been circulated to the following districts: Minnesota, New England, New York, Northern Plains, Pacific, Rocky Mountain, and Southeastern. Two weeks after distribution, only twelve coaches had completed the survey. The low response rate required an adjustment to the original protocol. Rather than relying solely on the coach-in-chiefs, a Google search was used to find youth hockey leagues in each state. For example, the search used key terms such as *Florida youth hockey*, *Pennsylvania youth hockey*. Once leagues were found, league directors and/or coach coordinators were contacted and asked to help distribute the survey. After two weeks, leagues who did not respond were sent a follow-up email. Approximately 600 youth hockey leagues were contacted to help distribute the survey, and 66 confirmed that the survey was sent out. Coach participation by district can be seen in Table 1.

Table 1: Coaches by USA Hockey District

USA Hockey District	Male (<i>n</i> = 369)	Female (<i>n</i> = 28)	Total (<i>N</i> = 397)	Percent (%)
Alaska	1	0	1	0.5%
Atlantic	7	0	7	2%
Central	58	3	61	15%
Massachusetts	1	1	2	0.5%
Michigan	7	2	9	2%
Mid-American	34	1	35	9%
Minnesota	36	3	39	10%
New England	25	0	25	6%
New York	3	0	3	1%
Northern Plains	76	12	88	22%
Pacific	19	1	20	5%
Rocky Mountain	77	4	81	20%
Southeastern	25	1	26	7%

*13 participants did not answer this question.

In total, 477 hockey coaches consented to take the questionnaire. After removing 67 partially completed questionnaires (less than 50% of the questionnaire completed), a sample size of 410 remained. USA Hockey was unable to provide the percentage of its nearly 60,000 coaches that are youth coaches. The sample was approximately 1% of all USA Hockey coaches, though that number would be higher if it were possible to determine the number of youth coaches. The breakdown of the age and gender of the participants can be seen in Table 2. The ethnicity/race of the participants can be seen in Table 3.

Table 2: Age and Gender of Coaches

Age	Male (<i>n</i> = 374)	Female (<i>n</i> = 28)	Total (<i>N</i> = 402)
18-29	39	7	11.5%
30-39	87	9	24%
40-49	174	8	45%
50-59	66	4	17.5%
60+	8	0	2%

Table 3: Ethnicities/Race and Gender of USA Hockey Coaches

Ethnicity/Race	Male (<i>n</i> = 371)	Female (<i>n</i> = 27)	Total (<i>N</i> = 398)
Non-Hispanic/White	351	27	95%
Latino/Hispanic American	6	0	1.5%
Black/Afro-Caribbean/African American	2	0	0.5%
East Asian/Asian American	1	0	0.25%
South Asian/Indian American	1	0	0.25%
Native American/Alaskan Native	1	0	0.25%
Other	9	0	2.25%

*12 participants did not respond to this question.

Instrumentation

The quantitative data was collected using the Coaching Education Questionnaire with the permission of Dr. Tiffanye Vargas, who used the instrument to collect new coaches' perceptions of education (Vargas-Tonsing, 2007). The questionnaire has been used in two different studies to assess coaches' perceptions of coach education programs (Kubayi et al., 2016; Vargas-Tonsing, 2007).

The questionnaire consisted of four sections, which include coaches' interests in educational topics, reasons and barriers for pursuing coaching education, beliefs of and the likelihood of pursuing coaching education, and demographics (Vargas-Tonsing, 2007). The

questionnaire contained 55 questions. Sections were divided into subscales using VARIMAX rotation conducted by the author of the instrument (Vargas-Tonsing, 2007).

Section One: Coaches' Preferences of Educational Topics. The aim of section one was to determine the educational topics that coaches preferred to learn about. Section one was comprised of sixteen themes and participants were asked to rate how helpful each subject was using a Likert scale of 1 (Not Helpful) to 5 (Extremely Helpful). Topics were divided into three subscales: advanced topics, interpersonal coaching skills, and physical aspects of coaching.

Advanced Topics Subscale included stress management, sport psychology, addictive behavior, gender differences, drugs in sports, and sport nutrition. These include topics that are related to sport, but at a higher level than interpersonal coaching skills and physical aspects.

Interpersonal Coaching Skills Subscale included communication with athletes, communication with parents, goal setting, motivation techniques, and character building. These include topics that can be associated with the way coaches communicate with athletes and parents.

Physical Aspects of Coaching Subscale included advanced first aid, advanced instructional drills, and conditioning drills. These include topics that are related to the physical components of sport. Visualization was not included because it was loaded on multiple factors (Vargas-Tonsing, 2007). Building trust was added to the original questionnaire and included with interpersonal coaching skills.

Section Two: Reasons and Barriers for Pursuing Coaching Education. Section two was comprised of nine topics and participants were asked to rate how important each topic was for

pursuing coach education using a Likert scale of 1 (Not Important) to 5 (Extremely Important). Section two was divided into two subscales by the original author: reasons to pursue coach education and barriers towards coach education.

Reasons to Pursue Coach Education Subscale included league requirement, relevant topics, the desire to coach higher levels, monetary compensation, convenience, and insurance. These include reasons that coaches would decide to pursue coach education.

Barriers to Coach Education Subscale included the cost of course, the time required, and online availability. These include barriers that coaches may face in pursuing coach education.

Section Three: Beliefs of and Likelihood of Pursuing Coaching Education. Section three included seventeen questions used to determine coaches' beliefs of coach education and likelihood to pursue further education. The first nine questions, excluding question eight, were divided into two subscales: coach education pursuit and coach education beliefs. These eight questions had a scale of 1 (No), 2 (Maybe), 3 (Yes). Question eight was excluded because the scale of the question was inconsistent with the other eight questions.

Pursuit of Coach Education Subscale included questions associated with the pursuit of coach education. These questions asked about different factors that would contribute to the pursuit of coach education. This subscale consisted of three questions: do you plan on pursuing further coach education, do you plan on pursuing further coaching education online, and are you more likely to pursue coaching education if it is available online?

Coaches' Beliefs of Coach Education Subscale included questions associated with coaches' beliefs regarding coach education. These questions asked about coaches' beliefs

relating to the implementation of coach education, such as whether coach education should be mandatory. This subscale consisted of five questions: is coaching education important for sport coaches, should coaching education be compulsory for youth sport coaches, should coaching certification be obligatory for all sport coaches, should coaches be expected to pursue coach education, and do you find value in coach education?

The remaining questions from section three provided additional information regarding additional coaching certification and coaching philosophy. The original questionnaire, before the addition of the questions, had an alpha coefficient of 0.65 (Vargas-Tonsing, 2007).

Section Four: Demographics. Section four contained demographic information for the coaches to help gain an understanding of additional influences to the coaches' perspectives. The questionnaire was modified slightly to cater to the specific population. A few questions were added to determine what district the coach was a part of, what level of hockey they coached, ethnic background, and whether they were a volunteer or paid coach. The questionnaire in its entirety can be found in Appendix B.

Procedures

The study was conducted using a questionnaire to collect quantitative data. Before reaching out to any league directors or coaches, IRB approval was received on October 24, 2016. The IRB Outcome Letter can be seen in Appendix A. The Coaching Education Questionnaire was modified with permission from Dr. Tiffanye Vargas. Data collection was composed of three primary steps: working with USA Hockey and youth hockey leagues to distribute the questionnaire, waiting for the participants to respond to the questionnaire, and preparing the data

for analysis. The first step in the data collection process was to obtain permission with USA Hockey to help distribute the questionnaire. The purpose of this move was to have the questionnaire sent to the coaches from a familiar contact through USA Hockey as opposed to an unfamiliar doctoral candidate. Each coach-in-chief was contacted individually to ask if they were willing to distribute the questionnaire to coaches. Coach-in-chiefs who did not respond after ten days were contacted again. The coach-in-chiefs who agreed to help were sent a brief description of the research and a link to the questionnaire to distribute to coaches under their jurisdiction. In total, seven coach-in-chiefs agreed to distribute the questionnaire. The coach-in-chiefs who decided to send the questionnaire were asked to confirm after they had distributed the email. The low number of responses following distribution of the survey required an adjustment to the procedure. Approximately 600 youth hockey leagues were identified, and league directors and/or coach coordinators were contacted and asked to help distribute the survey.

The first question of the questionnaire was a detailed explanation of the research used to obtain consent from the participant. If the participant provided informed consent, they were sent to the beginning of the questionnaire; if the participant declined to provide consent, they were sent to the end of the questionnaire.

The final step was preparing the data for analysis. Raw data were imported from Qualtrics to Microsoft Excel. Following the import, responses with less than 50% completion were removed ($n = 64$), and a coding key was created.

Data Analysis

Section One: Coaches' Interests in Educational Topics was used to answer the research question, “*What topics do coaches find most helpful?*” A repeated measures MANOVA was used to determine the overall differences between the subscales: advanced topics, interpersonal coaching skills, and physical aspects of coaching.

Section Two: Reasons and Barriers for Pursuing Coaching Education were used to answer the research question, “*What are reasons and barriers for attending or not participating in a coach education program?*” A paired sample t-test was used to examine the difference between the subscales: reasons to pursue coach education and barriers towards coach education.

Section Three: Beliefs of and Likelihood of Pursuing Coaching Education was used to answer the research question, “*What are ice hockey coaches' beliefs of coach education?*”. A paired sample t-test was also used to examine the difference between the subscales: coach education pursuit and coach education beliefs. The nine questions within section three that did not fall into either subscales were analyzed using descriptive statistics.

Section Four: Demographics included fourteen questions that asked general background information and demographics. Descriptive statistics were used to analyze this section.

Summary

This study used a questionnaire to gather descriptive data. The design of the study allowed for a larger sample size than a qualitative design. The modified Coaching Education

Questionnaire was used to gather data from ice hockey coaches. Gathering data from only hockey coaches permitted the study to focus on USA Hockey's coach education program.

CHAPTER 4: RESULTS

Introduction

The purpose of this study was to investigate ice hockey coaches' beliefs and preferences about coach education programs. Youth hockey coaches registered through USA Hockey were surveyed using an online questionnaire. This chapter presents the results of the data analysis to answer the three research questions.

Descriptive Statistics

The questionnaire consisted of four sections: coaches' interests in educational topics, reasons and barriers for pursuing coaching education, beliefs of and the likelihood of pursuing coaching education, and demographics. The first three sections were used to answer the three research questions.

Section One: Coaches' Preferences in Educational Topics.

Sixteen topics were included, and participants were asked to rate how helpful each topic was using a Likert scale of 1 (Not Helpful) to 5 (Extremely Helpful). Results from the questionnaire found that of the 16 topics included, ice hockey coaches preferred to learn more about *communication with athletes* ($M = 4.27, SD = 0.90$), *advanced instructional drills* ($M = 4.03, SD = 0.96$), and *motivational techniques* ($M = 4.02, SD = 0.98$). Ice hockey coaches were least interested in learning about *drugs in sports* ($M = 2.85, SD = 1.24$) and *addictive behaviors* ($M = 2.89, SD = 1.18$). Complete results can be seen in Table 4.

Table 4: Coaches' Preferences for Education Topics

Topic	<i>N</i>	Mean	Standard Deviation
Communication with athletes	409	4.27	0.90
Advanced instructional drills	410	4.03	0.96
Motivational techniques	409	4.02	0.98
Building trust	407	4.01	0.97
Communication with parents	409	3.99	1.04
Character building	410	3.90	1.01
Goal setting	408	3.78	0.97
Visualization	409	3.73	1.07
Sport nutrition	409	3.63	1.15
Conditioning drills	410	3.62	1.14
Sport psychology	407	3.61	1.11
Advanced first aid	408	3.38	1.08
Stress management	410	3.19	1.17
Gender differences	410	3.04	1.18
Addictive behaviors	409	2.89	1.18
Drugs in sport	406	2.85	1.24

Section Two: Reasons and Barriers for Pursuing Coaching Education.

Nine reasons were included, and participants were asked to rate how important each reason was using a Likert scale of 1 (Not Important) to 5 (Extremely Important). Ice hockey coaches were most likely to pursue further education if the program contained *relevant topics* ($M = 4.01$, $SD = 0.91$), had *online availability* ($M = 3.97$, $SD = 1.04$), and was *convenient* ($M = 3.80$, $SD = 1.08$). *Monetary compensation* ($M = 2.14$, $SD = 2.14$) and *insurance* ($M = 2.68$, $SD = 1.30$) had the least impact on ice hockey coaches' pursuit of further education. Results can be seen in Table 5.

Table 5: Reasons Influencing Coaches to Pursue Coach Education

Reason	<i>N</i>	Mean	Standard Deviation
Relevant Topics	406	4.01	0.91
Online availability	406	3.97	1.04
Convenience	405	3.80	1.08
Time required	405	3.74	1.08
USA Hockey Requirement	406	3.63	1.23
Desire to coach higher levels	404	3.50	1.23
Cost of course	404	3.14	1.23
Insurance	406	2.68	1.30
Monetary compensation	403	2.14	1.27

Section Three: Beliefs of and Likelihood of Pursuing Coaching Education.

Eight questions were included, and participants were asked to answer on a scale of 1 (No), 2 (Maybe), 3 (Yes). Of the questions regarding coaches' beliefs about coach education, *is coaching education important for sports coaches* ($M = 2.93$, $SD = 0.30$), *do you find value in coach education* ($M = 2.89$, $SD = 0.38$), and *should coaching education be mandatory for youth sport coaches* ($M = 2.78$, $SD = 0.54$) were rated highest by ice hockey coaches. *Do you plan on pursuing further coach education* ($M = 2.62$, $SD = 0.63$) and *do you plan on pursuing further coach education on-line* ($M = 2.55$, $SD = 0.66$) were rated lowest by coaches. Results can be seen in Table 6.

Table 6: Coaches' Beliefs about Coach Education

Question	<i>N</i>	Mean	Standard Deviation	Yes	No	Maybe
Is coaching education important for sport coaches?	406	2.93	0.30	1%	4%	95%
Do you find value in coach education?	405	2.89	0.38	2%	7%	91%
Should coaching education be mandatory for youth sport coaches?	405	2.78	0.54	6%	10%	84%
Should coaching certification be mandatory for all sport coaches?	406	2.64	0.67	11%	14%	75%
Should coaches be expected to pursue coach education?	406	2.63	0.68	11%	15%	74%
Are you more likely to pursue coaching education if it is available online?	406	2.63	0.66	10%	18%	72%
Do you plan on pursuing further continuing education?	405	2.62	0.63	8%	22%	70%
Do you plan on pursuing further coaching education online?	406	2.55	0.66	9%	26%	65%

Testing the Research Questions

Research Question One

Question 1: What topics do ice hockey coaches believe to be most helpful in a coach education program?

The first research question examined the results of section one of the questionnaire.

Topics were divided into three subscales: *advanced topics*, *interpersonal coaching skills*, and *physical aspects of coaching*.

A repeated measures MANOVA was used to determine if differences existed between the three subscales. Of the three subscales, ice hockey coaches preferred topics within *interpersonal coaching skills* ($M = 3.99$, $SD = 0.76$) the most, followed by *physical aspects* ($M = 3.67$, $SD =$

0.80) and *advanced topics* ($M = 3.20, SD = 0.90$). Results can be seen in Table 7. There was a statistical difference between the three subscales, $F(2, 390) = 253.04, p < .0005$; Wilke's Λ .435, partial $\eta^2 = .57$. These findings indicated a significant difference existed when each of the subscales was compared against each other. Results can be seen in Table 8.

Table 7: Educational Subscales

Subscale	<i>N</i>	Mean	Standard Deviation	Std. Error
Interpersonal Coaching Skills	392	3.99	0.76	.046
Physical Aspects	392	3.67	0.80	.038
Advanced Topics	392	3.20	0.90	.041

Table 8: Comparison Between Subscales

Subscale (a)	Subscale (b)	Mean Difference (a-b)	Std. Error	Sig. ^b	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Advanced Topics	Interpersonal Coaching Skills	-.794*	.035	.000	-.864	-.725
Advanced Topics	Physical Aspects	-.469*	.040	.000	-.548	-.391
Interpersonal Coaching Skills	Advanced Topics	.794*	.035	.000	.725	.864
Interpersonal Coaching Skills	Physical Aspects	.325*	.038	.000	.250	.399
Physical Aspects	Advanced Topics	.469*	.040	.000	.391	.548
Physical Aspects	Interpersonal Coaching Skills	-.325*	.038	.000	-.399	-.250

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

Research Question Two

Question 2: What are coaches' reasons and barriers for attending or not attending coach education?

A paired sample t-test was conducted to determine the overall differences between the two subsections: *reasons to pursue coaching education* and *barriers towards coaching education*. There was a statistical difference between the two subscales, $F(1, 396) = 54.39, p < .0005$; Wilks's $\Lambda = .879$, partial $\eta^2 = .12$. *Reasons to pursue coaching education* ($M = 3.62, SD = 0.88$) was rated as more important than *barriers towards coaching education* ($M = 3.29, SD = 0.63$) by coaches. Results of the paired sample t-test can be seen in Table 9.

Ice hockey coaches were most likely to pursue further education programs that contained relevant topics ($M = 4.01, SD = 0.91$), had online availability ($M = 3.97, SD = 1.04$), and was convenient ($M = 3.80, SD = 1.08$). Monetary compensation ($M = 2.14, SD = 2.14$) and insurance ($M = 2.68, SD = 1.30$) had the least impact on ice hockey coaches' pursuit of further education. Programs that do not include relevant topics, are not available online, and/or are not convenient may create barriers for coaches.

Table 9: Reasons to Pursue vs. Barriers Towards Coach Education

	Mean	Standard Deviation	Std. Error Mean	95% Confidence Interval of the Difference		<i>T</i>	<i>Df</i>	Sig. (2 tailed)
				Lower	Upper			
Reasons to Pursue- Barriers to Pursue	-.33	0.89	0.05	-.42	-.24	-7.38	396	.000

Research Question Three

Question 3: What are ice hockey coaches' beliefs about coach education?

A paired sample t-test was conducted to determine the overall differences between the two subsections: *coaching education pursuit* and *coaching education beliefs*. There was a statistical difference between the two subscales, $F(1, 402) = 253.04, p < .0005$; Wilke's Λ .435, partial $\eta^2 = .09$. *Coaching education beliefs* ($M = 2.77, SD = 0.38$) was rated higher than *coaching education pursuit* ($M = 2.60, SD = 0.48$) by coaches. Results of the paired sample t-test can be seen in Table 10.

The questions regarding coaches' beliefs about coach education rated highest by ice hockey coaches were, *is coaching education important for sports coaches* ($M = 2.93, SD = 0.30$), *do you find value in coach education* ($M = 2.89, SD = 0.38$), and *should coaching education be mandatory for youth sport coaches* ($M = 2.78, SD = 0.54$). Questions rated lowest by coaches were, *do you plan on pursuing further coach education* ($M = 2.62, SD = 0.63$) and *do you plan on pursuing further coach education on-line* ($M = 2.55, SD = 0.66$). These findings indicated

that coaches believed that educational programs were important, but they were less likely to pursue such programs.

Table 10: Education Pursuit vs. Education Beliefs

	Mean	Standard Deviation	Std. Error Mean	95% Confidence Interval of the Difference		<i>T</i>	<i>Df</i>	Sig. (2 tailed)
				Lower	Upper			
Education Pursuit- Education Beliefs	-.17	0.52	0.03	-.23	-.12	-6.20	402	.000

Further Analysis

Ice hockey coaches responded to nine additional questions which provided a deeper understanding of their beliefs about coaching and coaching education. After attending a USA Hockey coach education clinic, 82% of coaches reported changing the way they coached. Though only 62.5% of coaches reported having all the information needed to be a successful coach. Ninety-eight percent of coaches felt that coaching was a form of teaching. Complete results of coaches' perceptions of coaching education can be seen in Table 11.

Table 11: Perceptions of Coach Education

Question	Yes	No	Sometimes	N
Have you changed the way that you coach after attending a USA Hockey coach education clinic?	82%	18%	N/A	406
Have you participated in coach education outside of USA Hockey?	52%	48%	N/A	406
Do you have all the information needed to be a successful coach?	62.5%	37.5%	N/A	403
Do you view coaching as a form of teaching?	98%	2%	N/A	410
Does being a former athlete make you a good coach?	24%	18%	58%	402

Ice hockey coaches were asked what factors were associated with buying-in to a coaching education program. *Content of program* (85%) and *credibility of facilitator* (59%) were the factors coaches reported as having the greatest influence on buy-in. Coaches reported *reliability* (34%) as the lowest factor. Complete results can be seen in Table 12.

Table 12: Factors Associated with Buying-in to a Coach Education Program

What factors are associated with buying-in to a coaching education program?	%	N = 409
Content of Program	85%	347
Credibility of Facilitator	59%	240
Format (online, face-to-face, etc.)	49%	200
Reason for Attending	40%	167
Reliability	34%	139
Other	6%	26

Coaches were asked what educational methods they used in their pursuit of coaching education. The top responses were *learn by doing* (74%), *face-to-face coach education* (72.5%),

and *being a player* (68%). The least utilized methods were *formal education* (26.5%) and *through a mentor* (50%). Coaches were then asked what the most effective education method was used to teach them to coach. The top methods reported by coaches were *learn by doing* (25.5%), *face-to-face coach education* (23.5%), and *being a player* (21%). The least effective methods were *formal education* (2%) and *coach education online* (8%). Complete results can be seen in Table 13.

Table 13: Coach Education Methods Used by Ice Hockey Coaches

	Which of the following educational methods did you utilize in your coaching education? (N = 410)		Which educational method was most effective at teaching you to coach? (N = 409)	
Learn by Doing	74%	303	25.5%	105
Coach Education Face-to-Face	72.5%	297	23.5%	96
As a Player	68%	278	21%	87
Coach Education Online	67%	275	8%	34
Through a Mentor	50%	205	17%	71
Formal Education	26.5%	109	2%	8
Other	5%	19	2%	8

The final question in this section asked coaches “what best defines success as a coach?” The top responses included character development (43.5%), athletic development (21.5%), and life lessons (16%). Wins (0.5%) and motivation of players (5%) received the lowest response by coaches. Complete results can be seen in Table 14.

Table 14: What Defines Success as a Coach

What best defines success as a coach?	%	<i>N</i> = 409
Character Development	43.5%	178
Athletic Development	21.5%	88
Life Lessons	16%	65
Other	8%	32
Athlete Self-Esteem	5.5%	23
Motivation of Players	5%	21
Wins	0.5%	2

Demographics

The final section of the questionnaire asked ice hockey coaches demographic questions to gain a better understanding of the sample. Of the 409 coaches who responded, 288 were volunteer coaches (70.5%), 76 were paid part-time coaches (18.5%), and 45 were paid full-time coaches (11%). Results can be seen in Table 15.

Table 15: Type of Coach

Type of Coach	%	<i>N</i> = 409
Volunteer	70.5%	288
Part-time Paid	18.5%	76
Full-time Paid	11%	45

Of the surveyed coaches, 73% ($n = 298$) had coached a sport other than hockey. The most prominent sports other than hockey were baseball (55%), soccer (45%), and American football (24%). The least prominent sports were rugby (2%) and track and field (7%). Complete results can be found in Table 16.

Table 16: Other Sports Coached

What other sports have you coached?	%	<i>N</i> = 298
Baseball	55%	165
Soccer	45%	135
Football (American)	24%	71
Other	16%	48
Lacrosse	14%	41
Basketball	12%	36
Track and Field	7%	22
Rugby	2%	135

Of the surveyed coaches, 90% (*n* = 365) played or currently play ice hockey. Seventy-five percent of coaches played 11 or more years of hockey. Complete results can be seen in Table 17.

Table 17: Years as a Player

Years Played	%	<i>N</i> = 365
1-3	6.5%	24
4-6	6%	22
7-10	12.5%	46
11+	75%	273

The coaches who were current or former players played at various levels. *High school* (20%), *college* (18%), *junior hockey* (16%), and *youth hockey* (16%) had the highest number of responses. *Adult league* (11%) and *professional hockey* (11%) were the levels with the lowest response rates. Complete results can be seen in Table 18.

Table 18: Highest Level of Hockey as a Player

What was the highest level of ice hockey that you played?	%	<i>N</i> = 364
High School	20%	73
College	18%	64
Junior (20 and under)	16%	60
Youth Hockey (18 and under)	16%	58
Professional	11%	41
Adult League	11%	40
Other	8%	28

The current coaching level of the participants can be seen in Table 19. Youth hockey (83.5%), comprised of *Mite* (15.75%), *Squirt* (15.5%), *Peewee* (19%), *Bantam* (17%), *Midget Minor* (3%), *Midget Major* (6%), and *high school* (10%), had the highest number of coaches.

Table 19: Current Coaching Level

What age level do you coach?	%	<i>N</i> = 407
Mite (8 and under)	15.75%	64
Squirt (10 and under)	15.5%	63
Peewee (12 and under)	19%	76
Bantam (14 and under)	17%	70
Midget Minor (16 and under)	3%	13
Midget Major (18 and under)	6%	25
High School	10%	41
Junior (20 and under)	1.5%	6
Professional	0%	0
Adult	1%	3
Other	11.25%	46

The participants reported the number of years in coaching. The categories included *1-3 years* (29%), *4-6 years* (23%), *7-10 years* (19%), *11-14 years* (10%), and *15 or more years* (19%). Results can be seen in Table 20.

Table 20: Years as a Coach

Years as a Coach	%	<i>N</i> = 407
1-3	29%	119
4-6	23%	94
7-10	19%	76
11-14	10%	42
15+	19%	76

Coaches were asked their current level of USA Hockey Coach Education Certification. The levels with the highest number of coaches were *CEP4* (34.5%), *CEP3* (27%), and *CEP1* (16.75%). *Other* and *CEP High Performance* were the lowest with only one coach each. Complete results can be seen in Table 21.

Table 21: Current USA Hockey Coach Education Certification

Current Level of Certification (USA Hockey)	%	<i>N</i> = 407
USA Safe Sport	0.75%	3
CEP1	16.75%	68
CEP2	13%	53
CEP3	27%	110
CEP4	34.5%	140
CEP5	7.5%	31
CEP High Performance	0.25%	1
Other	0.25%	1

Coaches were asked their highest level of completed education. *Undergraduate degree* (55.5%), *master's degree* (18%), and *some college* (16.5%) had the most responses. *Other* (1.5%) and *high school* (3.25%) had the fewest responses. Complete results can be seen in Table 22.

Table 22: Coach Level of Education

Highest Level of Education	%	<i>N</i> = 405
Undergraduate Degree	55.5%	225
Master's Degree	18%	73
Some College	16.5%	67
Doctorate/Professional Degree	5.25%	21
High School	3.25%	13
Other	1.5%	6

Summary

This chapter used the results of the Coaching Education Questionnaire taken by USA Hockey coaches to help answer the three research questions. The questionnaire also provided information that allowed for further analysis and demographics to better understand ice hockey coaches.

Results from section one helped to answer the first research question: *What topics do coaches find most useful?* Coaches indicated that they found topics which fell under the subscale *interpersonal coaching skills* as the most useful, which differed significantly from the other two subscales. Results from section two were used to answer the second research question: *What are coaches' reasons and barriers for attending or not attending coach education?* Coaches responses indicated that *reasons to pursue coaching education* differed significantly from *barriers towards coaching education*. This indicated that relevant topics, USA Hockey requirement, and desire to coach at a higher level outweighed any barriers for attending. Coaches indicated programs that did not include relevant topics, were not available online, and were not convenient could act as barriers for pursuing further education. Results from section

three were used to answer the third research question: *What are ice hockey coaches' beliefs about coach education?* Though coaches indicated that coach education programs were important, they were less likely to pursue further education. This was observed because coaches' beliefs about coach education were stronger than their likelihood to pursue further coaching education.

CHAPTER 5: DISCUSSION

Introduction

The purpose of this study was to investigate ice hockey coaches' beliefs and perceptions of coach education. This chapter provides a summary of the study, a discussion of the findings, implications for practice, recommendations for future research, limitations, and conclusions. The following sections will expand on the results reported in Chapter 4 and provide a practical application of the findings.

Summary of the Study

The goal of this study was to understand ice hockey coaches' beliefs and preferences regarding coach education programs. USA Hockey coach-in-chiefs and youth hockey league directors were used to distribute the Coaching Education Questionnaire (Vargas-Tonsing, 2007). In total, 477 hockey coaches consented to take the questionnaire, and after removing 67 partially completed surveys (less than 50% completed), a sample size of 410 remained.

The questionnaire was made up of 55 questions divided into four sections. The first three sections (coaches' preferences of educational topics, reasons and barriers for pursuing coaching education, and beliefs of and the likelihood of pursuing coaching education) contained questions that were used to answer the three research questions. The fourth section asked demographic questions to better understand the sample of coaches. The three research questions in the study were:

1. What topics do ice hockey coaches believe to be most helpful in a coach education program?
2. What are reasons and barriers for attending or not participating in a coach education program?
3. What are ice hockey coaches' beliefs about coach education?

The research questions were addressed in the first three sections of the questionnaire. The questions within each section were divided into subscales to help answer the research questions. The first research question was investigated using section one of the questionnaire (coaches' interests in educational topics) which was divided into three subscales: advanced topics, interpersonal coaching skills, and physical aspects of coaching. A repeated measures MANOVA was used to determine the differences between the three subscales. The second research question was investigated using section two (reasons and barriers for pursuing coaching education) which was divided into two subscales: reasons to pursue coaching education and barriers towards coaching education. A paired sample t-test was conducted to determine the overall difference between the two subscales within section two. The third research question was investigated using eight questions from section three (beliefs of and the likelihood of pursuing coaching education) which was divided into two subscales: coaching education pursuit and coaching education beliefs. A paired sample t-test was conducted to determine the overall difference between the two subscales within section three.

Discussion of the Findings

Previous researchers have investigated athletic coaches' perceptions and beliefs of coach education (Kubayi et al., 2016; Vargas-Tonsing, 2007). The goal of this study was to determine the beliefs and perceptions of hockey coaches on coach education programs, specifically the USA Hockey Coaching Education Program that is required to be a hockey coach in the United States.

Research Question One

What topics do ice hockey coaches believe to be most helpful in a coach education program?

The findings from this study identified the topics hockey coaches believed were most helpful in a coach education program. Hockey coaches identified communication with athletes, advanced instructional drills, motivational techniques, building trust, and communication with parents as the most helpful topics. These findings were consistent with previous research. Vargas-Tonsing (2007) surveyed American youth football, baseball, basketball, soccer, softball, and volleyball coaches and found the most helpful topics were communication with parents, communication with athletes, and advanced instructional drills. Similarly, Kubayi et al. (2016) surveyed South African boxing, cricket, netball, rugby, soccer, and swimming coaches and found the most helpful topics were motivational techniques, advanced instructional drills, and advanced first aid. Though the most helpful topics were not identical, similarities existed between the three studies.

Topics were divided into subscales to identify whether differences existed between groups, which included advanced topics, interpersonal coaching skills, and physical aspects of coaching. A significant difference existed between each of the three subscales. Topics within interpersonal coaching skills (communication with athletes, communication with parents, goal setting, motivation techniques, and character building) were perceived as the most helpful of the three subscales. Topics within physical aspects of coaching (advanced first aid, advanced instructional drills, and conditioning drills) were perceived as the second most helpful, and facets within advanced topics (stress management, sport psychology, addictive behavior, gender differences, drugs in sports, and sport nutrition) were perceived as the least helpful. Vargas-Tonsing (2007) indicated similar findings, with advanced topics significantly different than interpersonal coaching skills and physical aspects of coaching. She did not find interpersonal skills to be significantly different from physical aspects of coaching (Vargas-Tonsing, 2007).

The high rating of importance placed on interpersonal coaching skills can be explained using the very definition of coaching. Côté and Gilbert (2009) developed an integrative definition of coaching comprised of three components: coaches' knowledge, athlete outcomes, and coaching contexts. A major component of coaches' knowledge is the importance of continually developing interpersonal knowledge and skills to communicate appropriately and effectively (Côté & Gilbert, 2009). A coach's potential to impact the physical, mental, and athletic development of athletes can be influenced by their ability to communicate (Langan et al., 2013).

The high rating of importance placed on the physical aspects of coaching was not surprising. Côté and Gilbert (2009) defined athlete outcomes as a key component in their definition of coaching effectiveness. The development of an athlete's competence, confidence, connection, and character have been identified as factors that can influence athlete outcomes (Côté & Gilbert, 2009). Through the use of effective instructional drills, coaches can improve the competence and confidence of athletes (Côté & Gilbert, 2009). Additionally, sport experience, through practice and games, has been shown to encourage positive character development when implemented by an effective coach (Vargas-Tonsing, 2007).

While the consistencies between the most preferred topics among coaches were not surprising, what was unanticipated were the topics that coaches found to be least helpful. Though the order was not identical, in each study coaches perceived gender differences, addictive behaviors, and drugs in sports as the least helpful topics (Kubayi et al., 2016; Vargas-Tonsing, 2007). The low number of coaches with a perception of helpfulness for gender differences, addictive behaviors, and drugs in sports may be a result of the demographics of the participants and the level in which they coach. The low preference for gender differences was likely due to the low number of female coaches; only 7% of hockey coaches were female. The perception that addictive behaviors and drugs in sports were of little help was likely because 86% coached only youth athletes. Coaches may believe that addictive behaviors and drugs do not occur in youth sports, which could explain the perception of low importance (Vargas-Tonsing, 2007). Hockey coaches rated stress management as the fourth least helpful topic, which was consistent with previous research (Kubayi et al., 2016; Vargas-Tonsing, 2007). These

findings were surprising due to the influence coaches have on stress levels of athletes (Thelwell, Wagstaff, Rayner, Chapman, & Barker, 2016). Several situations exist in a sport that can cause stress among athletes; poor communication and poor relationships with coaches have been cited as significant contributors by athletes (Thelwell et al., 2016).

Research Question Two

What are reasons and barriers for attending or not participating in a coach education program?

The findings from this study identified the reasons, and barriers hockey coaches had for attending or not attending coach education programs. Hockey coaches identified relevant topics, online availability, and convenience as the most important factors influencing the attendance of coach education programs. Vargas-Tonsing (2007) found that youth coaches identified league requirement relevant topics, and online availability as the most important reasons. South African coaches identified a desire to coach at a higher level, relevant topics, and league requirement as the most important reasons (Kubayi et al., 2016). Relevant topics were the only reason to be identified by all three studies as one of the most important factors (Kubayi et al., 2016; Vargas-Tonsing, 2007).

The most important factors (relevant topics, online availability, and convenience) identified by hockey coaches for attending or not attending coach education programs were not surprising. Nearly 71% of coaches were volunteers and had a career outside of coaching. The high number of volunteer coaches may explain the importance placed on these factors when deciding to pursue or not pursue coach education. Coach education programs must meet the needs of coaches, and understanding the high number of volunteer coaches highlights the

importance placed on relevant topics, online availability, and convenience (Wiersma & Sherman, 2005). Sports organizations must cater to their coaches and offer coach education programs that take this into consideration. Topics in coach education programs must be relevant for the coaching population (Wiersma & Sherman, 2005). Certain issues and topics may not be of interest at all levels of coaching, as novice coaches need different information than experienced coaches (Werthner & Trudel, 2006).

Two subscales were created to determine if a difference existed between reasons for attending and barriers for not attending a coach education program. A significant difference existed between reasons to pursue (league requirement, relevant topics, the desire to coach higher levels, monetary compensation, convenience, and insurance) and barriers for not attending (cost of the course, the time required, and online availability). Hockey coaches indicated that reasons for pursuing a coach education program were perceived as more important than barriers for not attending. This finding was consistent with previous research conducted on youth athletic coaches (Vargas-Tonsing, 2007).

The least important reasons identified by hockey coaches were monetary compensation, insurance, and cost of course. Previous research also identified the cost of course as not being an important reason for attending or not participating in a coach education program (Kubayi et al., 2016; Vargas-Tonsing, 2007). Hockey coaches who participated in the study were all members of USA Hockey and are required to complete coach education. Interestingly, USA Hockey requirement was not listed as one of the more important reasons for pursuing coaching education. This finding may indicate that coaches are not attending only to satisfy the USA

Hockey requirement. Previous research conducted on American youth athletic coaches found league obligation to be the primary reason identified (Vargas-Tonsing, 2007). The difference may be a result of the experience level of coaches. Seventy-one percent of hockey coaches had been coaching for four or more years whereas the coaches surveyed in previous research were new to coaching (Vargas-Tonsing, 2007). Previous research found that coaches identified attending required education programs as feeling as if they were “jumping through a hoop” or “checking off a requirement” rather than creating meaningful change (Piggott, 2012). The idea that hockey coaches did not perceive USA Hockey requirement as a top reason for pursuing coaching education may indicate that they did not feel the same.

Research Question Three

What are ice hockey coaches' beliefs about coach education?

The findings from this study identified hockey coaches' beliefs regarding coach education. In general, hockey coaches were noncommittal in their responses to questions in section three of the questionnaire. When asked if they believed coach education was important for sport coaches, 1% responded Yes, 4% responded No, and 95% responded Maybe. This was inconsistent with previous research. Vargas-Tonsing (2007) found that 97% of the youth coaches surveyed responded Yes to the same question. South African coaches responded similarly, with 96% of participants indicating that coach education was important (Kubayi et al., 2016). When asked if they planned to pursue further coach education, 8% of hockey coaches responded Yes, 22% responded No, and 70% responded Maybe. This differed from previous

research which revealed 46% of youth coaches and 87% of South African coaches planned to pursue continuing education (Kubayi et al., 2016; Vargas-Tonsing, 2007).

Hockey coaches were asked if they found value in coach education: 2% responded yes, 7% responded no, and 91% responded maybe. This finding was surprising based on the education level of the hockey coaches. Seventy-nine percent of hockey coaches held a higher education degree, and nearly 17% had some college experience. The value coaches placed on education has been shown to be influenced by the level of education and previous experiences (Gorges & Kandler, 2012; Gorges et al., 2013). The high number of coaches with a college degree was surprising based on the low number who found value in coach education.

The subscales in section three were compared to determine if a difference existed between coaching education pursuit and coaching education beliefs. The two subscales differed significantly; hockey coaches' beliefs of coaching education were higher than their likelihood to pursuing coaching education. These findings are consistent with previous research conducted on youth sports coaches (Vargas-Tonsing, 2007). Coaches' higher response to questions about beliefs indicated that they believe coach education is important, but the lower scores on the pursuit questions indicated that their beliefs might not be strong enough to pursue a coach education program.

The difference found between coaching education beliefs and coaching education pursuit may be a result of coach education programs that hockey coaches have previously attended. Hockey coaches may associate coach education specifically with the USA Hockey Coaching Education Program rather than coach education in general. Thus, hockey coaches may believe

coach education is important but do not find value in the USA Hockey Coaching Education Program (Hassanin & Light, 2014). Fifty-two percent of surveyed coaches had participated in coach education outside of USA Hockey, many of which were conducted by local hockey leagues and teams.

Further Investigations

The questionnaire provided valuable information about hockey coaches that went beyond the scope of the research questions. Eighty-two percent of hockey coaches reported a change in the way they coached after attending a USA Hockey Coaching Education Clinic. The high percentage of coaches who reported change was inconsistent with previous research that claimed formal education programs did not cause meaningful change in coaches (McCullick et al., 2009; Piggott, 2012). These findings could be a result of the questionnaire measuring self-reported change and may reflect perceptions of change not reflected in practice (Fives & Buehl, 2012). Nearly 63% of hockey coaches reported that they had all the information needed to be a successful coach. Though it may appear that over half of the coaches had all the information needed to be a successful coach, the response to this question was a subjective interpretation from the coaches, as the questionnaire was based on self-report.

Coaches have reported using previous playing experience as a source of knowledge when coaching (Lemyre et al., 2007). Though more prevalent in novice youth coaches, a small body of research suggests that previous elite-level athletic experiences may be a valuable resource for coaching knowledge (Carter & Bloom, 2009; Erickson et al., 2007; Gilbert et al., 2006; Werthner & Trudel, 2006). Ninety percent of coaches in the current study were former hockey athletes.

Interestingly, only 24% of hockey coaches believed being a former athlete makes you a good coach. The low number of coaches who believed being a former athlete makes a good coach may be due to the experience level of the coaches surveyed.

Attending a coach education program is only one facet in developing effective coaches (Erickson et al., 2008). Buy-in and support of the education program must occur for coaches to make a meaningful change (Piggott, 2012). Hockey coaches reported the content of a program and the credibility of the facilitator as the factors most associated with buy-in. The need for practical content and credibility of the facilitator was consistent with previous research (Piggott, 2012; Vella, Crowe, & Oades, 2013; Wiersma & Sherman, 2005).

Understanding the educational methods used in the development of hockey coaches can be utilized in the evaluation and improvement of coach education programs (Lemyre et al., 2007; Wiersma & Sherman, 2005). Hockey coaches were asked to select all methods that were used in their coach education journey. Learn by doing, face-to-face coach education, as a player, and online coach education was selected by the most coaches. The methods used by hockey coaches were consistent with previous research (Camiré et al., 2014; Forester et al., 2014; Lemyre et al., 2007). The high percentage of coaches who listed face-to-face coach education and online coach education may be due to USA Hockey's requirements. Learning through experience was listed as the top method hockey coaches used to learn how to coach, which has been reported by coaches across some different sports (Erickson et al., 2008; Lemyre et al., 2007; Piggott, 2012). Although coaches have perceived learning through experience as an effective method to develop as a coach, such learning is unregulated and informal (Erickson et

al., 2008; Nelson et al., 2006; North, 2010). Many coaches have reported that experience and observation with a more experienced coach are used as a mean of development and learning (Erickson et al., 2008; Piggott, 2015). One major criticism with learning through experience and observation with coaches is the lack of challenging of the more experienced coach (Piggott, 2015). This can result in less experienced coaches developing habits and knowledge that may not be the most effective or efficient. This highlights the importance of having a mixed-method approach to coach education.

The low percentage of hockey coaches who reported using a mentor to further their coach education was surprising. Mentoring has been linked to the effective coach development and has been shown to be used by used by coaches at all levels (Allison et al., 2016; Erickson et al., 2008; Vella et al., 2013). Though not established in all sport settings, structured mentoring programs have increased in commonality in the United States (Allison et al., 2016; Jones et al., 2009).

Several coaches provided additional information on questions that allowed text responses and through email. These coaches had a desire to voice their thoughts regarding USA Hockey's Coaching Education Program and did so without being asked. Ice hockey coaches appear to have an interest in coach education and the improvement of USA Hockey's program. This may indicate that coaches value coach education, highlighting the importance for sports organizations, like USA Hockey, to invest in their coach education programs.

Findings in Relation to Theory

USA Hockey requires all hockey coaches to complete the first three levels of certification by January 1 of the coach's third season ("USA Hockey," n.d.-b). Once a coach completes the Level 3 Coaching Education Clinic they have the choice to pursue higher level certification or periodically renew level 3 ("USA Hockey," n.d.-b). Making coach education programs, like USA Hockey, mandatory may get coaches through the program but does not necessarily lead to change in the way they coach (Hassanin & Light, 2014; Lauer et al., 2014). Attendance alone will not always create a lasting impact or change one's way of coaching (Hassanin & Light, 2014; Lemyre et al., 2007). The expectancy-value theory was used to provide an understanding into the motivation of hockey coaches regarding coach education. The low number of hockey coaches who believed coach education was important or valuable may influence the lasting impact of attending a coach education program (Hassanin & Light, 2014). Coaches who believe educational programs are valuable are likely to not only attend coach education programs but also to expand their knowledge and make changes in their coaching (Durik et al., 2006; Eccles et al., 1983; Wigfield et al., 2009).

Most hockey coaches surveyed had completed Level 1, 2, or 3 Coaching Clinics, which are required in their first three years of coaching, even though 71% of respondents had coached for four or more years. Only 8% of surveyed coaches held a certification higher than level 4. This trend may indicate that coaches complete USA Hockey's Coaching Education Programs to satisfy a requirement rather than an intrinsic interest or based on the level that they coach (Hassanin & Light, 2014; Piggott, 2012). It is important to note that the highest single level of

certification among surveyed coaches was level 4, which is not a required level. This may be explained due to the large number of coaches who have coached greater than three years. The low number of coaches who completed the Level 5 Clinic likely supports this claim. Coaches may have decided to take the level 4 clinic rather than renewing level 3. If hockey coaches valued USA Hockey's Coaching Education Program, one would expect to see more coaches with greater than four years of experience holding the level 5 certification (Gorges & Kandler, 2012).

The purpose of coach education is to provide an opportunity to produce positive change in coaches' beliefs, knowledge, skills, and behaviors (Lauer et al., 2014). Research on expectancy-value theory has revealed that importance and interest in a topic were significant predictors on an individual's desire to engage in a task as well as their performance during the task (Gao, 2008). These results highlight the importance for coach education programs to meet the interest and needs of the coaches (Wiersma & Sherman, 2005).

Implications of Practice

The United States is the only major country in the world without a national coaching education and certification program (McCullick et al., 2009). Without such a certification program in place, it is hard to offer consistent education for coaches between sports (McCullick et al., 2009). Until a national certification or framework is implemented, the responsibility to develop effective coaches falls in the hands of the national governing bodies of each sport. USA Hockey's Coaching Education Program, based on the American Development Model, was created to meet the education demands of its coaches ("USA Hockey," n.d.-a). This study helped

gain an understanding of the topics and methods coaches found valuable in coach education programs.

USA Hockey's Coaching Education program includes many of the topics coaches expressed as the most helpful, including communication, advanced instructional drills, motivational techniques, and character building ("USA Hockey," n.d.-b). From the perspective of educational topics, USA Hockey appears to be meeting the needs of its coaches. Hockey coaches believed relevant educational topics and online availability were important factors for pursuing or not pursuing coach education. In addition to including relevant topics in their coach education, USA Hockey offers some online components. USA Hockey's certification clinics are only offered face-to-face, but age-specific modules are offered online ("USA Hockey," n.d.-b). On the surface, it appears USA Hockey offers an education program that meets the needs of its coaches. The inclusion of topics in a coach education program does not necessarily mean the program provides more than a basic understanding of the subject or teaches in an effective manner (Cushion et al., 2010). Attending coach education programs can help assist knowledge acquisition and practice, but the delivery and content of programs do not always lead to meaningful change (Nelson, Cushion, & Potrac, 2013). Several coaches expressed that the face-to-face certification clinics were merely presentations taken directly from the participant manuals, which are available on the USA Hockey website (personal communication, November 20, 2016). Requiring coaches to attend an education program that merely follows the participant's manual that is available online may be perceived as less meaningful than offering a program that offers more robust information (Callary, Werthner, & Trudel, 2012; Lyle, Mallett,

Trudel, & Rynne, 2009). This highlights the importance of conducting ongoing assessment and evaluation of coach education programs.

Program Evaluation

Understanding coaches' beliefs and perceptions alone does not make more effective coaches and coach education programs. Regular assessment of USA Hockey's Coaching Education Program is necessary to ensure coaches' needs are being met and positive change in coaches' beliefs, knowledge, skills, and behaviors have occurred (Cushion et al., 2010; Lauer et al., 2014). In addition to program evaluation, it is important that organizations like USA Hockey conduct regular assessment of coaches (Mallett & Côté, 2006).

Inadequate evaluation has been cited as a major concern in many coach education programs (Cushion et al., 2010). One of the more predominant means of program evaluation is the use of surveys immediately following the course. This form of assessment does not provide insight into the implementation of strategies and information presented during the course (Cushion et al., 2010; Wayne, Yoon, Zhu, Cronen, & Garet, 2008). Adequate coach education program evaluation should be comprised of five levels: participant support, participant learning, organizational support, participant behavior, and athlete outcomes (Cushion et al., 2010). Program evaluation that includes the levels above can help identify whether learning occurred as a result of attending the program (Cushion et al., 2010). USA Hockey's evaluation process for its Coaching Education Program is limited and includes a post-course survey to be completed by coaches (personal communication, November 20, 2016). The absence of a more comprehensive

evaluation process of USA Hockey's Coaching Education Program makes it difficult to determine if the program is effectively meeting its learning objectives.

Evaluation comes in many forms, but previous research has suggested that coach education programs should be evaluated externally to ensure the enhancement of coach development (Cushion et al., 2010; Nelson et al., 2013). Nelson et al. (2013) recommended that evaluation of coach education should determine four issues: coaches' perceptions of the program, determine if learning occurred as a result of attending the program, whether the program led to positive changes in coaches' philosophy and practices, and whether athletes experience positive change in their development and skill as a result of their coaches. A one-time post-course survey is unable to capture these issues, highlighting a gap in the current evaluation model (Cushion et al., 2010).

Evaluation of USA Hockey's Coaching Education Program is an important component to determining its effectiveness (Cushion et al., 2010). Evaluating hockey coaches would determine whether learning occurred following the attendance of an education program and also if coach behavior changed as a result (Cushion et al., 2010). Though the research on athletic coach evaluation is scarce, previous studies have focused on coach observation (Allan, Turnnidge, Vierimaa, Davis, & Côté, 2016; Brewer & Jones, 2002; Cushion, Harvey, Muir, & Nelson, 2012; Cushion & Nelson, 2013; Ford, Yates, & Williams, 2010; Rushall & Wiznuk, 1985). Observation of coach behaviors can help identify the physical behaviors, a method of feedback, instruction, verbal and non-verbal communication, questioning, and management used by coaches when interacting with athletes (Cushion et al., 2012).

The concept of improving the effectiveness of coaches is not exclusive to athletics; efforts to increase the quality of school teachers have been undertaken by governments around the world (Hallinger, Heck, & Murphy, 2014). Teacher evaluation has been used as a strategy to help assess the quality of teachers as a means of improving student learning (Hallinger et al., 2014). Teacher observations, which take place in the classroom, have been used as the primary means of evaluation in the United States (Van Tassel-Baska, Quek, & Feng, 2006). The goal of observation is to capture the actual instructional experience in the dynamic learning environment (Van Tassel-Baska et al., 2006). Observation can be an effective method for capturing individual teacher behavior and instructional practice, but can also provide a comprehensive picture of the whole when data across different classrooms are collected (Van Tassel-Baska et al., 2006). Observing hockey coaches during practices and games would provide an opportunity to evaluate whether coaches are applying knowledge acquired from USA Hockey's certification courses (Hallinger et al., 2014). Even with the number of benefits that can occur from coach evaluation, cost and resources continue to be a barrier for widespread implementation (Cushion et al., 2010; Jones et al., 2009). Until sports organizations are willing to completely invest in their coaches, it will be difficult to create meaningful change (Allison et al., 2016; Cushion & Nelson, 2013).

Formal Mentoring

The dynamic nature of athletic coaching requires methods of education that not only meet the needs of the coaches but also provide continual learning opportunities (Erickson et al., 2008; Nelson et al., 2013; Wiersma & Sherman, 2005). The current structure of USA Hockey's

Coaching Education Program uses formal education through its certification clinics and non-formal education through its age-specific modules ("USA Hockey," n.d.-b). The high number of hockey coaches who reported using learning by doing as a method to learn how to coach goes against the structure of USA Hockey's Coaching Education Program. Even with the high percentage of respondents who claimed to have changed how they coached after attending a formal education program, coaches were not entirely satisfied. Hockey coaches reported the lack of follow-up as an area that could be improved by USA Hockey (personal communication, November 20, 2016). Specifically, the concept of unannounced visits or observations were suggested to monitor and evaluate coaches after attending coach education programs (personal communication, November 20, 2016).

A similar trend was observed in soccer coaches in England which led to the development of the Football Association Youth Coach Education (FAYCE) program by The English Football Association (Allison et al., 2016). The FAYCE's rationale is to provide personalized and needs-led coach development that takes place at the coach's location (Allison et al., 2016). The personalized approach to coach education is carried out by coach educators that are assigned to a specific region, providing the opportunity to build a relationship between the educator and the coach (Allison et al., 2016; Jones et al., 2009). Though considered to be a type of informal learning, experience and observation have been formalized by the FAYCE through the use of mentoring (Allison et al., 2016; Nelson et al., 2013). The concept of formal mentoring has been shown to be a successful method of development in nursing, business, and sport coaching (Jones et al., 2009).

Formal mentoring programs for athletic coaches are not a new concept; previous research has indicated that coaches were interested in such programs (Cushion et al., 2010; Nelson et al., 2013; Wiersma & Sherman, 2005). Fifty percent of hockey coaches reported using a mentor as a form of coach education, though nearly 75% of coaches claimed to have learned by doing. The low number who reported using a mentor to develop as a coach may be due to the absence of a formal mentoring program. A formal mentoring program may provide an opportunity for coaches to learn through experience in a more structured environment (Jones et al., 2009). Mentoring provides an opportunity for coaches to apply information acquired during formal coach education programs to actual coaching scenarios (Koh, Bloom, Fairhurst, Paiement, & Kee, 2014). Mentoring has also been shown to provide an environment for coaches to be exposed to new coaching strategies, information, and experiences while receiving real-time feedback (Koh et al., 2014). Even with the number of positive outcomes that have been shown to be a result of a formal mentoring program, challenges and barriers exist that may prevent the adoption of such a program by national sports organizations. The biggest barrier for leagues to implement a structured and formal mentoring program for coaches is the cost (Jones et al., 2009; Koh et al., 2014). This includes, but is not limited to, the training of the mentors, travel, and time. To provide an effective experience, it is important to restrict the number of mentees assigned to each mentor, which would also increase the costs (Koh et al., 2014). Even with such barriers, formal mentoring programs would complement the education offered by USA Hockey by providing an environment for coaches to apply and expand their knowledge.

Recommendations for Future Research

The findings from this study provided an understanding of hockey coaches' beliefs and perceptions of USA Hockey's Coaching Education Program. These findings should be used to continue the research in coach education, not only for hockey, but for all sports. The Coaching Education Questionnaire was selected because it was a validated instrument and results could be compared with previous research that investigated other populations of coaches (Kubayi et al., 2016; Vargas-Tonsing, 2007). Future researchers should be cautious when considering The Coaching Education Questionnaire. The questionnaire has the potential to collect valuable data but should not be used without modification. Nine questions in section three allowed participants to answer Yes, No, or Maybe. This format of response weakened the data, due to the large number of Maybe responses, making it difficult to draw firm conclusions. Slightly modifying the format to only allow for a Yes or No response or using a Likert scale would provide more interpretable data.

Future research should build on these findings and create an instrument unique to USA Hockey and collect qualitative data. This would provide a better understanding between USA Hockey Coaching Education and coach education in general. Qualitative data, through focus groups or interviews, would also be valuable to help understand not only what coaches want, but what they need to be effective coaches. The quantitative data collected using the questionnaire permitted the collection of a larger population of coaches. Several coaches reached out after completing the questionnaire to provide additional information regarding coach education. This information provided a more robust understanding of ice hockey coaches' beliefs and

perceptions of coach education. Previous research has investigated coaches' beliefs, preferences, and experiences of coach education programs through qualitative methods (Lemyre et al., 2007; Piggott, 2012; Wright et al., 2007). Wright et al. (2007) investigated how Canadian ice hockey coaches learned to coach using semi-structured interviews. It is recommended that future research uses qualitative data to gather a deeper understanding of ice hockey coaches' beliefs and perceptions of USA Hockey's Coaching Education Program.

The greatest need for future research is an evaluation of USA Hockey's Coaching Education program. Understanding coaches' beliefs and perceptions of coach education were a valuable first step, but it is important to determine if the program is creating positive change in the coaches' behaviors (Cushion et al., 2010). Research exists on small-scale coach education programs, but gaining an understanding of the effectiveness of programs being offered by individual national sports organizations is needed (Cushion et al., 2010; Langan et al., 2013; Trudel et al., 2010).

Limitations

This study has several limitations. The primary limitation was the Coaching Education Questionnaire used to collect data. Though the instrument was validated in a previously published study (Vargas-Tonsing, 2007), the questionnaire failed to capture many critical pieces of information. The first two sections of the questionnaire asked coaches to rate how helpful different topics were in coaching and how various important reasons were for attending or not participating in a coach education program. This information was useful to gather an understanding of ice hockey coaches' beliefs and perceptions, but did not provide information

into the effectiveness of the program (Cushion et al., 2010). Additionally, the questionnaire was not unique to USA Hockey's Coaching Education Program. It is hard to determine if coaches responded to questions about coach education regarding USA Hockey's program or coach education, in general, making it difficult to draw conclusions specific to USA Hockey. Though the Coach Education Questionnaire has its limitations, the absence of validated and published instruments available to measure the beliefs and perceptions unique to USA Hockey made it a reasonable choice for use in this study. Future research should measure the outcomes of coach education programs rather than self-reported beliefs and perceptions (Hoffman & Seidel, 2015). This would provide information to improve such programs based on what coaches learned or did not learn rather than their interests.

The format of many of the questions could be improved to provide more meaningful information. Section three of the questionnaire had several questions that were answered with a Yes, No, or Maybe response format. The high number of coaches who answered Maybe to the questions regarding their beliefs about coach education made it difficult to draw any firm conclusions. Modifying these questions to only allow a Yes or No response or to a Likert scale would provide more interpretive data and strengthen the study.

In addition to the poor design of many questions in the questionnaire, the interpretation of the results should be done with caution due to the heavy reliance of individual self-reporting (Eccles & Wigfield, 2002; Hoffman, 2015; Wigfield et al., 2009). Individuals have been shown to misinterpret their motives, beliefs, and depth of knowledge while often exposing a personal bias, particularly when multiple choice or Likert scales are used in the instrument (Hoffman &

Seidel, 2015; Wigfield & Eccles, 1992). These misinterpretations may lead to coaches viewing their perceptions closer to reality than outside observers, such as players and parents (Hoffman & Seidel, 2015).

The lack of support for this study from USA Hockey was another limitation. At the time of the study proposal, USA Hockey agreed to distribute the questionnaire to its nearly 60,000 ice hockey coaches. Shortly after the proposal, USA Hockey changed their stance and would not distribute the questionnaire to its coaches. The contact from USA Hockey stated that he could not get traction from *higher-ups* and did not provide any other reason for not distributing the questionnaire. The organization allowed me to reach out to its fourteen coach-in-chiefs to ask if they would distribute the questionnaire, but this approach led to a lower number of responses from coaches.

Conclusion

The findings from this study expand research in the field of athletic coach education. Research has identified that learning occurs in several environments, ranging along the continuum of formal learning to non-formal learning (Côté & Gilbert, 2009; Mesquita, Ribeiro, Santos, & Morgan, 2014). The absence of a national coach education framework in the United States highlights the importance of conducting sport-specific research to understand the effectiveness of each sports' coach education and the preferences of the coaches. Very few studies have investigated coach education from the perspective of ice hockey coaches (Wright et al., 2007). Coach education is often viewed collectively amongst sports, but the uniqueness of each sport highlights the importance of viewing each sport individually. This would provide the

opportunity to understand the coaches' beliefs and preferences of coach education for each sport (Nash & Sproule, 2012). The purpose of this study was to provide an understanding of ice hockey coaches' beliefs and preferences of coach education programs. Specifically, the topics coaches believed to be most helpful, the reasons and barriers for attending or not participating in a coach education program, and the overall beliefs of coach education from the perspective of ice hockey coaches were revealed. The findings from this study should be used as a foundation for future research in the field of coach education for hockey coaches.

APPENDIX A: IRB APPROVAL



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1
FWA00000351, IRB00001138**

To: **Alexander J. Chriest**

Date: **October 24, 2016**

Dear Researcher:

On 10/24/2016, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination
Project Title: Ice Hockey Coaches' Perceptions of Coach Education
Investigator: Alexander J. Chriest
IRB Number: SBE-16-12600
Funding Agency:
Grant Title:
Research ID: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the [Investigator Manual](#).

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

A handwritten signature in black ink, appearing to read "Patria Davis".

Signature applied by Patria Davis on 10/24/2016 09:32:43 AM EDT

IRB Coordinator

APPENDIX B: COACHING EDUCATION QUESTIONNAIRE

The primary purpose of this questionnaire is to assess coaches' continuing education needs. Please answer the following questions to the best of your ability. There are no right or wrong answers. Your answers will remain anonymous.

Section 1: Coaches' Interests in Educational Topics

Below is a list of topics that have been suggested as possible content for advanced coaching education. Please rate how helpful each of these topics would be for you as a coach.

Not at all helpful -- Somewhat helpful -- Extremely helpful

1. communication with athletes 1 2 3 4 5

2. communication with parents 1 2 3 4 5

3. advanced instructional drills 1 2 3 4 5

4. goal setting 1 2 3 4 5

5. motivational techniques 1 2 3 4 5

6. advanced first aid 1 2 3 4 5

7. character building 1 2 3 4 5

8. visualization 1 2 3 4 5

9. stress management 1 2 3 4 5

10. sport psychology 1 2 3 4 5

11. conditioning drills 1 2 3 4 5

12. addictive behaviors 1 2 3 4 5

13. gender differences 1 2 3 4 5

14. drugs in sport 1 2 3 4 5

15. sport nutrition 1 2 3 4 5

Section 2: Reasons and Barriers for Pursuing Coaching Education

Below is a list of topics that have been suggested as possible reasons for pursuing advanced coaching education. Please rate how important each of these reasons are to your decision to pursue further coaching education.

Not at all important – Somewhat important -- Extremely important

1. cost of course 1 2 3 4 5

2. time required 1 2 3 4 5

3. online availability 1 2 3 4 5

4. league requirement 1 2 3 4 5

5. relevant topics 1 2 3 4 5

6. desire to coach higher levels 1 2 3 4 5

7. monetary compensation 1 2 3 4 5

8. convenience 1 2 3 4 5

9. insurance 1 2 3 4 5

Section 3: Beliefs of and likelihood of pursuing coaching education

The following section asks you to consider your perceptions of coaching education.

1. Do you plan on pursuing further coach education?
2. Do you plan on pursuing further coaching education on-line?
3. Are you more likely to pursue coaching education if it is available on-line?
4. Is coaching education important for sport coaches?
5. Should coaching education be mandatory for youth sport coaches?
6. Should coaching certification be mandatory for all sport coaches?
7. Should coaches be expected to pursue coach education?
8. What factors are associated with buying-in to a coach education program?
9. Do you find value in coach education?
10. Have you changed the way that you coach after attending a USA Hockey coach education clinic?
11. Have you participated in coach education outside of USA Hockey?
 - a. If so, where did you participate in coach education?
 - b. Name of organization/certification
12. Which of the following educational methods did you utilize in your coaching education?
13. Which educational method was most effective at teaching you to coach?
14. Do you have all the information needed to be a successful coach?
15. Does being a former athlete make you a good coach?
16. Do you view coaching as a form of teaching?
17. What best defines success as a coach?

Section 4: Demographics

The following section asks you general background information.

1. What type of coach are you?
2. What is your age?
3. What is your gender?
4. Which of the following best represents your racial or ethnic heritage?
5. What is the gender of your team?
6. What gender do you prefer coaching?
7. Have you ever coached a sport other than ice hockey?
 - a. What other sports have you coached?
8. Did you play ice hockey?
 - a. How many years did you play ice hockey?
 - b. What was the highest level of ice hockey that you played?
9. What age level do you coach?
10. How long have you coached?
11. What is your current coaching level through USA Hockey?
12. What district are you associated with?
13. What is your highest level of formal education?
14. If you attended college, what was your area of study?
 - a. Undergraduate
 - b. Masters
 - c. Doctoral/Professional

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