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The Development and Validation of an Expertise Development Model for Sport Coaches

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THE DEVELOPMENT AND VALIDATION OF AN EXPERTISE DEVELOPMENT MODEL FOR SPORT COACHES

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Abstract

The objective of this dissertation was to develop and validate a model for coaching expertise development using semi-structured interviews. The aim of Study One was twofold: first, to examine how coaching expertise is defined and second, to investigate how this expertise develops over time. Interviews were completed with elite athletes and elite coaches and were done in the tradition of grounded theory. Results suggested that there is a need to go beyond identifying a coach as an expert based on the performance of his/her athletes. Some of the additional criteria suggested included: be recognized by peers (other coaches) as experts; be recognized by athletes as experts, and have successful athletes/teams at any level of competition. The intention of Study Two was to describe, in more detail, mechanisms for coaching expertise development identified in a previous study (Wiman, Salmoni & Hall, 2010). Seven varsity coaches were interviewed. It was found that open-mindedness seemed to be an essential learned characteristic in supporting the development of expertise. Coaches discussed using both internal and external feedback mechanisms and indicated a variety of ways in which they used this feedback to continually better themselves. Central to this process, coaches assessed the needs of athletes as a basis for their evaluation of their own strengths and weaknesses as a coach. A major source of information used to develop expertise is introspection. Coaches reported using introspection primarily for self-evaluation and to gain self-awareness. Mentoring other coaches and being mentored were also discussed. Finally, a model to place these ideas into a developmental process was proposed. The aim of the third and final study was to validate a model for the development of coaching expertise presented by Wiman, Salmoni and Hall in studies one and two. Five novice and five elite rowing coaches were interviewed. Results indicated that the model was supported

both implicitly and explicitly by the interviewees. Feedback provided by the participants suggested that motivation needed to be added as an explicit component within the model. Some other suggestions on how to facilitate the self-adaptation process described by the model as it relates to coaching education were included.

Keywords

Coaching Development

Expertise

Expert Coaching

Learning

Self-Adaptation

Co-Authorship Statement

The author, under the supervision and mentorship of Dr. Alan Salmoni, conducted the work in this doctoral dissertation. This encompasses the experimental conception, design, and implementation; data collection, analysis and interpretation; and manuscript preparation. This doctoral dissertation contains material that has been accepted for publication. The work contained in chapter 2, 3 and 4 was co-authored by Alan W. Salmoni and Craig R. Hall. Melissa Wiman was the first author.

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My PhD advisor, Dr. Alan Salmoni has provided me with unlimited guidance. He is a caring teacher and wonderful role model. He is to be commended on his ability to supervise students in a wide spectrum of research areas with such ease.

Dr. Craig Hall has been a friendly face since my first day at Western. I am lucky to have had the opportunity to work with Craig. Thank you for your guidance and support.

Thank you to my study participants. Your dedication is greatly appreciated and I think you have all made a special contribution to the world of coaching education.

Thank you to my family, friends and lab-mates for your encouragement.

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List of Abbreviations

NCAA- National Collegiate Athletic Association

NCCP- National Coaching Certification Program

NSO- National Sport Organization

CHAPTER 1

General Introduction

Our knowledge of how coaches develop expertise is meager compared to the knowledge we have about the same process for athletes, and thus, more studies are needed to enhance our understanding of this process. Bloom (1986) has highlighted the importance of quality coaching in developing athletes so it is imperative that we, as a research community, understand the process of coaching expertise development. A better understanding of this process will be useful in developing effective coaching education initiatives that could lead to better coaches.

Expertise development in athletes has been widely studied (i.e., Hodges, Kerr, Starkes, Weir & Nananidou, 2004; Baker, Côté & Abernethy, 2003; Ward & Williams, 2003). Ericsson, Krampe and Tesch-Römer (1993) proposed a theory of expertise development that has provided the theoretical framework for much of the recent expertise research, particularly in sport. The group identified one factor that contributes to expert performance- deliberate practice over the course of a minimum of ten years (or 10,000 hours). Deliberate practice is a type of practice that requires a large amount of effort (either physical or mental or both), is relevant to improving performance and is not inherently enjoyable. It must be noted, however, that Hodges et al. (2004) have shown that in sport, athletes deemed practice enjoyable. Deliberate practice is also highly structured. Another tenet of this theory is that the performer must receive valid, immediate feedback on his or her performance in order to improve. Ford, Coughlin and Williams (2009) have suggested that deliberate practice in coaching could be defined by a coach's intention to improve while engaging in any coaching-related activity. However, because of the relative scarcity of coaching development research, it is not known whether the deliberate practice model that has evolved for athlete development holds for the development of expertise in coaches. The purpose of the present research was to explore the developmental processes, as described by elite coaches, which underpin their development of coaching expertise. A clarification of the structure of these developmental processes should provide knowledge that can be used to facilitate the learning experiences necessary to become a good coach.

The Definition of an Expert Coach

There are several issues surrounding the study of coaching expertise that need to be addressed. One pressing issue is how we define expert coaching performance. According to Ericsson and Charness (1994), expert performers must demonstrate superior performance, not merely be perceived to be an expert, although, many researchers have used the perception of others or membership in a group to identify the experts to be studied. For example, Baker et al. (2003) selected expert decision makers in ball sports (netball, field hockey and basketball) by allowing their national team coaches to choose them based on their status as the best decision makers in their respective sports. Various other criteria have been used to identify experts in given domains. Ste-Marie (1999) deemed a gymnastics judge with the following resume to be an expert: 10 or more years of experience, ability to judge at the National or International level and be a Level V provincial judge. Ward and Williams (2003) identified expert soccer players on the basis of national team membership while novice players were defined by their status as recreational team athletes.

In coaching, the current research practice is to define coaches as expert based primarily on the performance of their athletes and years of experience. For instance, Horton, Baker and Deakin (2005) observed coaching behaviours of expert coaches and these coaches were considered experts based on their status as National Team coaches. Côté, Salmela, Trudel, Baria and Russell (1995) defined an expert gymnastics coach using the following criteria: the coach must have had at least 10 years of coaching experience, the minimal level the person must coach at was provincial, the coach must have developed at least one international athlete or two national athletes and was recognized by the national association as a coach who develops elite athletes. Hardin (2000) defined expert high-school level coaches as: having a minimum of 5 years of coaching experience, having a win/loss record of at least 70% or higher, having two or more playoff titles, peer recognition as an outstanding coach, and had leadership roles via coach training or leading sporting clinics. Côté and Sedgwick (2003) provided a definition of both coaches and athletes in the sport of rowing. The coaches in the study were considered experts while the athletes were deemed elite. The rowing coaches must

have had a minimum of 10 years of experience, developed several international-level athletes, and been recognized by their peers. The elite rower had to be an international competitor and have competed at one or more of the following: Commonwealth Games, World Championships or Olympic Games. Similarly, Nash and Sproule (2009) identified expert coaches for their study based on four criteria: 10 or more years of coaching experience, coaching athletes at a representative level (district or national), continual development of national performers, and holding the highest available coaching award from their national governing body.

As evidenced by the previous examples, there is no consistent definition an expert coach. Abraham, Collins and Martindale (2006) have suggested that there is a need to explicitly define expert coaching performance so that the criteria identified can be used in future research. Nash and Sproule (2009) made the same suggestion by making it known that one should question the criteria they have used in their study. Recently, Côté and Gilbert (2009) provided a proposed integrative definition of coaching effectiveness and expertise that included coaches' intrapersonal knowledge (i.e., ability for introspection and understanding of oneself), interpersonal knowledge (i.e., interaction with others), and professional knowledge (i.e., declarative knowledge of sport science, the sport itself and pedagogy). Moreover, they argued that in order to be considered an expert, a coach needs to attain extensive knowledge and demonstrate coaching effectiveness over a prolonged period. The process by which a coach attains interpersonal, intrapersonal and professional knowledge is a focus of the current study.

Characteristics of Expert Coaches

Several concrete characteristics of coaches can be easily quantified (e.g., win/loss record, years of experience, certification level [in Canada, NCCP level], number of titles won by athletes). Are there other common characteristics of expert coaches that can be seen or measured that can contribute to one being identified as an expert? Hardin (2000) investigated characteristics of expert high school coaches. Three themes emerged from the analysis of their interviews, documents and field observations. The coaches reported spending a significant amount of time planning and continuing their education and

considered this necessary for their improvement. The coaches also cited experience in their sport as a player as an important facet in their coaching ability. Only one coach in this study reported that experience as a coach was important. Horton, Baker and Deakin (2005) observed five expert national team coaches of team sports during practice sessions and rated the coaches' behaviour using the Revised Coaching Behaviour Recording Form (RCBRF) (Bloom, Crumpton, & Anderson, 1999; revised by Horton et al., 2005). They also interviewed the coaches and some of their athletes. Results indicated that expert coaches emphasized tactical instruction, followed by general instruction and then technical instruction, as measured by frequency and duration of these behaviours during practice. Praise and encouragement was also used quite frequently, although of a shorter duration. Scolds, criticism/re-instruction and nonverbal punishment were the least frequent behaviours of the coaches. The qualitative interviews with the coaches and athletes provided support for the results from the RCBRF as the participants in the study created a vision of a supportive coach that demands effort and intensity during training. In another study on characteristics of expert coaches, Côté and Sedgwick (2003) identified seven major categories of expert (rowing) coaching behaviour. In this study, both expert coaches and elite athletes were interviewed. It is rare that athletes are participants in expert coaching studies. This is curious since the athlete's success is partly due to the ability of the coach. According to the results, expert rowing coaches plan proactively for training and competition, create a positive training environment, facilitate the athletes' goal setting, build the athletes' confidence, teach technical, and physical skills effectively (instruction and feedback was included in this category), recognize individual differences in the athletes and establish positive personal relationships with each athlete. Although the information emanating from the aforementioned studies is useful, it does not provide us with a detailed description of the process that underpins the development of coaching expertise.

The Development of Coaching Expertise and Coach Learning

Although the above studies have provided information about expert coaches' characteristics and behaviours while coaching, there is much less known about how these characteristics and behaviours actually develop and how they contribute to the coach

becoming an expert. Salmela (1995) studied the development of expertise in expert team sport coaches. Commonalities amongst these coaches were involvement in several sports as young athletes, working with and learning from more experienced coaches early in their coaching careers, consulting with and learning from other expert coaches, learning from experiences and continuing education (formal training included). In another study on coaching expertise, Fleurance and Cotteau (1999) identified seven major themes in how coaches develop: formal education, experience as a player in the sport, coaching experience, working with mentors, interaction with high level athletes, ongoing education and a personal commitment to coaching. Knowledge of the experiences necessary for becoming an expert is essential but does not provide a description of the expertise development process as a whole.

In a different approach to the study of expert coaching, Gilbert, Côté and Mallett (2006) studied the developmental paths and activities of successful high school, community college and college level coaches in three different sports. All of the coaches in the study had extensive involvement in various sports as athletes. In fact, the researchers reported that a minimum of several thousand hours of playing participation was common amongst the coaches in this study over an average of 13 years. The more elite coaches in the group (Division 1 NCAA) specialized in fewer sports as youths than the lower level coaches (high school). The college coaches also spent more time per year participating in activities that promoted their coaching development. All coaches spent only a small amount of time participating in formal coach training. The results suggested differences across sport and level of competition; therefore, the authors proposed that the study of coaching developmental pathways must be coaching-context specific.

Young, Jemcyzyk, Brophy and Côté (2009) sought to identify learning experiences that discriminated four groups of Canadian track and field coaches: local club, senior club, provincial and national level. The national level coaches had been coaching the longest, spent the most time (in hours) interacting with athletes, attended more championship events, had more mentors over the course of their careers and had mentored more coaches.

Erickson, Côté and Fraser-Thomas (2007) sought to discover what experiences are necessary for one to become a high-performance coach. The participants were 19 coaches of elite athletes (both team and individual sports). Retrospective interviews provided the data for analysis. Commonalities amongst the coaches were: experience as an athlete within the sport they currently coach and some formal training or mentoring. Coaches in this study also had extensive coaching experience prior to becoming high performance coaches. The team sport coaches had the common thread of prior leadership experience (e.g., being a team captain as an athlete). Nash and Sproule (2009) interviewed nine expert coaches to determine if this group of coaches was able to explain how they became expert coaches. Experience, knowledge, personal characteristics, networking, and philosophy were themes that emerged in the coaches' explanations for how they developed into experts. Therefore, while experience as a coach has been a commonly identified factor supporting coaching development, little is known about the specific details of this (developmental) experience. While criteria for identifying expert coaches have often been studied, how personal characteristics might relate to coaching skill development has received much less attention. Indeed, there may be characteristics of a coach critical to the development of expertise that are not as important once a coach becomes an expert. The present research focuses on whether or not there are certain personal characteristics that are integral to the expertise development process.

Although the above studies have given us valuable information that helps us understand expert coaching, they tell us much less about the specific developmental processes supporting the accrual of expertise. Another group of studies aimed to provide a theoretical framework for this process. Werthner and Trudel (2006) presented Moon's (1999, 2004) generic view of learning as a method for how coaches learn to coach. This framework identified three types of learning situations: mediated, unmediated and internal. Mediated learning situations are externally driven, unmediated learning situations are internally driven by the coach and internal learning situations are essentially episodes of self-reflection. An example of a mediated learning situation would be formal coach training clinics and an unmediated learning situation would be when a coach decides to seek out a mentor coach for advice. Internal learning situations occur when the coach reflects on his/her performance and questions his/her current knowledge

base. All three situations were identified as valuable sources of knowledge acquisition. Werthner and Trudel suggested that coaches will create their own learning situations and are reflective in the interest of learning.

Nelson, Cushion and Potrac (2006) discussed formal, non-formal and informal coach learning employing Coombs and Ahmed's (1974) model. According to this model formal learning would include coach training and formal education. Non-formal learning includes attending conferences, seminars and coaching clinics. The term informal learning is used interchangeably with self-directed learning and includes such things as experiences accrued as a player, coaching experience, informal mentoring and interaction with peers and athletes. Other learning ventures such as reading books, visiting websites and watching videos fall into this category. Although these models are informative they lack specific detail, particularly the temporal component of the lived experiences supporting a developmental process.

Werthner and Trudel (2009) interviewed 15 Canadian Olympic coaches in a variety of sports: athletics, canoe/kayak, figure skating, freestyle ski, gymnastics, ice hockey, Paralympic athletics, soccer, speed skating, rowing, and wrestling to further elucidate the idiosyncratic nature of a coach's learning path. The results suggested that there were commonalties amongst the group of coaches such as former athletic experience in the sport they coach (although one coach did not have such experience), the use of mentors, formal education and a devotion to development. Most importantly, it was found that the coaches were active participants in their learning process.

Abraham, Collins and Martindale (2006) presented and validated a model in the form of a schematic that reflects the coaching process. In terms of coaching development, the authors suggested that coaching development is not a structured process and occurs through serendipitous methods. These methods included coaching courses, academic ventures, playing and coaching experience and reading, amongst other activities. The coaches in their study exhibited an interest in learning and improving.

A common thread between some of the studies previously mentioned is the interest coaches must exhibit in learning and improving. The process is not structured

(Abraham et al, 2006) and is idiosyncratic (Werthner and Trudel, 2009). The aforementioned literature has highlighted certain learning experiences and activities that coaches have engaged in to become expert or elite but none of these studies has delineated a model that explains the underlying process of coaching expertise development that is based on empirical evidence.

Thesis Objectives

The goal of the current line of research was to develop and validate a model that describes the processes and structures that underpin the development of coaching expertise. Using a grounded theory protocol, the objective of Study One was twofold. The first goal was to find out how elite coaches and athletes describe coaching expertise and the second objective was to explore the descriptions of the processes underlying their own developmental trajectories. The goal for Study Two was to expand the description and improve the clarity of the components of the developmental model described by coaches in Study One. Study Three was done to validate and refine the proposed model. Abraham, Collins and Martindale (2006) argued that further research was needed on how coaches develop in order to build programs that effectively foster coach development. The greater goal of this dissertation was to provide sound suggestions for coaching education initiatives

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CHAPTER 2

An Examination of the Definition and Development of Expert Coaching

A version of this chapter has been accepted for publication:

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Introduction

It is important that we understand how coaches develop expertise so we can provide the best training possible. Bloom (1986) highlighted the importance of quality coaching in developing athletes so it is surprising that more studies have not been undertaken on coaching development. Our knowledge, as a research community, of how coaches develop expertise is meager, and more studies are needed to enhance our understanding of this process. There are several issues surrounding the study of coaching expertise that need to be addressed, including how we define an expert coach. Our study aims to enhance understanding in this area.

The Definition of an Expert Coach

According to Ericsson and Charness (1994), expert performers must demonstrate superior performance to be perceived as an expert. Researchers have used the perceptions of others or membership in a group to identify the experts to be studied. For instance, Baker, Côté and Abernethy (2003) selected expert decision-makers in ball sports (netball, field hockey and basketball) by allowing their national team coaches to choose them based on their status as the best decision makers in their respective sports. Alternatively, Ste. Marie (1999) deemed a gymnastics judge with the following resume to be an expert: 10 or more years of experience, ability to judge at the National or International level and be a Level V provincial judge. Ward and Williams (2003) identified expert soccer players on the basis of national team membership while novice players were defined by their status as recreational team athletes. The lack of consistency in how experts have been identified in previous studies provides justification for the basis of our current study.

In coaching, the current research practice is to define coaches as expert based primarily on the performance of their athletes and years of experience. For instance, Horton, Baker and Deakin (2005) observed coaching behaviours of expert coaches in the sports of basketball (n=2), soccer (n=2) and wheelchair basketball (n=1). These coaches were considered experts based on their status as National Team coaches. Côté, Salmela, Trudel, Baria and Russell (1995) defined an expert gymnastics coach using the following

criteria: coach must have at least ten years of coaching experience, the minimal level the person must coach at was provincial, the coach must have developed at least one international athlete or two national athletes and be recognized by the national association as a coach who develops elite athletes. Hardin (2000) defined expert high-school level coaches as: having a minimum of five years of coaching experience, having a win/loss record of at least 70% or higher, having two or more playoff titles, peer recognition as an outstanding coach, and has had leadership roles via coach training or leading sporting clinics.

Côté and Sedgwick (2003) provided a definition of both coaches and athletes in the sport of rowing. The coaches in the study were considered experts while the athletes were deemed elite. The rowing coaches must have had a minimum of ten years of experience, developed several international-level athletes, and been recognized by their peers. The elite rower had to be an international competitor and have competed at one or more of the following: Commonwealth Games, World Championships or Olympic Games. Nash and Sproule (2009) identified expert coaches for their study based on four criteria: ten or more years of coaching experience, coaching athletes at a "representative level" (district or national), continual development of national performers, and the coaches held the highest available coaching award from their national governing body.

As evidenced by the previous examples, there is no cohesive definition of what an expert coach is. Abraham, Collins and Martindale (2006) have suggested that there is a need to explicitly define expert coaching performance so that the criteria identified can be used in future research. Nash and Sproule (2009) have gone on to make this suggestion again; specifically by making it known that one should question the criteria they have used in their study. One purpose of the present research was to provide suggestions for definitional criteria that should be used in future studies on expert coaching.

Characteristics of Expert Coaches

Several concrete characteristics of coaches can be easily quantified (e.g., win/loss record, years of experience, certification level (in Canada, NCCP level), number of titles won by athletes). It would be interesting to find out if there are other common

characteristics of expert coaches that can be seen or measured that can contribute to one being identified as an expert. Hardin (2000) investigated characteristics of expert high school coaches. Three themes emerged from the analysis of the interviews, documents and field observations. The coaches reported spending a significant amount of time planning and continuing their education and considered this necessary for their improvement as coaches. The coaches also cited experience in sport as a player as an important facet in their coaching ability but only one coach in this study reported that experience as a coach was important.

Horton et al. (2005) observed five expert national team coaches of team sports during practice sessions and rated the coaches' behaviour using the Revised Coaching Behaviour Recording Form (RCBRF) (developed by Bloom, Crumpton,& Anderson, (1999); revised by Horton et al.). The group also interviewed all five of the coaches and some of their athletes (exact number of athletes not given). Results indicated that expert coaches emphasized tactical instruction, followed by general instruction, then technical instruction, as measured by frequency and duration of these behaviours during practice. Praise and encouragement was also used quite frequently, although of a shorter duration. Scolds, criticism/re-instruction and nonverbal punishment were the least frequent behaviours of the coaches. The qualitative interviews with the coaches and athletes provided support for the results from the RCBRF as the participants in the study created a vision of a supportive coach that demands effort and intensity during training.

In another study on the characteristics of expert coaches, Côté and Sedgwick (2003) identified seven major categories of expert (rowing) coaching behaviour. In this study, both expert coaches and elite athletes were interviewed. This point has been highlighted since it is rare that athletes are participants in expert coaching studies. This is curious since the athlete's success is partly due to the ability of the coach. According to the study participants, expert rowing coaches: plan proactively for training and competition, create a positive training environment, facilitate the athletes' goal setting, build the athletes' confidence, teach technical and physical skills effectively (instruction and feedback was included in this category), recognize individual differences in the athletes and establish positive personal relationships with each athlete. The

aforementioned studies have gleaned the broadness of the findings of studies on coaching characteristics and highlight the importance of more work in this area.

The Development of Coaching Expertise

Although the above studies have provided information about expert coaches' characteristics and behaviours, there is much less known about how these characteristics and behaviours actually develop and how they contribute to the coach becoming an expert. Schempp, McCullick and Mason (2006) discussed the development of expert coaching. The group highlighted the findings of Ericsson and Charness (2004) that it takes ten years of deliberate practice for one to become an expert in a given domain. Schempp et al. suggest that anyone can increase one's coaching expertise if he/she invests the time and seeks out the correct type of practice for skills specific to coaching.

Salmela (1995) studied the development of expertise in expert team sport coaches of four sports: basketball, ice hockey, volleyball and field hockey. Commonalities in the expertise development process amongst these coaches were: involvement in several sports as young athletes, working with and learning from more experienced coaches early in their coaching careers, consulting with and learning from other expert coaches, learning from experiences and continuing education (formal training included). In another study on coaching expertise, Fleurance and Cotteau (1999) identified seven major themes in how coaches develop expertise: formal coaching education, experience as a player in the sport, coaching experience, working with and learning from mentors, interaction with high level athletes, ongoing coaching education and a personal commitment to coaching. The common findings in these two studies indicate that mentoring, experience as an athlete and formal training are important factors in the expertise development process, but the differences in findings provide support our assertion that more research is needed in this area.

In a different approach to the study of expert coaching, Gilbert, Côté and Mallett (2006) studied the developmental paths and activities related to coaching development of successful high school, community college and college level coaches in three different sports. All of the coaches in the study had extensive involvement in various sports as

athletes. In fact, the researchers reported that a minimum of several thousand hours of playing participation was common amongst the coaches in this study over an average of thirteen years. The more elite coaches in the group (Division 1 NCAA) specialized in fewer sports as youths than the lower level coaches (high school). Both college level groups of coaches spent more time per year participating in activities that promoted their coaching expertise development. All groups spent only a small amount of time participating in formal coach training (meaning through a national sporting organization). The results suggested that the development paths varied across different sports and levels of competition; therefore, the authors suggested that the study of coaching developmental pathways must be coaching-context specific.

Erickson, Côté and Fraser-Thomas (2007) sought to discover what experiences were necessary for one to become a high-performance coach. The participants were nineteen coaches of elite athletes (both team and individual sports). Retrospective interviews provided the data for analysis. Commonalities amongst the coaches were: experience as an athlete within the sport they currently coach and some formal training or mentoring. Coaches in this study also had many hours of coaching experience prior to becoming high performance coaches. The team sport coaches had the common thread of prior leadership experience (e.g., being a team captain as an athlete).

Nash and Sproule (2009) interviewed nine expert coaches to explain how they became expert coaches. The themes that emerged in the coaches' explanation for how they developed into experts included experience, knowledge, personal characteristics, networking and philosophy. Although experience as a coach has been a commonly identified factor supporting coaching development, little is known about the specific details of this (developmental) experience. In fact, criteria for identifying expert coaches have often been studied, yet how personal characteristics might relate to coaching skill development has received much less attention. Indeed, there may be characteristics of a coach critical to the development of expertise that are not as important once a coach becomes an expert. The present research focuses on both of these issues.

Abraham et al. (2006) argued that further research is needed in relation to how coaches develop their expertise. This is necessary to build programs that effectively foster coach development (Abraham et al.). The present study investigates how coaching expertise develops, as viewed by a group of elite coaches and athletes. In summary, the purpose of the current study was to elucidate definitions of expertise and to explore the developmental process involved in becoming an expert coach.

Methodology

The qualitative research approach used was in the tradition of grounded theory (Glaser & Strauss, 1967). Grounded theory research seeks to discover a theory that is "grounded" or emerges from the data (Glaser & Strauss). The current study lent itself to such an analysis since literature on the development of coaching expertise requires more exploration.

Participants

To provide richness of data, purposeful sampling was utilized to select study participants (Patton, 1990). The participants in this study were eight Canadian, university level or higher coaches (representing both team and individual sports) and seven Canadian, university level or higher competitive athletes (both team and individual), all from an Ontario university. All of the coaching participants were head coaches. It was decided to interview elite athletes along with coaches since it was felt that the athletes would provide a unique (and informed) insight into coaching expertise. University-level coaches were selected because they exhibit the characteristics of expert coaches that have been used in previous coaching studies (e.g., have coached for 10 or more years, have lead athletes to national level or higher) (e.g., Horton et al., 2005; Côté et al., 1995; Côté & Sedgwick, 2003) and they represented a diversity of sports, as well as representing male and female teams.

The coaches had a mean of 26.8 years of experience as coaches. They came from rowing (n=2), football (n=2), wrestling (n=1), cross-country running (n=1), ice hockey (n=1) and rugby (n=1). One coach in this study was National Coaching Certification

Program (NCCP) Level 5 certified, five coaches were Level 4 certified, one coach was Level 3 certified and one coach did not provide his NCCP level since he did not feel that NCCP qualifications were important. The NCCP is the coaching certification program in Canada. Five of the coaches have coached international competitors (one has coached Olympic and World Champions, one had coached World Champions and Olympic medallists), two of the coaches had coached professional athletes and one had coached National university champions. The coaches had a mean of 13.3 years of experience as athletes in the sport they currently coach (experience accrued prior to commencing coaching). Their athletic experience ranged from Olympic competitor to Professional athlete to NCAA participant. Seven of the coaching participants were male and one was female. These coaches were strategically chosen because of the background understanding they would have for the development of expertise in coaching and their lengthy educational and academic experiences.

The athletes came from a variety of sports (rowing, (n=2); synchronized swimming, (n=1); rugby, (n=1); wrestling, (n=1); cross-country running, (n=1); and swimming, (n=1)) and had accumulated a mean of 10.0 years of experience in their sport. All of the athlete participants had competed at the international level and had had a mean of 9.1 coaches in their careers. This number is important since the experience that the athlete participants have had with coaches provided a rich context on which to base their comments. Six of the athlete participants were female and one was male. The coaches represented six sports: rowing, n=2; football, n=2; ice hockey, n=1; cross-country running, n=1; wrestling, n=1; and rugby, n=1.

The gender breakdown was not something of concern as there was no a priori sense that gender made a difference in expertise development. I interviewed the coaches at my disposal. At the time of the interviews there were only two female head coaches of any varsity team at the university.

Procedure

In-depth, semi-structured interviews were utilized to elucidate the qualities of an expert coach and to delve into the process of coaching expertise development. The

coaches were recruited via email by the research team. The coaches email addresses were accessible by the research team on the university website. The athletes were also recruited via email. Since all of the athletes were students at the time of the interview, their email addresses were found on the university website. Some of the athletes were recommended by the coach participants in the study. Others were sought out due to their elite status and past athletic success. Once recruited to participate in the study, the participants completed a short demographic questionnaire to provide background information on his/her involvement in sport. A different questionnaire was used for coaches and athletes. The participants were sent the interview guide via email so that they could consider their answers prior to arriving to the interview. Upon arrival at the interview, the participant was briefed on the purpose of the study. At this time, the participants read the letter of information on the study (if they had not read it prior to arriving) and signed a consent form. The interviews lasted approximately fifteen to sixty minutes (the coach interviews typically lasted longer than the athlete interviews) and were recorded with a Sony Voice Recorder. Interviews were later transcribed verbatim. Ethical approval for the study was obtained through the University of Western Ontario ethics board.

Interview

The main interview questions were as follows: How would you define an expert coach? Can someone who coaches development level athletes be considered an expert coach? How can we identify an expert coach? What does it take to become an expert coach? Probes and follow-up questions were utilized to ensure richness of the data. A commonly used probe question that was directed to the coaches was: How do you think you became an expert coach? Other common probes consisted of: Can you give any specific examples of a coach that you think is an expert? Can you think of any skills that an expert would have or any attributes or characteristics that could someone could identify? Athletes were often asked to compare coaches who they perceived to be an expert versus a less skilled coach they had during the course of their career and asked to comment on the attributes and skills of both.

Analysis

The interviews were analyzed inductively, ensuring that the categories that emerged came from the data. The inductive analysis process began with open coding to identify meaning units (Glaser, 1992). A meaning unit has been defined by Tesch (1990) as "a segment of text that is comprehensible by itself and contains one idea, episode or piece of information" (pg. 116). The transcripts were read several times and each meaning unit was highlighted in the text. The following excerpt from the interview transcript of a coaching participant in the current study illustrates how the coding process began. The paragraph from the transcript is as follows: 'My quiet time when I do this is when I'm driving my car to the, to a workout….it's about a 15 minute drive. Um, I'll visualize or think about things that may come up, incidents or things like that and then I think about how I'll react to it...and that's in my mind, part of being an expert coach'. The research team extracted the following: 'I'll visualize or think about things that may come up, incidents or things like that and then I think about how I'll react to it' since it was a separate thought. The extracted text was copied to another word document and compared to other bits of extracted text to determine sub-categories and categories. This particular meaning unit contributed to the sub-category of visualization in the internal feedback category of feedback under the topic coaching development. This process is referred to as the constant comparative method. Two researchers read four interview transcripts and independently developed a preliminary coding scheme that identified meaning units through open coding (based on line-by-line analysis of the interview transcripts; Glaser, 1992). The researchers discussed any disagreements in the coding scheme and made changes where necessary. The first author then inductively analyzed the remaining interview transcripts and revised the preliminary coding scheme as new categories emerged. She discussed these changes with the second author as they arose. The same coding scheme was utilized for both the coach and athlete data.

The interview transcriptions were prepared with Microsoft Word and saved. The meaning units were highlighted and moved to a separate document where they were arranged into sub-categories and categories. A copy of the transcripts including each labeled meaning unit was saved and stored.

Steps to Ensure Trustworthiness of Data Analysis

The first author of the study had 12 years of coaching experience at the time the study was undertaken. It is possible that this could have affected the researcher's analysis of the data since she may have assumptions and biases regarding the coaching process and coaching development. For this reason, it was important that reflexivity (also known as self-awareness or self-reflection) was used throughout the analysis. A method of doing this is by analyzing and discussing the data frequently as a research team (Morrow, 2005). A further step taken, as reported above, was to seek the feedback of the participants of the study. This is referred to member (or participant) checking (Morrow). Member checking was done in two ways. The interview transcripts were sent to all of the participants. They were told that they could make changes to their answers if they felt that their intended responses to the interview questions were not apparent. They were also sent a copy of the results and asked to provide feedback. None of the participants made changes to their interview transcripts, nor did any provide feedback that resulted in a change in the analysis of results. Three of the participants changed the wording of the quotes that were selected from their transcripts to be used in this manuscript. A final step taken was to utilize the responses of both coaches and athletes. This is a method of triangulation. Agreement between coaches and athletes gives more validity to the responses of both groups.

Results

The total number of meaning units identified in the interview transcripts was 469. The athletes provided 198 meaning units and the coaches provided 271 meaning units. The analysis of the data revealed three main topics: descriptors of expert coaches, identifiers of expert coaches, and development of coaching expertise.

Descriptors of expert coaches elicited eight categories: athlete/coach interaction, athlete performance, knowledge, type of expert, duties of an expert, personal characteristics of the coach, experience, and level of athlete the expert coach coaches. Two main categories of identifiers of an expert coach emerged: reputation and observable athlete performance/skills. Finally, the development of coaching expertise elicited five

main categories: personal characteristics, time, adaptation process/experience, environment and opportunity. Quotes are included to give insight into the participants' responses. Coach quotes are identified with a "C" and the participant number; athletes are identified with an "A" and the participant number.

	Number of Athlete MUs	Number of Coach MUs	Athlete N	Coach N	Total N
Identifiers of an Expert Coach					
Reputation	6	32	3	2	5
Peer Recognition	0	9	0	3	3
Athlete Recognition	3	17	2	5	7
Parental Recognition	0	2	0	2	2
Media/Public Recognition	0	2	0	2	2
Observable Athlete Performance/Skills	0	11	0	4	4
Descriptors of an Expert Coach					
Athlete/Coach Interaction	40	7	0	0	0
Feedback Given	11	0	4	0	4
Relationship with Athlete	6	2	4	2	6
Treatment of Athlete	23	5	6	3	9
Athlete Performance	6	17	4	6	10
Knowledge	32	59	0	0	0
Procedural Knowledge	12	22	4	7	11
Declarative Knowledge	20	37	7	7	14
Type of Expert	3	11	0	0	0
Generalist	2	5	1	3	4
Specialist	1	6	1	1	2
Duties of an Expert	5	4	2	1	3
Personal Characteristics	43	34	0	0	0
Coaching Style	16	6	5	4	9
Coaching Philosophy	1	4	1	4	5
Open-Minded	10	15	3	4	7
Personal Traits	16	9	7	4	11
Experience	11	8	1	1	2
As a coach	7	5	4	3	7
As an athlete	3	2	2	2	4
Level of Athlete	8	17	0	0	0
All levels	3	7	3	6	9
Just elite	5	10	3	6	9
Development of an Expert Coach					
Personal Characteristics	20	21	5	7	12
Time	10	11	4	7	11
Adaptation Process / Experience	14	50	0	1	1
Experience as a player	3	5	3	4	7
Experience as a coach	3	11	2	6	8
Feedback- Internal	0	9	0	2	2
Feedback- External	1	5	1	6	7
Active Knowledge Acquisition	7	11	4	4	8
Opportunity	0	4	0	3	3
Environment	0	4	0	1	1

Table 2.1. Number of Meaning Units for Each Category and Number of Participant Contributions to Each Category

Since several of the categories of identifiers and descriptors have been stated in previous research, only novel findings, or findings that are conducive to a research definition of an expert coach without use of tests or various other measures, are detailed in the results section below. Further research is needed to investigate how we can devise objective measures to identify expert coaches. Table 2.1 includes each category and sub-category that emerged from the inductive analysis of the interview transcripts. The number of meaning units for both coaches and athletes are reported, as well as the number of coaches and athletes (N) whom contributed to each category and sub-category.

Descriptors and Identifiers of an Expert Coach

Two main categories of identifiers of an expert coach emerged: reputation and observable athlete performance/skills. Descriptors of expert coaches elicited eight categories: athlete/coach interaction, athlete performance, knowledge, type of expert, duties of an expert, personal characteristics of the coach, experience, and level of athlete the expert coach coaches.

Reputation

The reputation of the coach amongst various groups emerged as a method of identifying an expert coach. The finding among the elite group of coaches and athletes interviewed in this study is that peer (i.e., other coaches) and athlete recognition are integral in deciding whether or not one is an expert coach. As the following quote illustrates, one of the coaches in this study indicated that as athletes have direct contact with coaches, they would have valid opinions as to whether or not the coach is an expert:

> I would take into account that athlete's perception of that coach because the coach is working directly with that athlete and only truly the athlete would know if they are getting what they need in a way out of the coach because you have to be in a position to know what you need (C5).

To a lesser degree, the parents of youth athletes could be used to verify a coach's reputation: "probably with younger athletes, feedback from parents would be suitable" (C1).

Athlete Performance

Athlete performance indicators are a typical criterion used in coaching expertise studies. These indicators, as described by our study participants, include: success, win/loss record, winning National or International events, consistency of good results, record breaking performances, number of athletes on a National team or Olympic team, good results in more than one environment (i.e., at different universities or different training sites), and the number of "good" athletes in the program. As Coach 4 indicated, "you can't be an expert unless you have consistency of good results".

Type of Expert

An interesting finding is that most of the coaches who participated in this study identified a generalist and specialist as two possible expert coaching descriptors. Both types can be considered an expert coach but they have different knowledge bases and skill sets. A generalist is good at a variety of tasks: "There are some coaches who I would call expert coaches who are more generalists…so they're good in a lot of areas" (C1). A specialist is an expert in a particular area of coaching:

> You can be an expert in learning, in teaching someone the sport, the technique of the sport and you can be an expert in bringing someone up and you can be the expert in national teams and you can actually be the expert in individual counseling (C2).

Experience

With the distinction of expert comes some required coaching experiences: has extensive coaching experience with a variety of age groups and levels ("I think you have to have taught a lot of different levels because I don't think you can only have taught 30 year olds and be able to say I'm a good teacher" C7) and has coached high level athletes. Experience as an athlete was also identified as integral. The finding was that the coach should have participated in the sport at a high level but not necessarily the most elite level ("I believe that an expert coach has to have played at a high level as the higher level you've played, the better understanding you have of what it's like to get there" C7).

Level of Athletes the Coach Coaches

The level of athletes the coach coaches reflects the notion that an expert can coach athletes at a variety of different levels in sport. Several of the participants indicated that an expert coach does not necessarily have to coach the highest level of athlete. The sentiment is that if one does an outstanding job at a lower level, one can still be considered an expert. For example, Coach 3 responded as follows: "I think that there are some people who work with lower levels who probably are expert coaches but they probably haven't been given the recognition or notoriety that usually goes hand in hand with being acknowledged as an expert". The results indicated that there were ideas counter to this response. Some participants feel that one must coach elite athletes to be considered an expert. One athlete recommended that:

> I think you're not really an expert until you're working with the top so I think I'd say they are probably a good coach but not an expert if they are working with elite athletes who are not at the top of their game (A3).

Development of Expert Coaches

One purpose of this study was to begin to create a model that describes how coaches develop their expertise. The development of coaching expertise elicited five main categories: personal characteristics, time, adaptation process/experience, environment and opportunity. The components that emerged will first be explained and then the model will be described in terms of linkages between the components in the discussion section.

Personal Characteristics Supporting Development

It can be seen in Table 2.1 that a list of personal characteristics of the coach emerged both in identifying coaches whom are already expert coaches as distinct from those characteristics deemed necessary to support coaching expertise development. The latter are highlighted here.

The participants suggested that drive and passion are necessary for one to develop into an expert coach. The following quote illustrates this example:

> I think an underlying drive and passion to become the best…I think if you want to be an expert coach you want to have the drive to win just as an athlete does and the underlying passion to always become better and the drive to be disappointed when your team doesn't win. (A2)

Dedication and commitment were also identified as necessary personal characteristics for the development of coaching expertise. Athlete 3 illustrated the importance of dedication in expert coaching: "somebody who's obsessively dedicated to their sport". It was suggested that being empathetic to athletes and being a people-person helps a coach develop into an expert. Open-mindedness was mentioned several times as a necessary characteristic to facilitate coaching development:

> I think you have to always keep an open mind for change, whether it's changing technical things or the game's changing, changing rules over the last number of years, certainly the equipment has changed and the players change and so if you don't keep up with the innovations or the technologies that are coming along then certainly I think some of the coaches who don't keep with the game see the game sort of pass them by (C7).

Open-mindedness was defined by the study participants as: a willingness to learn, willingness to accept criticism, willingness to listen to others, willingness to advance with the changing times, willingness to recruit resources to assist him/her in areas where he/she is weak and being a good listener.

Time

The participants in this study highlighted the importance of time in the development of coaching expertise ("you can't do it in a New York minute" C3). The notion is that coaching needs to be a full-time occupation if the coach aspires to become a true expert ("it has to be an avocation, I think, which is harder, obviously for someone who is not a full-time coach" C4) and that a lot of time has to be spent working with

athletes. However, a timeline was not given; our participants did not suggest a minimal amount of time necessary to become an expert.

Adaptation Process/Experience

This category has four sub-categories: experience as a player, experience as a coach, feedback (external and internal) and active knowledge acquisition. Experience as a player includes: experiences with past coaches and basic knowledge gained about the sport as a player:

> I saw a lot of things in my own experiences as a player, things I didn't want to be, the way I didn't want to coach as examples from people who I had and yet there were many positive examples that I tried to emulate and incorporate into my own coaching (C8).

Experience as a coach includes: experience with different levels and age groups, trial and error, and learning from experiences in order to improve as a coach. The following quote represents what experience can do for a coach:

> I notice with a lot of older coaches, they are often in tense situations or under scrutiny and they act very calmly and they seem to have a ready answer. I watch them and I think they've done this so many times before they've probably already answered that question or a similar question. They are almost like a computer, they process a perfect answer" (C1).

Feedback comes from both external and internal sources. External feedback is received or sought from mentor coaches, athletes and other sources. For example, A6 said: "The willingness to get feedback from other people to be able to improve yourself, never being satisfied with your level of knowledge and constantly working to improve it". Mentoring was identified as an important tool in becoming an expert as C5 indicated: "Becoming an expert in anything, you have to have some coaching in doing it".

Internal feedback (or introspection) is achieved through a coach's self-analysis and visualizations of situations ("If I think about myself, what I do, is I constantly self-analyze…I'll visualize or think about things that may come up, incidents or challenges and then I think about how I'll react to them" C1). With this type of feedback a coach will look within to identify his/her own strengths and weaknesses and ponder what he/she needs to do to improve ("dealing with the objectives that you have as a coach and constantly re-assessing and re-evaluating those things and philosophically adjusting and moving forward" C3).

Knowledge acquisition includes on-going education (e.g., attending conferences, upgrading certifications, talking to other coaches and reading) and deliberate expertise development (i.e., coaches deliberately seek learning experiences in order to improve). This category also includes observational learning ("…for example when I was young I was way too careful. I learned by observing other coaches' programs and you can actually push much harder, so this is what I learned" C2). Self-teaching ("I think a lot of the top coaches are more self-taught than anything. You can't really teach an expert coach in a classroom" A3) and learning characteristics that are of value to the coach are also a part of knowledge acquisition ("…and you have to also learn to become a leader" C2).

Opportunity and Environment

It was suggested that being given certain opportunities can assist one in becoming an expert: "it's just luck that for example, I was given an opportunity here to coach and I had very little coaching background" (C5).

One participant suggested that the proper environment is necessary to become an expert: "You have to be in an environment that is conducive to producing athletes" (C6).

The aforementioned categories contributed to the preliminary conceptual model of coaching expertise development. How these categories interact and form a model will be discussed further in the next section of the paper.

Discussion

The goal of this study was two-fold. The first was to elucidate a definition of an expert coach elicited from elite coaches and athletes that could be used in scientific research on expert coaching. The second objective of this study was to delineate what elite coaches and athletes believe is necessary for a person to develop into an expert coach.

Descriptors/Identifiers of an Expert Coach

The current study suggests that there are several factors that have been overlooked in defining what an expert coach is, although some of our findings are in accordance with past literature. Researchers often rely on other coaches to identify expert coaches to be studied (e.g., Côté & Sedgwick, 2003). The current results agree with the prior research as peer recognition emerged as a method of identifying an expert coach. The suggestion among the elite coaches and athletes interviewed in this study is that athlete recognition is also important in deciding whether or not one is an expert coach. To my knowledge, no studies have been done on expert coaches that utilize the athletes' opinions in identifying expert coaches. Côté & Sedgwick utilized athletes in their study to identify expert coach behaviours but not to provide a definition of an expert coach.

Several sub-categories of knowledge emerged that have been identified in the literature as being essential for an expert coach (e.g., sport science, sport-specific). For example, Côté et al. (1995) suggested that a method to obtain such knowledge is through coaching certification and formal education. An interesting finding from the present research is that most of the coaches identified a generalist and specialist as two possible expert coaching scenarios. This breakdown into generalist and specialist suggests that research and practice needs to start identifying and defining where a coach's expertise lies. For example, a coach may be quite skilled in teaching the athletes but have deficits in the ability to plan for their athletes. At the very least, I am suggesting that researchers identify the areas of coaching expertise they are studying (generalist or specialist, game strategist or developer of athletes, etc.) Since the results suggest that they have different knowledge bases, it would also be useful to broaden the study of coaching expertise and

begin to study assistant coaches who may, in fact, be more skilled at a particular aspect of the sport than the head coach.

The level of the athlete an expert coach works with does not agree with past research on expert coaches. Typically, only coaches who coach at the highest levels of sport have been selected as study participants (e.g., Horton et al., 2005; Côté et al., 1995; Côté & Sedgwick, 2003; Bloom et al., 1999; Gilbert et al., 2006; Erickson et al., 2007). The results suggest that one can be considered an expert at different levels of competitive sport. Studies of experts at lower levels of sport could be useful for coaching education initiatives. As the participants suggested, there are specific forms of knowledge required for each different age group/competitive level. For this reason, it would be fruitful to study expert coaches who coach several levels of athlete so that we can gain insight into what is required for the most effective athlete development.

Suggestions for How to Define Expert Coaching in Future Studies

Some of our results are in agreement with the current method of identifying expert coaches found in coaching literature. Peer recognition, athlete or team success, experience and level of athlete the coach works with are all commonly seen in coaching expertise studies. As already mentioned, Côté et al. (1995) defined expert coaches from their grounded theory research of expert gymnastic coaches by the following criteria: a minimum of 10 years of coaching experience, all coaches had to have competed at the provincial, national or international level, had to have developed at least one international and two national level gymnasts, and the coaches had to be recognized by the national coach as being one of the best at developing elite gymnasts. I propose that the following indicators be added to the above list- athlete recognition of coaching expertise and type of coach (head coach versus assistant coach).

We must also re-examine our idea of what an expert is. The study participants, for the most part, did not believe that expert coaches only work with the most elite athletes. One could be considered an expert with certain age groups and/or levels and we should not discount these coaches. Only a small percentage of coaches' work with elite

athletes and what these coaches have undergone to develop their expertise may not be the same as coaches of junior level or developmental athletes.

The following is my suggestion for criteria to be used in future studies on coaching expertise. Coaches must have: 10 or more years of experience (as per Ericsson, Krampe & Tesch-Römer's 1993 research); be recognized by peers (other coaches) as experts; be recognized by athletes as experts; have successful athletes/teams at any level of competition (researchers to provide a rationale for studying coaches at a certain level). Researchers should also identify the type of coach or area of coaching expertise being studied. In keeping with the tradition of studying expertise, I suggest that research in coaching expertise would benefit by being more specific. In the Ericsson et al. (1993) study, the musicians being studied all played the same instrument. The level of athlete the coach was in the past may be a criterion but according to our results, the coach need not have been an elite athlete. For this reason, I do not agree with coaches being excluded from a study due to a lack of competitive experience. Côté et al. (1995) made a provision that two coaches in their study had not competed at the required level for the study but allowed the coaches to participate since they had accumulated fifteen and seventeen years of coaching experience. They posited that the extra coaching experience compensated for a lack of competitive experience. The converse assumption has also been made by Horton et al. (2005). The group interviewed a coach with less than ten years of coaching experience because the coach had extensive experience as an athlete. While I agree that athletic experience contributes to coaching expertise, the assumption made by these authors does not agree with the theory of deliberate practice in that athletic experience may not be experience within the domain of coaching.

Development of Coaching Expertise

Personal characteristics emerged as a method of describing what an expert coach is (essentially the outcome of the expertise development process), but, also, the category emerged when the participants were asked how expertise develops. Based on my findings, it seems as though there are some essential personal characteristics that are required for one to develop into an expert coach. Personal characteristics also emerged in

a study by Nash and Sproule (2009) that sought to explain coaching expertise development. An open question is whether these personal characteristics are innate or learned.

An interesting finding in this study was the characteristic of open-mindedness. It was reported by both coaches and athletes to have a significant impact. The concept of being open-minded (as an outcome) was identified as a characteristic of expert coaches in a study by Vallée and Bloom (2005) but was not discussed. The notion of expert coaches being open-minded has also appeared in studies by Werthner and Trudel (2006) and Jones, Armour and Potrac (2003) but was not related to the expertise development process.

Research in the field of psychology on mindsets can be useful to explain how open-mindedness can be integral for coaching development. Fujita, Gollwitzer and Oettingen (2007) studied how mindsets affected recognition memory. A deliberative mindset allows for open-minded processing of incidental information while an implemental mindset lends itself to closed-minded processing. One with a deliberative mindset is more receptive to all sources and types of information. Fujita et al. posited that in order to make good decisions, one must be open to all available information. The implemental mindset is more selective. A coach, for example, with this type of mindset will filter all information that he/she does not feel is relevant. The study showed that participants with a deliberative mindset recognized whether they had previously seen incidental words on a recognition task quicker, and with greater accuracy, than those with the implemental mindset. In other words, the open-minded mindset allows for a quicker access to memory and thus a quicker response.

Fujita et al. (2007) posited that a deliberative mindset allows one to be more receptive and open to all available information and will positively affect decision making in that one will be more informed. Abraham et al. (2006) highlighted the fact that coaching research typically finds coaching to be a decision-making process and decision-making by coaches was widely discussed by Lyle (2002). The developmental role of

open-mindedness will be expanded on as it appears integral to the process suggested by the present participants to promote the development of coaching expertise.

In accordance with the deliberate practice literature (see Ericsson et al., 1993), the participants in this study highlighted the importance of time in the development of coaching expertise. Both coaches and athletes recognized the importance of time to be able to experience many different situations and athletes in order to develop their skills and knowledge. Along with time, however, several other interesting factors emerged in the adaptation process/experience category.

It was reported by the study participants that the coach combines the knowledge gained as a player and with past coaches with the experiences he accumulates as a coach. The time spent as an athlete is a time when future coaches learn the specifics of the sport but they can also learn about the coaching process. As mentioned by one of the study participants, he tries to emulate some coaches he has had and counter to that, he avoids teaching methods or behaviours that he did not find beneficial to athlete development. Past experience as an athlete has been widely mentioned in former studies as being important (Cushion, Armour & Jones, 2003). In addition to the developmental role, the study participants indicated that they have empathy toward their athletes as a result of their experience as an athlete.

A property of the coaching experience category was learning through trial and error during which the coach will learn from successes as well as mistakes. This learning will in turn affect future decisions that a coach makes. This process has been identified in previous literature as central to the developmental process (e.g., Abraham et al, 2006; Jones et al., 2003; Cushion et al., 2003; Irwin, Hanton & Kerwin, 2005) so it is not surprising that this was mentioned by the coaches and athletes. Expert coaches also seek or accept feedback from external sources in order to improve. One such source is interaction with a mentor coach which has been identified in past literature as integral to coaching development (for instance, Nash & Sproule, 2009). Mentor coaches facilitate growth but a coach that mentors others will also learn from this experience (Jones et al., and Lee, 2007).

Participants in the current study cited past coaches as their main source of mentorship. Another external source that was identified in the present study was feedback from athletes. Past research has discussed the ability of the coach to give feedback but has not discussed the usefulness of the coach seeking and receiving feedback from the athlete in order to improve as a coach. Lyle (2002) mentioned feedback in his proposed coaching model but not in great detail. It would seem logical that the value of athlete feedback would be at least partially determined by the level of athlete being coached.

According to the study participants, internal sources of feedback occur via introspection. It has been suggested that the process of reflective practice requires introspection (Lyle, 2002). Reflective practice was introduced by Schön (1983) and has been studied in a wide variety of professional avocations (e.g., nursing). It was suggested by Knowles, Gilbourne, Borrie and Nevill (2001) to be a useful method for coaches to develop their skills. Irwin et al. (2005) studied an elite group of gymnastic coaches and purported that these coaches did, in fact, learn by using reflective practice. A key finding in this study is that the group of elite coaches has illuminated the importance of being introspective and this opens the door to reflection. A product of this process is that the coach will identify his/her strengths and weaknesses as a coach and may seek out assistant coaches to provide strength to the area where he/she is lacking. Ericsson et al. (1993) have purported that to become an expert in a given domain, the performer must be given feedback on performance, particularly on strengths and weaknesses, to improve. Coaches are the main source of this feedback for their athletes, and according to the present study, coaches are also responsible for doing this for themselves as well.

Another sub-category was titled active knowledge acquisition. According to the study participants, those who want to become (or have become) experts must engage in on-going education. This has been highlighted in previous studies on expert coaches (e.g., Hardin, 2000). On-going education (in this study) has been defined as reading, attending conferences, upgrading certification and talking to other coaches. Other sources of knowledge acquisition are: observational learning (mainly of other coaches) and the coach identifying potentially fruitful activities for learning and engaging in them

(deliberate expertise development). An example of this would be taking a class or attending a seminar.

Observational learning (learning as a result of observation of another coach) has been reported as a useful method for athletes to learn (Wesch, Law & Hall, 2007) and it has been shown that coaches learn from observing other coaches (Jones et al., 2003, Cushion et al., 2003). This is another interesting finding that should be studied further. Observational learning can be differentiated from mentorship in that the coaching participants in our study simply said that they watch other coaches (not necessarily just in their sport) and learn just from watching. There is no interaction with the other coach in this case, whereas in mentorship interaction is the benchmark.

The coaches in the present study also sought out learning opportunities that could lead to their improvement. In line with this, the coaches will often teach themselves if they have identified a topic/area that they need to learn more about. Further to this, the coaches may learn that there are certain characteristics or behaviours that would be advantageous to add to their coaching skills. For instance, a coach participant in this study suggested that coaches must learn to become leaders. In addition, opportunity and environment were found to aid in the expertise development process. The training environment appears to be essential for development.

Upon examination of the categories that emerged for the development of coaches, there are definite linkages that can be made to suggest a preliminary model for coaching expertise development. I will start with personal characteristics of the coach. A coach who is open-minded will be willing to seek feedback from external sources and be willing to look within (introspect) and self-analyze, and also seek out assistance for perceived weaknesses. An open-minded coach will also be open to learning new things and will seek out various learning opportunities. Drive, passion, dedication and commitment will ensure that the coach puts the necessary time into learning his/her craft. Being empathetic to athletes will facilitate the coach's need to seek feedback from them. Introspection relates to open-mindedness in that an open-minded coach will be willing to

determine where his or her strengths and weaknesses lie. An open-minded coach will use this information to bring resources to his weaknesses.

The comments made by study participants suggest that coaching development is largely a self-adaptive process. The coach is responsible for his/her own development and must make his/her own decisions regarding how to best do so. Abraham et al. (2006) have suggested that a coach's development occurs via serendipitous methods, without structured programs. This can be contrasted to how an athlete develops: a coach tends to direct how often the athlete trains, the activities the athletes engages in, the intensity that the athlete trains at, and so on. Schempp, McCullick, Busch, Webster and Mason (2006) suggest that expert coaches "self-monitor". The coaches monitor themselves regularly in order to develop their craft. Schempp et al. found that experts monitor: skills, knowledge base, personal characteristics, philosophy and tools (i.e., use of new equipment). The results from the current study support this notion.

Werthner and Trudel (2006) presented Moon's (1999, 2004) generic view of learning as a method for how coaches learn to coach and identified three types of learning situations: mediated, unmediated and internal. Mediated learning situations are externally driven, unmediated learning situations are internally driven by the coach and internal learning situations are essentially episodes of self-reflection. An example of a mediated learning situation would be formal coach training clinics and an unmediated learning situation would be when a coach decides to seek out a mentor coach for advice. Internal learning situations occur when the coach reflects on his/her performance and questions his/her current knowledge base. All three situations were identified as valuable sources of knowledge acquisition.

Werthner and Trudel (2006) suggested that coaches will create their own learning situations and are reflective in the interest of learning. Results from the current study suggest that this is indeed an integral part of the coaching development process. The study participants identified mediated learning situations such as upgrading their National Coaching Certification Program certification and attending coaching conferences. Unmediated learning situations identified in the present study expands on what Werthner

and Trudel (2006) purported; coaches will seek out mentor coaches for advice but they will also seek advice from their athletes and others who are intimately linked to their day-to-day coaching. Internal learning situations were also apparent in our results via introspection. The participants in our study discussed the importance of looking within, particularly to identify strengths and weaknesses.

Summary of Discussion

My intent was to delineate a preliminary model for coaching expertise development. As mentioned before, the results suggest that coaches develop their expertise primarily through a self-adaptive process, meaning, the coach drives his/her development process. The process of expertise development starts with personal characteristics of the coach. Certain personal characteristics appear to facilitate the process of expertise development: drive, commitment, dedication, passion, empathy for the athletes and open-mindedness. In essence, these personal characteristics serve as a filter that acts on the inputs into adaptation process. This process is circular and iterative. Drive, commitment, dedication and passion will allow the coach to put the necessary amount of time into development. The coach undergoes an adaptation process that involves experience as a player, experience as a coach, feedback (external and internal) and active knowledge acquisition (the coach seeks out learning activities that he/she feels will assist in his/her development). These processes can be thought of as inputs into the adaptation or learning process. External feedback could be from mentor coaches, peer coaches, the athletes, among other sources. Internal feedback occurs via introspection and was mentioned to be used for identifying strengths and weaknesses as a coach. This process can only occur if the coach has the opportunity to work with athletes and spend a large amount of time doing so. An environment that is conducive to development must also be present. The model is not static as the role of various aspects of the model may change over time.

Conclusions

The results from this study suggest that the current definition of an expert coach requires some modification. We need to look beyond the accomplishments the athletes

have achieved and consider such factors as the level of athlete that is associated with an expert coach. It was suggested that one could be considered an expert at lower levels of sport. This should be of interest to those who study coaches of elite level athletes in the interest of developing coaching education initiatives. It would perhaps be more useful to study expert coaches at various levels of sport since the coach of elite athletes may operate very differently and have a different knowledge base than coaches of young, developing athletes. We also need to address the type of coach being studied. A head coach may be quite different than an assistant coach in their knowledge base and how they relate to athletes and they may have developed their coaching skills differently. This work has provided suggestions in how we define an expert coach but more study is needed in this area. I encourage other researchers to contribute to this line of research so that consensus on a definition can be reached.

There are many avenues that require exploration when it comes to expertise development in coaches. The first is how the coach's personal characteristics are developed (or if they are innate). The issue of open-mindedness seems rather critical as it can facilitate the coach's learning in a variety of ways (e.g., the coach is willing to learn and willing to accept assistance from others). Reflective practice has been promoted in the coaching literature but the notion of being introspective has received minimal attention. Since Lyle (2002) has suggested that being reflective requires introspection, the development of introspection should be studied further. Coaches in this study suggested that they identify their own strengths and weaknesses. It would be useful to know how coaches do this. It would also be fruitful to investigate the sources of feedback a coach receives in more depth and what the coaches do to adapt to the feedback they have received. Another area in need of further study is if there is a difference in how team sport coaches' versus individual sport coaches' expertise is defined and developed. It is clear that more research is needed to clarify the processes involved in developing coaching expertise and my goal is to refine the preliminary conceptual model I have presented here. The end point of this line of research should be a more effective training program for coaches.

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CHAPTER 3

Open-Mindedness, Feedback, Introspection and Mentoring Their Role in Coaching Expertise Development

Introduction

Whereas much has been written describing expert coaching, research on the development of this expertise has been sparse, especially when compared to the amount of research investigating athlete development. Several approaches have been utilized to uncover the complexities of the expert coach and expert coaching development. One such approach focuses on common experiences shared by expert coaches. Salmela (1995) outlined several experiences that were common to the group of team sport coaches he studied, including: involvement in several sports as young athletes, working with and learning from more experienced coaches early in their coaching careers, consulting with and learning from other expert coaches, learning from experiences and continuing education (includes formal education). Fleurance and Cotteau (1999) also studied how expert coaches develop and identified seven major themes that typify this process. Formal education, experience as a player in the sport, coaching experience, working with mentors, interaction with high level athletes, ongoing education and a personal commitment to coaching all emerged as integral to coaching development.

Another approach to the study of coaching expertise development is to delineate the paths that successful coaches have followed. Gilbert, Côté, and Mallett (2001) studied coaches at three levels of competition- high school, community college and college level in three different sports. A common theme amongst all three groups was extensive athletic involvement in a variety of sports. The college coaches specialized in fewer sports as athletes than the high school coaches. Activities that promote coaching development were engaged in more frequently by the community college and college coaches. All three groups of coaches spent minimal time undertaking formal coaching training. The authors of the study purposed that the pathway to expertise development must be specific to the coaching context, as evidenced by the differences shown by the three groups they studied. In a separate study on the experiences necessary to becoming an expert coach, Erickson, Côté, and Fraser-Thomas (2007) interviewed 19 coaches of elite athletes in both team and individual sports. As seen in previous studies, experience as an athlete, specifically in the sport they coach, seemed necessary. Mentoring and some formal training also emerged as important experiences. Extensive coaching

experience was required for one to become an expert coach and prior leadership experience was also necessary.

Although the aforementioned studies have given us valuable information that helps us understand expert coaching, they tell us much less about the specific underlying processes of expertise development. Another group of studies aimed to provide a theoretical framework for this process. Werthner and Trudel (2006) presented Moon's (1999, 2004) generic view of learning as a method for how coaches learn to coach. This framework identified three types of learning situations: mediated, unmediated and internal. Mediated learning situations are externally driven, unmediated learning situations are internally driven by the coach, and internal learning situations are essentially episodes of self-reflection. An example of a mediated learning situation would be formal coach training clinics and an unmediated learning situation would be when a coach decides to seek out a mentor coach for advice. Internal learning situations occur when the coach reflects on his/her performance and questions his/her current knowledge base. All three situations were identified as valuable sources of knowledge acquisition. Werthner and Trudel (2006) suggested that coaches will create their own learning situations and are reflective in the interest of learning.

Nelson, Cushion, and Potrac (2006) discussed formal, non-formal and informal coach learning via Coombs and Ahmed's (1974) model. According to this framework formal learning would include coach training and formal education. Non-formal learning includes attending conferences, seminars and coaching clinics. The term informal learning is used interchangeably with self-directed learning and includes such things as experiences accrued as a player, coaching experience, informal mentoring and interaction with peers and athletes. Other learning ventures such as reading books, visiting websites and watching videos fall into this category. While these models are informative they lack specific detail, particularly the temporal component of the lived experiences supporting a developmental process.

Using a grounded theory approach, Wiman, Salmoni and Hall (2010) sought to develop a preliminary model to describe the expertise development process in coaches.

To gain insight into this process elite coaches (n=8) and elite athletes (n=7) were interviewed. The results suggest that coaches develop their expertise primarily through a self-adaptive process, meaning, the coach drives his/her own development. For many of the coaches interviewed this process began with experiences as a player. During coaching, the key sources of inputs to the adaptation or learning process include experience, feedback (external and internal) and active knowledge acquisition (the coach seeks out learning activities that he/she feels will assist in his/her development). Throughout development personal characteristics such as drive, commitment, dedication, passion, empathy and open-mindedness are important. In particular, open-mindedness was identified by the coaches as playing a key role acting as a filter to the potential inputs available to the learning process. Throughout all coaching experiences feedback was critical to sharpen the knowledge gained. External feedback could be from mentor coaches, peer coaches, athletes, among other sources. Internal feedback occurs via introspection and was mentioned to be used for identifying strengths and weaknesses as a coach. Importantly, this adaptation process is circular and iterative leading to gradual increments in coaching expertise over time.

Several coaches acknowledged during the interviews that development can only occur if the coach has the opportunity to work with athletes and spend a large amount of time doing so. An environment that is conducive to development must also be present. Lastly, the model is not static as various parameters in the model may change over time. For example, some coaches discussed how their open-mindedness had changed over time.

Whereas open-mindedness was given a heightened role in the present research, it has received far less attention in the coaching development literature. For example, the concept of being open-minded (as an outcome) was identified as a characteristic of expert coaches in a study by Vallée and Bloom (2005) but was not discussed. The notion of expert coaches being open-minded has also appeared in studies by Werthner and Trudel (2006) and Jones, Armour and Potrac (2003) but was not related to the expertise development process.

Research in the field of psychology on mindsets can be useful to explain how open-mindedness could be integral to coaching development. Fujita, Gollwitzer and Oettingen (2007) studied how mindsets affected recognition memory. A deliberative mindset allows for open-minded processing of incidental information while an implemental mindset lends itself to closed-minded processing. A person with a deliberative mindset is more receptive to all sources and types of information. Fujita et al. posited that in order to make good decisions, one must be open to all available information. The implemental mindset is more restrictive. A coach, for example, with this type of mindset will filter out all information that he/she does not feel is relevant. The study showed that participants with a deliberative mindset recognized whether they had previously seen incidental words on a recognition task quicker, and with greater accuracy, than those with an implemental mindset.

Fujita et al. (2007) posited that a deliberative mindset allows one to be more receptive and open to all available information and will positively affect decision making in that one will be more informed. Abraham et al. (2006) highlighted the fact that coaching research typically finds coaching to be a decision-making process and decision-making by coaches was widely discussed by Lyle (2002). The developmental role of open-mindedness will be expanded on as it appears integral to the process suggested by the present participants to promote the development of coaching expertise.

According to Wiman et al. (2010), expert coaches also seek or accept feedback from external sources in order to improve. One such source is interaction with a mentor coach which has been identified in past literature as integral to coaching development (for instance, Nash & Sproule, 2009). Mentors facilitate growth in coaches, but a coach that acts as a mentor can also learn from this experience (Jones et al., and Lee, 2007). Being mentored and mentoring were both identified by the coaches interviewed in the Wiman et al. (2010) study as supportive of a growth process.

Another external source that was identified by Wiman et al. (2010) was feedback from athletes. Past research has discussed the ability of the coach to give feedback but has not discussed the usefulness of the coach seeking and receiving feedback from

athletes in order to improve. Lyle (2002) mentioned feedback in his proposed coaching model but from the perspective of the developing athlete rather than developing coaching expertise.

According to Wiman et al. (2010), internal sources of feedback occur via introspection. It has been suggested that the process of reflective practice requires introspection (Lyle, 2002). Reflective practice was introduced by Schön (1983) and has been studied in a wide variety of professional avocations (e.g., nursing). It was suggested by Knowles, Gilbourne, Borrie and Nevill (2001) to be a useful method for coaches to develop their skills. Irwin, Hanton and Kerwin (2005) studied an elite group of gymnastic coaches and purported that these coaches did, in fact, learn by using reflective practice. A key finding in Wiman et al. is that a group of elite coaches have illuminated the importance of being introspective and this opens the door to reflection. A product of this process is that the coach will identify his/her strengths and weaknesses as a coach. Ericsson, Krampe and Tesch-Römer (1993) have purported that to become an expert in a given domain, the performer must be given feedback on performance, particularly on strengths and weaknesses, to improve. Coaches are the main source of this feedback for their athletes, and according to the Wiman et al., coaches are also responsible for doing this for themselves as well.

The primary purpose of the present research was to confirm and clarify the role of open-mindedness, feedback, introspection, and mentoring in coaching expertise development proposed by Wiman et al. (2010). The previous sections have delineated how these concepts can contribute to coaching expertise development. To study these concepts further, in-depth interviews of elite coaches representing several sports were conducted.

Methodology

Participants

Seven elite, university level or higher coaches from an Ontario university were selected to take part in this study. All of the coaches were head coaches at the time the

interviews occurred and were interviewed for Study One as well. Purposeful sampling (Patton, 1990) was utilized to select study participants that would provide rich data. The participants were interviewed for a previous study by the research team on coaching development and defining expert coaching performance. Since this was a sequel to the Wiman et al. (2010), the participants were given a brief synopsis of the findings of that study prior to participating in the current study. Potential participants were contacted via email to determine their interest in participating in the current study. The participants had a mean of 27.7 years of coaching experience and 11.8 years of experience as athletes (experience accumulated prior to commencement of coaching career). One of the participants was National Coaching Certification Program (NCCP) Level 5 certified, four of the coaches were NCCP Level 4 certified, one of the coaches was NCCP Level 3 certified and one of the coaches did not report an NCCP level. Five of the coaches had coached international athletes, one of the coaches worked with professional athletes and one of the coaches had coached national champions. The coaches represented 5 sports: rowing, (n=2); football, (n=2); cross-country running, (n=1); wrestling, (n=1); and rugby, (n=1). Six of the coaching participants were male and one was female. Their athletic experience ranged from Olympic competitor to Professional athlete to NCAA participant.

Procedure

In-depth, semi-structured interviews were utilized to confirm the findings of Wiman et al (2010). The participants were sent the interview guide via email so that they could consider their answers prior to arriving to the interview. Upon arrival to the interview, each participant was debriefed on the purpose of the study. At this time, the participants read the letter of information for the study (if they had not read it prior to arriving) and signed the consent form. The interviews lasted approximately 30 to 45 minutes and were recorded with a Sony Voice Recorder. They were later transcribed verbatim. Ethical approval for the study was obtained through the Office of Research Ethics at the University of Western Ontario.

Interview

The main interview questions were as follows: 1) Please discuss the role that open-mindedness has served in developing your coaching expertise. 2) Please comment on how and if this has changed over the course of your career. 3) What role does introspection play in the development of your expertise? 4) How do you identify your own strengths and weaknesses as a coach? 5) What do you do with this information? 6) Who or where do you seek feedback from and how do you use it to make yourself a better coach? 7) Comment on the experiences you've had with mentor coaches and how they have contributed to your coaching expertise development. Common follow-up questions used were: how has your use of introspection changed over the course of your career? And how has your use of mentors changed over the course of your career?

Data Analysis

The interviews were analyzed deductively, since the participants were specifically asked to discuss open-mindedness, introspection, feedback, mentoring and strengths and weaknesses. Two researchers read the interview transcripts and independently developed a preliminary coding scheme through open coding (line-by-line analysis of the interview transcripts to identify meaning units). The meaning unit has been defined by Tesch (1990) as "a segment of text that is comprehensible by itself and contains one idea, episode or piece of information" (pg. 116). The researchers discussed any disagreements in the coding scheme and made changes where necessary. The author of this thesis deductively analyzed the interview transcripts and revised the preliminary coding scheme as new sub-categories emerged and discussed these changes with the second researcher as they arose.

At the conclusion of data analysis, the interview transcripts were sent to all of the participants so they could make changes to their answers if they felt that their intended responses to the interview questions were not apparent. They were also sent a copy of the preliminary results section with their quotes highlighted and asked to provide feedback. They had the option to remove or re-word their quotes if they felt that changes were necessary. None of the participants made changes to their interview transcripts, nor

did any provide feedback that resulted in a change in the analysis of results. None of the participants changed the wording of the quotes that were selected from their transcripts to be used in this manuscript.

Steps to Ensure Trustworthiness of the Data

The lead researcher of the study has extensive coaching experience and it is possible that this could bias or affect the analysis of the data. Reflexivity (also known as self-awareness or self-reflection) was carried out through the analysis process to ensure that the lead researcher's potential biases or assumptions did not affect the outcome of the study (Morrow, 2005). One step taken to ensure reflexivity was discussing the data frequently as a research team. Another method was to seek the feedback of the study participants.

Results

The interview questions were designed so that the coaches would specifically discuss how open-mindedness, introspection, feedback, their strengths and weaknesses, and mentoring contributed to their development of coaching expertise, therefore, these were the main categories considered. Abbreviated data tables can be found in each section. The expanded version of each table can be found in Appendix B.

Open-Mindedness

Open-mindedness was defined by the study participants in terms of what it means to coach expertise development. The coaches defined open-mindedness in a variety of ways. In short, open-mindedness is openness to information and situations in support of continued evolution as a coach. One comment by participant C3 typifies this thinking:

> I think the rationale behind open-mindedness and why I think it's so important is it comes back to personal growth, personal development as a coach, so to be open-minded, you're open to new ideas and open to other peoples' opinions.

Open-mindedness serves a role in coaching development primarily as an impetus to new learning opportunities. The following quote typifies one role of open-mindedness in expertise development:

> You are brought up with a training method, and you feel very comfortable with it and all of a sudden you hear a very good (team), a very good nation (uses) a very different training method and you try to use this or not and I believe, again, it's important you are open-minded and try to understand more what the benefits are and try to apply it to your own environment (C5).

Another sub-category of open-mindedness was named "pitfalls of not being open-minded". This category reflects the coaches' assumptions that if a coach is not open-minded the coach will coach the same way he/she was coached as an athlete and/or get stuck coaching the same way year after year- "I'm somewhat of a slave to certain principles and I think when you are a slave to principles it can sometimes stifle free thinking and being really flexible so I vacillate between the two" (C7). This category provides rationale as to why being open is essential to growth.

Table 3.1. Categories and Sub-categories of Open-Mindedness

Category	Sub-Category
Definition provided by coaches	Open to new concepts/ideas
	Open to outside opinions
	Open to growth/change/new learning
	Open to receiving feedback
	Open to introspection
	Open to trying new equipment
	Open to understanding athletes
	Adaptability
	Flexibility
	Vision beyond current moment in time
	Assists during the act of coaching
Roles of open-mindedness	Enhanced understanding
	Provides impetus for learning opportunities
Pitfalls to not being open-minded	Inhibits growth
Change in open-mindedness over career	How they changed
	Why they changed
Psychological underpinnings of open-mindedness	Requirements to be open-minded
	Psychological gains from being open-minded
	Worry
	Caveat

Since this study was done to investigate coaching development, it was fitting to discuss with the participants whether their open-mindedness has changed over their coaching careers. Most coaches agreed that they had become more open-minded over

the course of their careers (or had become more aware of open-mindedness). The study participants admitted that as new coaches they thought they "knew everything" and didn't need any help and were less open-minded because of this: "I think as a young coach I was less open-minded simply because as a young coach I had a very strict idea of how it should be" (C5). Over the course of their careers the coaches learned from their mistakes. It was thought that open-mindedness can be learned and developed: "I think it's definitely a skill that you can develop and you can learn to be better at it…you need certain experiences on the way to become better at it" (C5). The coaches gave some reasons for becoming more open-minded: changes in the game/sport require the coach to be more open-minded (e.g., coaching during a game), changes in beliefs, success, experience ("the more you know, the more you know you don't know" (C6)). Education can increase open-mindedness. Coaches realize that they must make changes to their style and learn to listen over their careers and from this they ascertain the need to be more open-minded. A caveat to this is that the coaches did recognize that with years of experience comes the development of attitudes and opinions that can stifle open-mindedness since they tend to become more judgmental. This leads coaches to become more cognizant of the need to be open-minded. There are some psychological underpinnings that can affect one's degree of open-mindedness. The following quote provides insight into a coach's struggle:

> I also think when you're a new coach you have to be very careful if you appear to be too open-minded, people may not give you any credibility, so, what should we do today, kids type of thing. For me in the early years, I was trying to establish credibility and probably a bit more rigid than I am today (C7).

The coach must not be afraid of what being open will bring, rise above his/her ego, be confident, vulnerable and humble. Pressure to perform can stifle open-mindedness. The coach will gain credibility and respect from his/her athletes. Worry can appear when the coach believes he/she has become set in his/her ways. The caveat to being open-minded is that the coach wants to stay true to him/herself; therefore, the coach is open-minded to a certain extent.

Introspection

The study participants defined introspection in several ways. Self-awareness is important for a coach so they know who they are as a person. The following quote illustrates how self-awareness aids in expertise development: "The concept of being reasonably attuned to your style, your tendencies, the kinds of things that you react to" (C1). Self-evaluation is important so that the coaches can examine their coaching performance and identify their strengths and weaknesses.

> I think that's the only way, if you look inside yourself, it's the only way for you to grow and get better and to seek out support if you need it because if you don't know what's going on that's good, what's bad, what needs to change you don't know where to go." (C6).

The developmental outcomes of this are that the coach will grow and change for the future and will find longevity in their occupation. The coaches also discussed how the use of introspection has changed throughout their careers. The coaches are more introspective now than they were as novice coaches and the reason for this is success and experience- "I think that introspection is something that came to me really as I aged and gained more experience" (C7). Some psychological underpinnings were associated with introspection. In order to utilize introspection, the coach must be confident and mature and rise above his/her ego. The following quote represents this concept: "I think it's just maturing as a coach and learning more about yourself and where you fit into things and being willing to look in" (C7). There is some motivation for being introspective: respect from the athletes, the coach will learn about himself, and the coach will become more humble.

Table 3.2. Categories and Sub-Categories of Introspection

Category	Sub-Category
Definition of introspection provided by study participants	Self-analysis
	Self-honesty
	Intuition/gut feeling
	Soul-searching
	Self-awareness
Roles in coaching expertise development	Self-evaluation
	Developmental outcomes
Change over career	Type of change
	Reason for change
Psychological underpinnings	Requirements to be introspective
	Motivation for use of introspection

The Role of (External) Feedback in the Development of Coaching Expertise

The coaches divulged that they seek and/or receive feedback from a wide variety of sources. “My coaches, people inside the locker room, people who really understand our family and people who know who we are, what we do and how we do it. Those people who are part of it, you listen, generally to what they have to say” (C4). The coaches reported that they obtain feedback through built-in mechanisms and informal means. Once the feedback is received, they go through a process of analyzing it. This means that just because feedback is given to the coach, it does not guarantee that the coach takes strides to make modifications. The coach considers both the source the feedback came from and the quality of the feedback. The coach analyzes the feedback with external assistance in some cases and then considers the impact of change based on the feedback by investigating the pros and cons of a change along with philosophical considerations.

Table 3.3. Categories and Sub-Categories of External Feedback

Category	Sub-Category
External feedback sources	Who
	Where
How feedback is analyzed	Source evaluation
	Quality evaluation
	Analysis process
	Evaluation impact of change

Identification of Strengths and Weaknesses

The study participants were asked to discuss how they identify their strengths and weaknesses. There are two principles that govern this process: strengths and weaknesses are based solely on the needs of the athletes and the coach requires confidence and a lack of fear to undergo this process ("strengths and weaknesses have nothing to do with some definition, a great motivator or a great technical coach, they actually are more, it's more important to analyze what a coach's strengths and weaknesses are based on the athletes' needs" (C3)). They use two basic means to identify strengths and weaknesses- internal mechanisms and external mechanisms. Internal mechanisms are afforded by knowledge (that stems from experience as both a coach and an athlete) and introspection.

The following are examples of an internal mechanism:

> But certainly, the day to day, moment to moment experiences you have with people. It's probably like a great classroom lecture. You know that, when you leave you know if you've done a good job or not and you can tell by the way people respond and react and listen or not as to how you are doing and when you are in a performance teaching environment and you are giving guidance and direction and trying to enhance the performance of people and it begins to break down and not result in what you want you feel positively or negatively and so I think all of us come to understand what works best with people, how we manage those things

> personally and we have an adaptive mechanism that helps us change where necessary but focus clearly on what we know based on experience what we do best (C4).
>
> I try to be quite frank to myself in terms of I can identify things that go well and things that don't go well. I try to be open to myself and try to be frank that certain things are not going so well (C5).

External mechanisms come in the form of outcome measures of coach and athlete performance as well as external sources such as formal evaluations of coaching performance and interpersonal interactions designed to solicit information on strengths and weaknesses. The next quote illustrates the internal and external mechanisms working in concert with each other:

> I can explain as I try to put a mirror in front of myself and I try to watch myself and I try to see what I am doing and to a certain extent possible but I also try to have other people put a mirror in front of me to show me how I am (C5).

The process the coach utilizes to deal with the feedback he receives involves engaging in learning situations, adapting coaching performance, developing a plan for change and using external sources to assist with weak areas. Learning situations can include reading, talking to others and attending clinics to gain knowledge. There are two scenarios in the case of adapting coaching performance to the feedback: what is done in the case of an identified strength and what is done in the case of an identified weakness. The coaches indicated that they do not spend as much time working on their strengths but they do try to build upon them: "Strengths you obviously want to keep going with and getting better" (C5). One coach commented that "it's human nature to focus on what we're good at (C2)". That said, the coaches make a concerted effort to deal with and minimize their weaknesses. The following outlines how this is done: "through introspection, if that's what I feel is lacking, then a concerted effort would go toward being more conscious of that and dealing more with it" (C1). Dealing with weaknesses allows a coach to try new things to assist in the process of change. Some coaches mentioned that some weaknesses are too difficult to change and in some cases the coach will avoid instances where their weaknesses are a problem and seek help from others to

fill the void. Once strengths and weaknesses are identified, coaches form a plan to deal with them ("The plan is the biggest thing, actually doing something about it" (C6)). The focus is on growth of the coach and the ability to execute the plan. Coaches will learn a lot about themselves during this process. External assistance typically comes in the form of the coach asking for outside help from other coaches or consultants.

Table 3.4. Categories and Sub-Categories of Identification of Strengths and Weaknesses

Category	Sub-Category
Internal mechanisms	Knowledge
	Introspection
External mechanisms	Outcome measures
	External sources
Process of using feedback for development	Coach engages in learning situations
	Adapt coaching performance

Mentoring as Support for the Development of Coaching Expertise

The impact that mentoring has on coaching development can be partially explained via the following quote: "I think that my coaching approach is kind of a melting pot of what I consider to be the appropriate styles" (C1). Five of the seven participants indicated that former coaches have served as a main source of mentorship ("Well, as an athlete you have a coach so that person is really your mentor as well. So, if you develop into a coach, then that coach typically becomes your mentor" (C2)), although, elite coaches and peers also serve as mentors. Coaches usually select highly experienced and successful coaches with which to form a relationship. In some cases, coaches will form what we call a mutual mentorship relationship. This occurs when a coach finds a colleague of similar experience to work with: "I had the luck and

opportunity for some time to be in an environment that was a little more open when I was a national team coach and I was here working with (coach x)" (C5).

Most of the coaches interviewed indicated that the majority of their mentoring experiences were informal in nature but they have also partaken in formal mentoring opportunities. The following quote illustrates a typical situation: "I think mentors, a lot of time, they just fall in, it's not an official thing, it just develops" (C6). Informal methods can include: shadowing, email interactions, casual interactions during training and discussions. One coach indicated that he serves as a mentor outside of his sport to business people. Formal mentorship opportunities are facilitated through sporting organizations or universities as part of the curriculum for coaching programs.

Observational learning serves as a useful exercise for expertise development. Some coaches indicated that they spend a lot of time observing other coaches in their sport in action. One coach professed that he will observe coaches at any level in a variety of sports:

> I love to observe any coach in action. I'll often sit at sporting events without invading space and listen to what a coach is saying or watch what a coach is doing, from any sport… I've observed coaches I've seen be very effective and very ineffective and really learn by watching and it's helped me develop as a coach (C3).

One coach indicated that working with a mentor coach is one of the best methods to develop expertise. Six of the seven coaches also discussed their role as a mentor. The consensus was that mentoring other coaches is useful for coaches as it forces them to examine their style/philosophy/approach/technique and reflect on what they are doing. The following quotes illustrate this example: "I hope that the person you're mentoring learns more but you learn a little bit too because you reflect on what you are saying" (C5).

> It's helped me as a coach but often times it has helped me from the sense of having to re-iterate or talk at length about what we do and why we do it

> so it's a kind of re-assessing, or validation of, here's what we do and here's why (C4).

One participant in this study has never worked with a mentor coach: "The interesting thing is that I've never had a mentor coach, I just jumped into this…I just jumped into the fire" (C7).

Table 3.5. Categories and Sub-categories of Mentor Coaching

Category	Second-Order Category
Source	Coaches individual had as an athlete
	Elite coaches
	Peers
Types identified by study participants	Formal
	Informal
	Observational learning
Developmental outcomes	Facilitates development
	Mentoring is best method of development
Coach as a mentor	Learning outcomes of being a mentor
	Mentees of study participants

Discussion

Open-mindedness has been mentioned in the coaching development literature (e.g., Vallee & Bloom, 2005 and Werthner & Trudel, 2006) but has not been discussed

with respect to how this trait contributes to expertise development. The results show that elite level coaches think that being open-minded has been essential to their development.

Open-mindedness can be linked to introspection, external feedback, identification of strengths and weaknesses and mentoring. One must be open-minded to seek out external feedback or be willing to analyze one's performance via introspection. In fact, according to Griffin (2003), open-mindedness is one of the attributes of a reflective teacher. It has been suggested that one must be introspective to have the ability to use reflection (Lyle, 2002). There has been a plethora of research undertaken on reflection and how it can promote development of a variety of professional careers (e.g., Schön, 1983) and reflective teaching/coaching has been promoted in studies on coaching (e.g., Knowles et al., 2001). It seems as though the study participants have learned that being introspective is integral to expertise development on their own.

Studies have been undertaken to introduce reflective skills to coaches and these initiatives have been successful (Knowles et al., 2001). Gilbert and Trudel (2005) were the first researchers to uncover that youth sport coaches use reflection. One of their findings was that creative thought through introspection and personal cognition was useful in generating strategies to solve problems. Given the earlier statement that we must be introspective before we can be reflective, it seems as though the study participants got it right. Further to this, Côté and Gilbert (2009) provided a proposed integrative definition of coaching effectiveness and expertise that included a component of coaches' intrapersonal knowledge. The authors contested that a coach must have the ability to be introspective and reflective to be an effective coach. The current results certainly agree with this suggestion.

The psychological side of coaching has received some attention in the scientific literature, but not with respect to the developmental process. Feltz, Chase, Moritz, and Sullivan (1999) developed a conceptual model for coaching efficacy. The group defined coaching efficacy as "the extent to which coaches believe they have the capacity to affect the learning and performance of their athletes". They found that coaches with high efficacy were more effective and had higher athlete satisfaction than their counterparts

with low efficacy. Coaching efficacy could be predicted by coaching experience, perceived player talent and level of social support. Past success was only a moderate predictor. The results of the present study could give some insight into why past success was only a moderate predictor of coaching efficacy. It seems as though a coach's confidence waxes and wanes. This provides the impetus for the coach to seek out ways to improve his/her performance. This also ties into the coach being humble and seeking the respect and reassurance from his or her athletes.

The participants in this study identified several types of mentoring. Observation of other coaches was widely discussed and considered a type of mentoring. Gilbert and Trudel (2005) provided some rationale for the usefulness of observing another coach's strategy. They suggested that the observer will undergo a reflective transformation after observing another coach in action. In another link with reflection, the participants suggested that they undergo a process of reflection when they act as a mentor to other coaches. All but one of our study participants has been mentored. The participants did not tout the usefulness of one type of mentoring over another. They have used every available method to enhance their development. Some of the coaches reported observing coaches at much lower levels and coaches in other sports. The participants also mentioned situations where mentoring can occur outside of sport. Cushion, Armour, and Jones (2003) suggested that coaches should be mentored and be mentors themselves. The current findings indicate the usefulness of both situations.

The participants in this study delineated in detail the sources they solicit and receive feedback from and the process they undergo to analyze it. The feedback category can be related to all of the categories we uncovered in this study. The coach must be open-minded so that he/she is receptive to the feedback and so that the coach will seek feedback to begin with. The coaches also mentioned that they want reassurance from their athletes. The coach learns the feelings of the athletes via feedback. The way in which coaches receive and utilize feedback is reminiscent of skill learning (cf. Schmidt & Wrisberg, 2000). Intrinsic feedback is in the form of introspection and extrinsic feedback comes from sources such as the athletes, peers, and mentors. That is, receiving and processing feedback influences learning and the development of expertise over time.

The coaching feedback loop includes introspection. In some cases, this intrinsic feedback is enough and the coach proceeds with decision-making and acting. If the intrinsic feedback is not sufficient, the coach will seek or use extrinsic feedback available to him/her from the varied sources. This acts essentially as knowledge of results or knowledge of performance (Schmidt & Wrisberg, 2000). The study participants spoke of a process whereby they analyze the feedback they receive. They consider where the feedback came from and the pros and cons of acting based on the feedback. This is similar to the method the study participants use to determine their strengths and weaknesses as a coach and the experience and knowledge the coach has assists in this process. The coaches identified various methods for identifying their own strengths and weaknesses as coaches. This process was similar to how feedback is utilized.

Griffin (2003) discussed the development of reflection in pre-service teachers as a move from a self-orientation to a student-orientation. The study participants indicated that they use introspection and external feedback as a method to identify strengths and weaknesses and by their reports, this decision is based on the needs of the athletes. One could consider the group of elite coaches I interviewed as student-oriented.

The study participants told us that they foster relationships with others so they are comfortable giving them feedback, particularly their athletes. Coaches typically nurture their players so the players want to perform for them (Jones, Armour, & Potrac, 2003). The results indicate another function of a coach of nurturing a relationship with his/her players- the coach needs feedback from his/her players in order to develop his/her coaching expertise.

Figure 3.1 illustrates the proposed model for coaching expertise development. The developmental process begins with inputs from various sources, including coaching experience, feedback, and formal training. The model posits that the coach's open-mindedness acts as a filter to these inputs and the degree of openness is affected by psychological underpinnings such as fear, ego, confidence, humbleness, vulnerability and pressure to perform. An open-minded coach will not be afraid to be open to all potential sources of information, go above his ego, be humble and vulnerable and minimize

external pressure. Open-mindedness requires confidence. This leads to a coach actively pursuing knowledge of his own strengths and weaknesses, as well as external feedback on coaching performance (includes mentoring). If a coach is not open-minded, the expertise development process is hindered. Internal feedback will come from introspection. External feedback comes from a variety of sources including coaches, athletes and all who are tied to the team or organization. Over time and across different experiences this looped process continues, allowing for the development of expertise.

In summary, I present the following model (see Figure 3.1) to capture the iterative developmental process coaches seem to use/experience on the road to building their expertise. The model is not static as the role of various aspects of the model may change over time. Since no coach indicated that they had been taught to use feedback etc., it seems that the model represents a largely self-adaptive process.

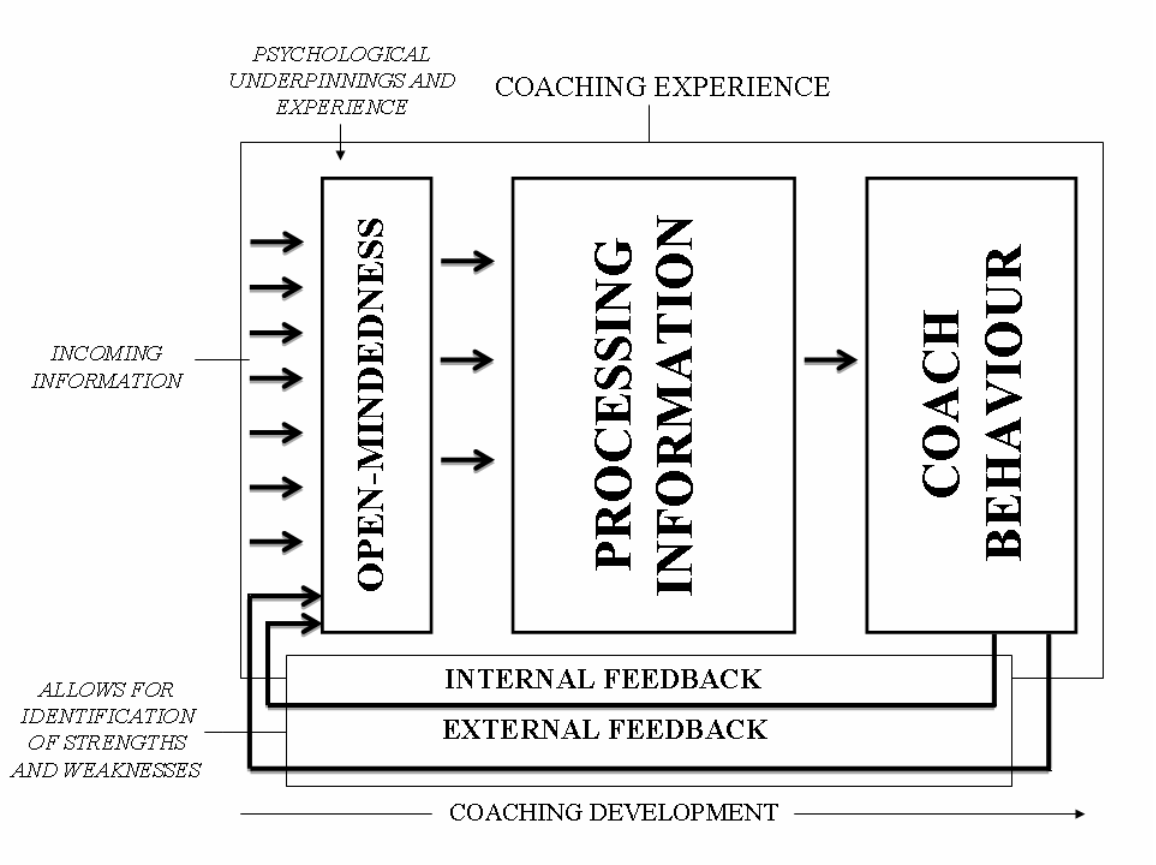

Figure 3.1. Proposed Model for Coaching Expertise Development

Conclusions

It is evident that psychological factors and personal traits of the coach are integral to expertise development. Open-mindedness is one such trait that has not received much attention in the coaching literature. Reflective practice is being promoted as a method to aid coaches, but in order to be reflective, one must be introspective. Gilbert and Trudel (2005) suggest that coach education programs should foster self-directed learners and the coaches they interviewed did not spend much time engaged in training for coaching. For example, the participants indicated that they became both more open-minded and more introspective over the course of their careers. This did not occur because they were trained to increase those skills; the coaches learned on their own that these were skills that were advantageous to their development.

The psychological side of expertise development was an interesting and unexpected finding in our study and seems to be non-existent in the expertise literature. This topic should be studied further to determine the extent of the role of psychological factors in developing expertise.

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CHAPTER 4

Validation of a Proposed Model for Coaching Expertise Development with Canadian Rowing Coaches

Introduction

It is important that we understand the process that underpins how coaches develop expertise in their domain so we can provide the best training possible. Bloom (1986) highlighted the importance of quality coaching in developing athletes so it is surprising that more studies have not been undertaken on understanding the process of coaching expertise development. Our knowledge, as a research community, of how the process that underpins how coaches develop expertise is meager and more studies are needed to enhance our understanding of this process so we can inform more effective coaching education initiatives. To my knowledge, there is no structured model based on empirical evidence that describes the process that underpins coaching expertise development. I have attempted to create such a model and aimed to validate the model in the current study.

A model for coaching expertise development based on data collected via interviews with elite coaches in a variety of sports (both team and individual) was proposed in Study One and Study Two. The development process starts with the coach deliberately seeking to improve as a coach. Open-mindedness serves as the gateway to the expertise development process. If a coach is not open-minded, the expertise development process is hindered. Open-mindedness was defined by the study participants in Study Two as: open to new concepts/ideas, open to outside opinions, open to growth/change, open to receiving, feedback, open to introspection, open to trying new equipment, open to understanding athletes, open to learning, adaptability, flexibility and having a vision beyond the current moment in time. We can think of this as an input that leads to learning and development. The degree of open-mindedness is affected by psychological underpinnings or moderators such as fear, ego, confidence, humbleness, vulnerability and pressure to perform. These psychological underpinnings can be either facilitative or inhibitive to the coaching expertise development process. Fear, ego, lack of confidence and pressure to perform can stifle open-mindedness. Conversely, a lack of fear and ego, confidence, humbleness and allowing oneself to be vulnerable can enhance one's open-mindedness. An open-minded coach who wants to improve will actively pursue knowledge of his own strengths and weaknesses, as well as external feedback on

coaching performance (includes mentoring). This knowledge can come from external feedback sources such as athletes, peers, and mentor coaches, or from internal feedback via introspection and reflection. The frame of reference that coaches use while introspecting is experience accrued as an athlete and coach. Over time and across different experiences this looped process continues, allowing for the development of expertise. This feedback model captures the iterative developmental process coaches seem to use/experience on the road to building expertise. The model is not static as the role of various aspects of the model may change over time. Since no coach indicated that they had been taught to use feedback, it seems that the model represents a largely self-adaptive process.

The purpose of the present research was to validate and refine the proposed model through an interview process with both novice and elite Rowing coaches. To do this, I followed a similar methodology presented by Abraham, Collins and Martindale (2006). They interviewed sixteen expert coaches in an effort to understand the coaching process. The participants were also presented with a theoretically-derived coaching schematic that was composed by Abraham et al. (2006). Implicit support for the model came from the interview responses of the study participants. Explicit support for the model came from questions the participants were asked directly about the model presented to them during the interview. Following the same approach, I sought to gain both implicit and explicit support for our model. I also considered the differences between a group of novice and elite coaches with respect to coaching expertise development. I interviewed both novice and elite coaches in order to discover whether or not there are differences between how the groups had developed thus far in their coaching careers. I expected to glean implicit and explicit support for the model from the elite coaches. Since the novice coaches did not have much experience, I did not expect that they would provide the same richness of implicit support for the model as the elite coaches, but I did anticipate that the process would be similar.

Methodology

Participants

Two groups of coaches were selected to take part in this study- novice and elite rowing coaches from across Canada. I wanted to interview coaches in just one sport and selected rowing since Rowing Canada had expressed interest in this project and rowing coaches work with both individual athletes and with teams on a regular basis. Purposeful sampling (Patton, 1990) was utilized to select study participants that would provide rich data. Potential participants were contacted via email to determine their interest in participating in the current study. The novice coaching participants were five coaches with a mean of 2.6 years of coaching experience and 15.9 years of experience as athletes in the sport of rowing. The level of athlete the novice coaches were coaching during data collection was: high school, junior level and novice rowers at the university level. All of the novice participants rowed at the university level as athletes. Four of the coaching participants were male and one was female. The elite coaching participants were five coaches with a mean of 23.6 years of coaching experience and 10.4 years of experience as athletes in the sport of rowing. All of the elite participants were currently or had coached national teams for Rowing Canada. As athletes, one of the coaches rowed at the varsity level and four of the athletes rowed at the Olympics and/or World Championships. Three of the coaching participants were male and two were female. I used the term elite since there is not a consensus in the literature with respect to what defines an expert coach.

Procedure

In-depth, semi-structured interviews were utilized. The study participants were recruited from across Canada; therefore, the interviews were completed over the phone. The participants were sent the interview guide for the first half of the interview via email so that they could consider their answers prior to the interview. At the time of the interview, each participant was briefed on the purpose of the study and asked to return the consent form via email if they had not done so already. The interviews lasted approximately 45 to 60 minutes and were recorded with a Sony Voice Recorder. They

were later transcribed verbatim. Ethical approval for the study was obtained through the Office of Research Ethics at the host university.

Interview

The novice coaches and elite coaches were asked similar questions for the first half of the interview. The questions for novice coaches were as follows: 1) What have you done thus far in your coaching career to learn to become a better coach? What have you done on a daily basis? What have you done on a yearly basis? 2) What do you plan to do in the future to learn to become a better coach? What do you plan to do on a daily basis? What do you plan to do in the next 12 months? What do you plan to do in the next 5 or 10 years? Please discuss all methods you plan to use in order to develop. 3) Are there any activities that you have seen other coaches participate in to improve but haven't done? Are there any activities that you think you should participate in but don't have the time or resources to do so? The questions for the elite coaches were as follows: 1) What have you done thus far in your coaching career to learn to become a better coach? What have you done on a daily basis? What have you done on a yearly basis? 2) What do you plan to do in the future to learn to become a better coach? What do you plan to do on a daily basis? What do you plan to do in the next 12 months? What do you plan to do in the next 5 or 10 years? Please discuss all methods you plan to use in order to develop. 3) Do you think there is anything that could have facilitated your development as a coach that was missing in your career? Please explain.

Once the first three interview questions were answered I emailed the study participants a file with a description and diagram detailing the proposed model for coaching expertise development. The reason for not allowing the participants access to the model prior to the first half of the interview was to ensure knowledge of the model would not affect their answers. The participants were asked to read it and ask questions for clarification while they read the document to themselves. The interviewer asked all participants if they understood the model and urged them to discuss the model so that their understanding could be made apparent. Once discussion on the model ceased, the participants were asked questions about it. The novice coaching participants were asked

different questions than the expert coaching participants. The novice coaching participants were asked: 1) What are your thoughts on the model? 2) Are there components of the model that you have not considered as part of coaching development? 3) Will your approach to expertise development change now that you have seen the model? If yes, what will you do differently? The elite coaches were asked: 1) What are your thoughts on the model? 2) Does the model reflect or capture the experience you have had in your own coaching development? 3) Based on your own experience, what would you add to or omit from the model?

Analysis

The interviews were analyzed by both inductive and deductive techniques. The inductive analysis was to ensure that new concepts in coaching expertise development would emerge. The deductive analysis was based on the components of the proposed model for expertise development proposed. Two researchers read two of the novice coaching participant interview transcripts and two of the elite coaching participant interview transcripts and independently developed a preliminary coding scheme through open coding. Raw themes were identified and led to the identification of higher-order themes and categories. The researchers discussed any disagreements in the coding scheme and made changes where necessary. The first author content-analyzed the remaining interview transcripts via inductive and deductive techniques and revised the preliminary coding scheme as new themes emerged and discussed these changes with the second author as they arose. The deductive analysis was based on the proposed model of coaching expertise development.

At the conclusion of data analysis, the interview transcripts were sent to all of the participants so they could make changes to their answers if they felt that their intended responses to the interview questions were not apparent. They were also sent a copy of the preliminary results section with their quotes highlighted and asked to provide feedback. They had the option to remove or re-word their quotes if they felt that changes were necessary. Two of the participants made minor changes to their interview transcripts. This did not result in changes to the data analysis. Furthermore, none of the

study participants provided feedback that resulted in a change in the analysis of results. Two of the participants changed the wording of the quotes that were selected from their transcripts to be used in this manuscript.

Steps to Ensure Trustworthiness of Data Analysis

The first author of the study had 13 years of coaching experience at the time the study was undertaken. It is possible that this could have affected the researcher's analysis of the data since she may have had assumptions and biases regarding coaching expertise development. For this reason, it was important that reflexivity (also known as self-awareness or self-reflection) was used throughout the analysis. A method of doing this is by analyzing and discussing the data frequently as a research team (Morrow, 2005). A further step taken, as reported above, was to seek the feedback of the participants of the study. This is referred to as member (or participant) checking (Morrow). Member checking was done in two ways. The interview transcripts were sent to all of the participants. They were told that they could make changes to their answers if they felt that their intended responses to the interview questions were not apparent. They were also sent a copy of the results and asked to provide feedback.

Results

The categories and the themes that lead to category development can be found in Table 4.1. The number of participants in both the elite and novice groups who contributed to each category is reported. Quotes from the elite coaches are denoted with an "E" and participant number while quotes from the novice coaches are denoted "N" and the participant number.

Table 4.1. Results of the qualitative analysis of interview transcripts

	Elite N	Novice N
Implicit Support		
Open-Mindedness	3	3
Identification and Processing of Strengths and Weaknesses	5	1
Internal Mechanisms for Feedback Acquisition	4	5
External Mechanisms for Feedback Acquisition	5	5
Psychological Underpinnings	3	3
Process (Self-Adaptation, On-Going, Iterative, Time)	5	3
Explicit Support		
Explicit Agreement with Model	5	5
Open-Mindedness	5	5
Identification and Processing of Strengths and Weaknesses	2	4
Internal Mechanisms for Feedback Acquisition	4	3
External Mechanisms for Feedback Acquisition	5	3
Psychological Underpinnings	5	4
Process (Self-Adaptation, On-Going, Iterative, Time)	2	3
Motivation	3	2

Implicit Support for the Model

The results indicate that implicit support for all components of the proposed model was achieved. Implicit support for the model was gleaned from both the novice

and elite interview transcripts from the analysis of the portion of the interview that occurred prior to the study participant seeing the proposed model.

Open-Mindedness

Open-mindedness was identified by three novice and three elite participants as a personal characteristic that facilitates or fuels coach learning. As with my previous research, the study participants gave examples of open-mindedness such as being open to outside feedback, open to being critiqued and open to seek feedback from others. Some of the study participants also discussed the fact that they were closed-minded early in their careers based on their experiences as athletes and that they learned to become more open-minded either through introspection or being prodded by external sources. The following quote illustrates how a novice coach has been open-minded: "I'm not going to discredit someone who has a different way of teaching or a different philosophy. I like to listen to the different reasoning and maybe even apply it" (N1).

Identification of Strengths and Weaknesses

Some of the study participants discussed the process by which they discover their strengths and weaknesses as a coach. All five of the elite participants described this process, whereas only one novice participant referred to this process. Both internal and external feedback loops were mentioned. The coaches use introspection/reflection as a means to evaluate strengths and weaknesses and will go to external sources such as other coaches and athletes to assist with this process. As with my previous research, the study participants suggested that they utilize external experts to compensate for their weaknesses as a coach, and will also spend time working to strengthen weaknesses in order to increase coaching effectiveness. Some of the study participants also indicated that they will learn immensely from experts, and that they look for individuals with more expertise in an area than they have. They also look for someone who makes them comfortable, but will challenge them, and who makes the athletes comfortable.

Internal Mechanisms for Feedback Acquisition

Four of the elite and five of the novice coaches in this study indicated that they utilize internal feedback via introspection and reflection as a means to become better coaches. Experience as a coach and as an athlete provides a frame of reference for the coach to undergo this process. Personal experience (i.e., knowledge gained from formal education) was also identified as a frame of reference for the coaches to consider. Some participants in the current study indicated that they use introspection to evaluate goals they have made and determine whether or not these goals have been met. Self-monitoring and evaluation was also identified as a method for the coaches to learn and move forward. The following quote from a novice coach represents this process: "You're constantly evaluating yourself…what you said, what your comments were, what you're creating…" (N1).

External Mechanisms for Feedback Acquisition

All of the study participants also discussed external sources of feedback as a means by which they learn to become better coaches. External sources may include athletes, mentors, and peers, although some participants indicated that feedback can come from anywhere, one just has to be open to accepting the feedback. The following quote highlights the importance of external feedback:

> I think I listened a lot. I think it's important to take in all the expertise you have around you and it's really important, especially as a young coach, and also further on, to listen to all people's ideas, especially those who have been in the game for years. And really be open for critique and see if someone can give you some positive feedback on what you are doing" (E1).

In fact, some study participants indicated that many sources of external feedback cannot be anticipated.

As with my previous work, good mentoring was identified as an important part of a coach's developmental process. Coaches typically select a mentor with a wealth of

experience and knowledge and aim to draw from the mentor's knowledge base, particularly the mentor's procedural and tacit knowledge. The following quote from a novice coach highlights the importance of mentoring, particularly for new coaches: "it's having a mentor, having someone you feel at ease with, as a novice coach I'm struggling so it's nice to have someone with experience and background to say you've tried this, now try this technique" (N5). Some qualities of a good mentor emerged: one who has a good rapport with other coaches and athletes, one who has leadership skills and a sense of conviction, and as stated earlier, one with a great deal of knowledge.

As found in Study Two, there is an evaluation process with respect to external feedback and some coaches indicated that too much feedback can confuse a coach, especially in the early stages of one's career. The elite coaches, in particular, discussed using outside experts to both assist them and to learn from: "That's not my area of expertise so I'm very keen to learn from specialists, discuss the evaluation of data and have them provide input on creating the program" (E3).

Psychological Underpinnings that Affect Coach Learning

I identified fear, ego, confidence, pressure to perform, vulnerability and humbleness as psychological underpinnings that affect a coach's expertise development process, particularly with respect to how they affect a coach's open-mindedness. This was of importance since I postulated that open-mindedness controls the gateway to expertise development. Fear, ego, confidence and humbleness all emerged providing implicit support for the model, as discussed by three novice and three elite study participants. The next quote represents the experience a novice coach had early in his career:

> I was nervous as hell to coach kids. I was really scared and I didn't know if they would listen to me and I didn't know how they'd react to the things I was saying and I wasn't very confident in my skills (N2).

These psychological underpinnings were not discussed with respect to open-mindedness per se, but they were discussed in the context of facilitating or stifling development. The following quote represents how being humble can facilitate learning:

> I feel I'm learning a lot from them and I think that I may know a lot about rowing but I don't know everything about training, therefore I feel that you have to be really humble as a person and that's also being humble of other people's experience… and then you have to listen to them (E1).

Self-Adaptation/On-going Process/Continual Learning

Five of the elite and three of the novice coaches in this study provided implicit support for our assertion that the process that coaches undergo is one of self-adaptation over an extended period of time. The following quote illustrates one elite coach's view on the process: "every day I get a bit richer as a coach" (E1). Another coach (E5) said, "I guess it's just that, a cumulative knowledge that one gains incrementally from watching athletes execute an action. The 10 000 hour rule is at work, I think and it applies to coaches as well".

Differences between Novice and Elite Coaches

Upon examination of the results, there were minimal differences in terms of the number of coaches who contributed to each category (Ns). The only obvious difference was with respect to implicit support for identification of strengths and weaknesses. All of the elite coaches discussed this process prior to seeing our proposed model, although only one novice coach talked about this process.

Explicit Support for Model

All of the study participants agreed with the proposed model. Further explicit support from the elite coaching participants came through discussion of their experience.

One coach's view was:

> I have to tell you that in all my years in sport it is the first time I have seen this definition, open mindedness, if I can use the term, being a gateway into excellence and I think you are onto something (E5).

Previous work identified that open-mindedness can be learned. The following quote represents that this can happen early in a coaching career:

> In the second year, I started to pay more attention. I saw that so many negative things came out of what I did the first year that being open minded, maybe reading something like this before I coached would have been more helpful. The direct relation is I remember being like this and I remember changing and being more open minded (N2).

Fear was identified as a psychological factor that can stop a coach from moving forward and some of the coaches experience pressure to perform. The concept of open-mindedness as a gateway to coach learning was quite popular and some of the participants indicated that ego can affect how open a coach is, and a lack of confidence can inhibit both open-mindedness and introspection. The following quote comes from participant E2 after the model had been presented to him. It ties in a couple of the key concepts:

> I think that you're always trying to fill your tank and improve your knowledge base and I'll hear other coaches say things like, oh, I don't have to go to the conference, I've been there before, they say the same thing over and over again and it's like they've shut their mind off to learning and I see those same coaches stagnating and not really advancing themselves so it also says in here that coaches tend to drive their own development. I think that is really quite critical. Nobody is ever going to be able to teach you how to coach.

The notion that the coaching expertise development process is a self-adaptive and on-going process that takes years to achieve was also explicitly supported.

The identification of strengths and weaknesses was given explicit support as can be seen through the following quote:

> The first thing we get people to think about a lot is what do you do really well and what do you do not very well so it would be the same for the coaches and taking in everything around them, what do they do well, what do they not do well. Their plans for next year are filling in the gaps, if they have it, that's good, if they don't, figuring out how to do it better (N3).

One coach indicated that her expectations of the model were different than actually presented: "I kind of thought it would revolve more around technical coaching and it's nice to see that it's talking about more psychologically how people are growing; versus just coaching" (N3). This quote emphasizes that our model reflects growing (i.e., coaching development) versus doing (i.e., coaching process).

Modifications to Model

A concept emerged that prompted a re-evaluation of the proposed model. Recall that the model describes the underlying processes that facilitate coaching expertise development. Whereas a great deal of both implicit and explicit support for the model was received, it seems as though there is an element that directly facilitates coach learning that had not been incorporated into the model. Clearly motivation is a psychological factor that facilitates and enhances the coaching expertise development process. The following themes have been grouped into the category of motivation: drive, aim to be the best one can be every day, hunger, interest, stimulation, curiosity, passion and challenges/stress. The following quote represents how one elite coach (E4) has gleaned motivation in the form of interest and stimulation from committee work: "I think it helps keep me interested and stimulated". These factors provide the impetus for the coach to continue to engage in learning in an effort to improve. The following quote represents how learning something new can provide motivation to learn more: "Every year I feel I got something bigger out of it, that's kind of what gives me the kick." (E1).

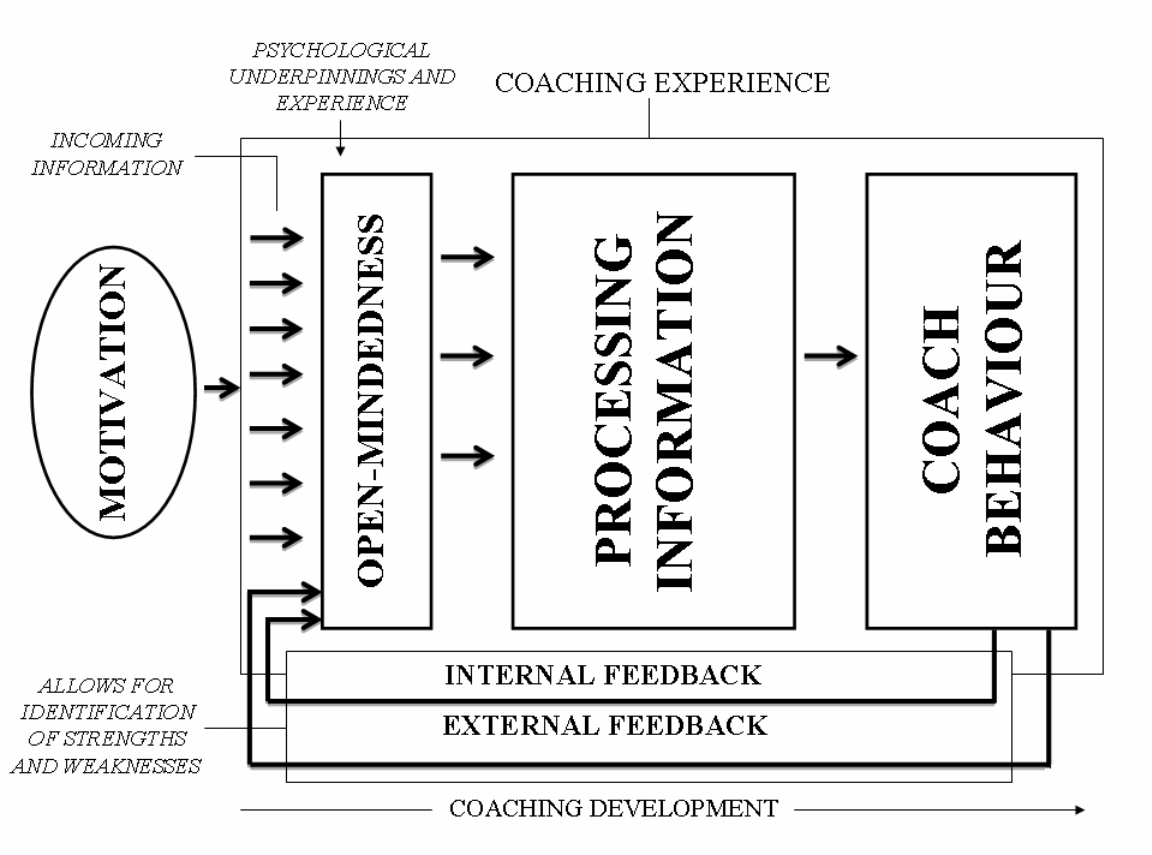

Figure 4.1. Modified Model for the Self-Adaptive Coaching Expertise Development Process

The modified model is depicted in Figure 4.1. Coaching expertise development begins with the coach being motivated to learn. Motivation is necessary if one wants to become a better coach. If motivated, the next step the coach undergoes is taking in all available information. Input from various sources is filtered via open-mindedness. Open-mindedness is affected by certain psychological underpinnings such as fear, confidence and ego. Open-mindedness is also affected by the coaches' level of experience. Next the information is processed leading ultimately to coach behaviour. The behaviour of the coach is assessed via external feedback (from peers, athletes, mentors) and internal feedback (introspection). The coach can also use these

mechanisms to identify his/her own strengths and weaknesses as a coach The entire s process is on-going and iterative and occurs over an extended period of time.

. Discussion

The purpose of this study was to obtain implicit and explicit support of the proposed model from a group of novice and elite rowing coaches. The results suggest that implicit support was obtained on all components of the proposed model and explicit support for the model was obtained from all study participants once they had seen the model. The main difference with respect to the number of coaches who contributed to each category was found in implicit support for the process of identification of strengths and weaknesses. As noted earlier, only one novice coach discussed this process and all five of the elite coaches made mention that they engage in this process. Four of the novice coaches discussed the importance of the process once they had viewed the model. Obviously this is a process that needs to be engaged in by novice coaches. Further research would be useful to determine whether or not novices do identify their own strengths and weaknesses as a coach and if they do how they engage in the process.

Motivation was not an explicit component of our proposed model but based on the results, it is obviously a factor in learning to become a better coach. If motivation is not present, the expertise development will not occur. Perhaps the fact that motivation was not discussed explicitly by coaches in our previous work indicates that the coaches we interviewed felt this personal characteristic is implicit in any quest to develop expertise. Ericsson, Krampe and Tesch-Römer (1993) have highlighted the importance of motivation in their work describing deliberate practice. One must be highly motivated to improve performance and to be able to withstand the rigors of deliberate practice in a given domain over an extended period of time. It is of no surprise that some of the coaches in this study discussed motivation as an important factor in the expertise development process. Motivation can also be described using self-determination theory (Deci & Ryan, 1985). This model is concerned with how social and cultural factors facilitate or undermine one's sense of volition and initiative. High quality intrinsic motivation occurs when social and cultural factors foster autonomy, competence and

relatedness. Autonomy relates to one having the experience of choice, competence relates to one's sense of efficacy in performance, and relatedness relates to one's feelings of security of connectedness to the significant others in one's social milieu. Gratification of these three needs can lead to a high level of intrinsic motivation, thus leading to enhanced performance and persistence. Carson and Chase (2009) sought to investigate whether physical education teachers' perceptions of autonomy, competence and relatedness was related to their self-determined motivation. Results suggested that perceptions of autonomy, competence and relatedness were more closely related to intrinsic motivation and that professional behaviours such as attending conferences, reading teaching journals and giving presentations influenced perceptions of autonomy, competence and relatedness. Implications for intrinsic motivation of a coach will be discussed further below.

Suggestions for Applications of the Model

Since the model was validated and refined as a result of the current study, I will now provide some suggestions for how this model could be applied to coaching education initiatives. The results have given me a myriad of ideas regarding its application. I will provide our suggestions and rationale for why they could be useful for coaching education based on the study results. I recognize that some of the suggestions we make may be part of existing coaching education programs. The suggestions are meant to encourage on-going development and are not meant to be done only for the purposes of obtaining formal certification.

I have provided a rationale for why open-mindedness is essential for expertise development. Coaching education initiatives should address this and ensure that neophyte coaches are aware of the need to be open-minded and what can be afforded to them by being open. As I have stated, several psychological moderators affect how open-minded a coach will be at any given time. These moderators should be described to coaches, particularly new coaches, so that they may be addressed by the coach. For instance, a coach may feel he/she is not confident. Since this will inhibit open-mindedness and, thus, the expertise development process, efforts should be made by the

coach to increase his/her confidence level. Two suggestions come to mind. The first is that the coach should spend some time articulating what he/she is not confident in This knowledge could inform psychological interventions to deal with the lack of confidence. If the coach has a difficult time articulating the lack of confidence, a general intervention could include a motivational general-mastery (MG-M) imagery program. MG-M imagery interventions have been shown to be effective in bolstering the confidence of athletes (i.e., Callow, Hardy & Hall, 2001). An intervention of this sort could be useful in helping coaches become more confident.

The study participants described, in detail, the process they use to analyze their strengths and weaknesses as a coach. If we look at the deliberate practice literature, we will find that this is an integral part of developing expertise in a given domain. In the case of an athlete, the coach will play a large role in such identification and efforts will be made to strengthen and overcome a weakness. In the case of coaches, weaknesses are attended to sometimes but in some cases a coach will simply find an expert in a given area to fill in instead of spending time strengthening the weakness. Coaching education should address the importance for this process and provide suggestions for how to effectively engage in this process. I am suggesting that a coach undergoes a performance profiling process that is similar to what they may do for their athletes. The caveat to identifying one's strengths and weaknesses is that a coach should only deal with improving one weakness at a time. The following quote from E5 represents this idea: "I look for something in there that I'm not doing as well as I should be or the athletes perceive I'm not doing as well as I should be. But I limit it to one thing. I've learned over the years that trying to do many things, you don't do anything".

The first step in the identification of strengths and weaknesses is identifying what is essential for the coaching process. I have selected components from the schematic by Abraham et al., (2006) that was proposed and validated through expert coach consensus and components of the proposed integrative definition of coaching effectiveness and expertise provided by Côté and Gilbert (2009) to use as an example of what coaches may base their identification of strengths and weaknesses on. Abraham et al indicated the coaches set both process and outcome goals. These data indicate that this process has not

been refined by some of the coaches we interviewed, particularly novice coaches. The inability or difficulty with setting goals for one's athletes is obviously a weakness that needs to be addressed. The coaches in this study used internal means to identify this weakness but one may go to external sources to determine if this needs to be addressed. One suggestion we have is for a coach to seek help with this process from an experienced mentor coach. Another component of the Abraham et al. schematic is required knowledge for coaching. This includes sport-specific knowledge, knowledge of the "ologies" (i.e., sport psychology, biomechanics) and knowledge of pedagogy. A coach may identify that his/her knowledge of sport psychology is lacking. There are two choices in this instance: the coach may decided to learn about sport psychology from some of the sources I identified earlier in the paper (e.g., books, websites and university courses) or the coach may decide to seek the assistance of an external expert in the area. Côté and Gilbert (2009) have suggested that coaches must have intrapersonal knowledge to be an effective coach. Intrapersonal knowledge comes from introspection and reflection. It has been suggested that coaches must (i.e., Knowles, Gilbourne, Borrie & Nevill, 2001), and do (i.e., Irwin, Hanton & Kirwin, 2005) use reflection to become better coaches. I suggest that coaches spend time every day on reflection/introspection. The participants in Study Two suggested that the capacity for introspection can be learned and improved over time. Since this process is vital to development, I suggest that coaches learn to become more introspective. Part of this process may include writing daily journals that provide a self-assessment or evaluation of the coach's performance that day.

The coaches in this study delineated a list of sources from which they seek and/or receive feedback. They include their athletes, peer/assistant coaches, parents (for young athletes), external experts and mentor coaches. In order for this to occur, both parties must be comfortable with the arrangement. The participants discussed the importance of developing relationships, particularly with their athletes, so that these potential feedback sources are willing to give feedback to the coach. All coaches should be made aware of the importance of seeking feedback from a variety of sources. I am suggesting that all coaches utilize this process. The study participants outlined various methods for obtaining external feedback: emails sent to athletes and peer coaches asking for feedback, meetings with athletes and coaches, formal evaluations of the coach and casual

conversations. In some cases, the coach will ask the team captain or a few veteran members of the team to collect feedback from the other players. To start engaging in this process I suggest that the coach make a list of sources he/she trusts and would like to seek feedback from. One coach in this study commented that listening to several sources is not advantageous for development; in fact, it could be confusing to a coach. Once a shortlist of feedback sources has been completed, the coach should then ask the potential sources if they feel comfortable providing feedback and develop relationships with these sources if they show interest.

It is not a surprise that the coaches in this study highlighted the importance of mentoring in the development of their expertise. All of the study participants have engaged in mentoring over the course of their careers. Some of the elite coaches in this study also acknowledged the usefulness of being a mentor. A study by Young, Jemcyck, Brophy and Côté (2009) showed that a group of national level Canadian track and field coaches had more mentors during their careers as compared to provincial, senior club and local club coaches. They purported that these coaches either sought these experiences more than their lower-level counterparts or had access to these experiences more often during the course of their careers. Although mentoring experiences may be limited by things such as finances and geographic location, coaches should be urged to seek as many mentors as possible. It would be useful for National Sport Organizations (NSOs) to develop a list of potential mentors across the country that coaches could consult when trying to find a suitable mentor.

I have purported that the coaching expertise process is one of self-adaptation. According to these data, coaches do not typically structure their development by means of plans to learn to become better coaches. The deliberate practice literature suggests that structure is inherent to development if one aims to become an expert. Coaches should incorporate more structure into their development. Structure can come from precise planning in both the short term and long term. Again, planning can be facilitated by knowledge of both the Abraham et al. (2006) schematic and knowledge of Côté and Gilbert's (2009) integrative definition of effective coaching. For example, a coach may devise a plan on how to develop his interpersonal skills.

My final suggestion involves providing motivation to the coaches. This may be of more importance at the developmental level of sport where the coaches are typically volunteers. Since the coaching expertise development process takes many years, it is not advantageous for sporting organizations to consist of coaches who only coach for a few years. They simply do not have enough time to develop. We obviously need to figure out how to motivate volunteer coaches to continue with coaching. Another issue motivation brings is enhanced performance, if the coach has intrinsic self-determined motivation. Recall that conditions that foster a coach's perceived autonomy, competence and relatedness all contribute to high quality forms of motivation, creativity and persistence. Coaching education initiatives can certainly foster autonomy by providing coaches with guidelines for development, without forcing the coach into a certain developmental path (gives the coach freedom of choice). Competence could be fostered by positive feedback on coaching performance.

Conclusions

The proposed model for coaching expertise development has been validated and refined based on the responses of a group of elite and novice rowing coaches. Since both implicit and explicit support was obtained by both novice and elite coaches, I am suggesting that this model is applicable to coaches at any level. The caveat is that coaches must be motivated to become better. The model is not applicable to coaches who are not interested in improvement. For example, there are many people who become recreational coaches, often parents coaching their children. Their focus is on the children and not on their own growth as a coach.

Several suggestions were made for how coaching education initiatives can be developed based on this work. Comparisons have been made to the deliberate practice literature. Further work may be done to utilize the deliberate practice framework and apply it to coaching, particularly with respect to how we can inform coaches to engage in practice that could be considered deliberate.

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CHAPTER 5

General Discussion

Summary of Thesis Studies

The aim of this thesis was to produce and validate a model, based on empirical evidence, which explains the process of expertise development in sport coaches.

Study One suggested that coaches develop their expertise primarily through a self-adaptive process. Unlike athletes, whose development is organized and directed by an external agent (coach), coaches reported managing their own learning experiences and processes, sometimes in an organized fashion, but often in a rather serendipitous manner. The process of expertise development is affected by personal characteristics of the coach. Certain personal characteristics appear to affect the process of (expertise) development: drive, commitment, dedication, passion, empathy for the athletes and open-mindedness. In essence, these personal characteristics serve as a filter that acts on the inputs into the adaptation process. The process is iterative. Drive, commitment, dedication and passion will allow the coach to put the necessary amount of time and effort into development. The coach undergoes an adaptation process that involves experience as a player, experience as a coach, feedback (external and internal) and active knowledge acquisition (the coach seeks out learning activities that he/she feels will assist in his/her development). These experiences provide inputs into the adaptation or learning process. External feedback could be from mentor coaches, peer coaches, the athletes, among other sources. Internal feedback occurs via introspection and was mentioned to be used for identifying strengths and weaknesses as a coach. This process can only occur if the coach has the opportunity and is motivated to learn, including working with athletes and spending a large amount of time doing so. An environment that is conducive to development must be present. The model is not static as the role of various aspects of the model may change over time.

The purpose of the second study in this dissertation was to confirm the role of certain components of the model described in Study One and to delve more deeply into some of the components from the preliminary model. The concepts of open-mindedness, feedback, mentoring, identification of strengths and weaknesses and introspection were explored using semi-structured interviews that were subsequently analyzed deductively.

From these data the model proposed in Study One was refined. The process starts with the coach wanting to improve as a coach. Open-mindedness is a psychological mechanism that serves as the gateway to the expertise development process. If a coach is not open-minded, the expertise development process is hindered because necessary inputs for improvement and learning are blocked. Open-mindedness was defined by the study participants as: open to new concepts/ideas, open to outside opinions, open to growth/change, open to receiving feedback, open to introspection, open to trying new equipment, open to understanding athletes, open to learning, adaptability, flexibility and having a vision beyond the current moment in time. The degree of open-mindedness is affected by other psychological underpinnings such as fear, ego, confidence, humbleness, vulnerability, and pressure to perform. These psychological underpinnings can be either facilitative or inhibitive to the coaching development process. Fear, ego, lack of confidence, and pressure to perform can reduce open-mindedness. Conversely, a lack of fear and ego, confidence, humbleness and allowing oneself to be vulnerable can enhance one's open-mindedness. An open-minded coach who wants to improve will actively pursue knowledge of his own strengths and weaknesses, as well as external feedback on coaching performance. These inputs can come from external feedback sources such as athletes, peers, and mentors or from internal feedback via introspection and reflection. The frame of reference that the coaches use while introspecting is experience accrued as an athlete and coach. Over time and across different experiences this iterative process continues, allowing for the development of expertise. This model captures the iterative developmental process coaches seem to use/experience on the road to building their expertise. Since no coach indicated that they had been taught to use internal feedback (for example) it seems that the model represents a largely self-adaptive process.

The purpose of Study Three was to validate the proposed model for coaching expertise development, and refine the model if necessary. There was support for the model both from an implicit and explicit standpoint but there was one concept that had not been overtly described- motivation. This concept was discussed in Study One by some of the study participants when asked what it takes to become an expert coach. Drive and passion were identified. Perhaps motivation was not explicitly discussed since it is obviously an integral component of any quest to develop one's skills in a given

domain. Motivation was explicitly added to the model. Since the model was validated by both novice and elite coaches (essentially coaches at both ends of the expertise spectrum), it could appropriately be used for all levels of coaches. For this reason, suggestions for coaching education initiatives are discussed below that can be applied to any level of coach, as long as the coach is motivated to become better.

There are some data from Studies 2 and 3 that were not presented and discussed in the manuscripts due to length constraints and since the data were not germane to the primary purpose of the studies. These findings will be discussed below, and in the suggestions for coaching development section, since they are integral to the global purpose for this type of research- understanding the process of coaching expertise development and developing more effective coaching education initiatives.

Learning Experiences and Activities (from Study Three)

Both the elite and novice rowing coaches delineated a variety of learning experiences and activities they engage in when asked what they have done thus far in their coaching careers to become a better coach. Mallet, Trudel, Lyle and Rynne (2009) highlighted the lack of consensus in the literature regarding the terminology used for formal and informal coaching education and activities. For this reason the activities/experiences delineated by the study participants were not grouped according to type. Learning experiences and activities included: reading, observational learning (observation of other coaches), use of technology (websites, video), mentoring and interaction with colleagues, learning from experience (day to day coaching) and learning from other sports. The following quote delineates the importance of experiential learning:

> I think nothing ever replaces the day to day working or daily practice of learning to do things better. I don't think there is any one thing in particular, one course or anything that would replace the experience of getting in there, making mistakes, doing it right, doing things wrong (E2).

Other learning experiences included: NCCP courses; formal education (post-secondary study at a college or university, graduate studies or national coaching institute); formal mentoring through a national sporting organization; practicum as part of university degree requirements; attending conferences and workshops; taking courses (i.e., for public speaking, computer skills); acting as a member of committees in the sport of rowing; still partaking in the sport of rowing as an athlete; and learning from outside employment. The next quote represents what can be gained by conference attendance: "You are constantly filling your toolbox, so to say, at those conferences and you are learning from each other, from your peers, too" (E4). A comprehensive list of potential learning experiences and activities could be useful to disseminate to coaches, particularly novice coaches since some of the coaches interviewed for Study Three indicated that they do not know what learning activities/experiences are available for them to partake in.

Evidence of Planning (from Study Three)

In an effort to understand the expertise development process more deeply, study participants were asked what they plan on doing in the future (both short-term and long-term) to learn to be better coaches. In short, there was some evidence of planning in the short-term, but many of the coaches indicated not having a five or ten-year plan. The plans the coaches did have basically involved doing more of what they were already doing: "I think I've had a good learning process so far so I don't think I want to too much differently" (E1) and "I believe it's continuing what I have been doing" (N1). Some novice coaches stated they do not know what learning experiences/activities are available for them to partake in. Coach planning also typically involved an athlete-centered approach whereby the coach would first make a plan for the athletes, and then engage in learning experiences if necessary to reach a goal they have made for their athletes. The most typical plan the study participants had for their own development was to reach higher levels of certification through the NCCP program.

It was proposed that the coaching expertise development process is one of self-adaptation. It is not highly structured and often occurs rather serendipitously. This was also suggested by Abraham, Collins and Martindale (2006). As evidenced by the results

from this study, coaching development does not involve a large degree of planning. The following quote represents this idea:

> When you are caught up in the minute of the day to day aspects of your coaching, it is easy to overlook asking yourself 'where am I going with this? Where do I want to be 5 or 10 years from now?' After having seen that last line [of the proposed model] I will certainly try and be more conscious of where I want to go and whether my day to day activities are supporting or hindering those long term goals. It is certainly important to ask those basic types of questions: 'What kind of coach do I want to be? How am I going to try and use what I'm doing today to get me where I want to end up?' (N4).

The coaches interviewed typically engage in learning experiences on an as-needed basis when they discover they need to learn more about a certain topic/area. Having seen the model, one coach recognized that he needs to engage in more planning: "…try and structure personal progression…" (N5). Coaches could benefit from engaging in more planning for their own development as coaches. This type of planning is not inclusive of planning for athletes in terms of process and outcome goals (i.e., win national championship). More suggestions for how coaches can plan for their development are discussed below.

Barriers to Learning/Development (from Study Three)

Barriers identified that can inhibit a coach's learning include financial constraints, time constraints, lack of resources, lack of opportunities for learning, location and a lack of discipline (which relates to a lack of time). One coach said: "The big thing is our learning is really hampered by the resources we have" (E2). Financial constraints include low wages and lack of money/funding to engage in learning activities. Time constraints can be a result of the many duties a coach needs to perform on a daily basis leaving no time for developmental activities or constraints due to having children (female coaches) or another occupation (novice coaches). The following quote represents the challenges of having a young family and trying to develop as a coach:

> I have 2 small children and it's virtually impossible with my duties to the team to even have any spare time other than very late at night. I want to do my job properly and well but sometimes get frustrated because I have to rush and I do not have the time to do what I have set out to do. I have been unable to attend courses because of these time constraints and basically I've just tried to learn by doing. I do however realize and understand that the formal development of my career needs to be put on hold for now (E3).

A barrier to learning that novice coaches face is a lack of direction with respect to what they need to do to develop expertise. Since it was suggested that coaches should engage in more planning for development, information on available learning activities and experiences should be available for new coaches to assist with this process.

Although not central to the model developed, the aforementioned results from Study Three give us clues into the developmental process and are certainly useful for informing coaching education initiatives. Evidence of a lack of a structured plan by coaches is compatible with the assertion that the coaching expertise process is one of self-adaptation. The aforementioned learning experiences/activities and barriers have provided ideas for coaching development suggestions that can be found below.

Comparison of Findings to the Deliberate Practice Framework

Since the theory of deliberate practice (Ericsson et al.,1993) so elegantly describes athletic expertise development, and was a starting point for my thinking in this area, I wondered whether the theory (or parts of it) might relate to the coaching expertise development model that evolved from the present research. Recall that for an activity to be considered deliberate practice, the activity must require a large amount of effort (either physical or mental or both), be relevant to improving performance, may or may not be inherently enjoyable (Hodges, Kerr, Starkes, Weir & Nananidou (2004) have shown that in sport athletes deem practice enjoyable) and be highly structured. Another tenet of the theory of deliberate practice is that the performer must receive valid, immediate feedback on his or her performance in order to improve. Ford, Coughlin and Williams (2009) have

suggested that deliberate practice in coaching could be defined by a coach's intention to improve while engaging in any activity. The coaches in the current studies highlighted the importance of continual learning and the quest to become better every day. Intention, however, with respect to every activity they engage in was not investigated. In terms of effort, the coaches interviewed suggested that the process of expertise development takes time and hard work. Research has suggested that elite coaches have spent more time coaching than their lower level counterparts (i.e., Young, Jemcyzyk, Brophy & Côté (2009).

The fact that coaches identify their strengths and weaknesses (and aim to ameliorate weaknesses) indicates that they do select to engage in activities that are relevant to improvement. The difference between coaches and athletes is that a weakness that is identified for an athlete must be targeted and improved in order for the athlete to improve his/her performance. Coaches do not always need to attempt to improve upon their weaknesses. In many cases coaches will seek an outside expert to assist them by working with their athletes instead of spending the time to improve the area they are deficient in.

Another difference between the present coaching development model and the deliberate practice framework is the lack of structure in coaching development. It was suggested that the process of coaching expertise development is one of self-adaptation, that is, the coach drives his/her own development. This idea was validated both implicitly and explicitly in my third dissertation study. Further evidence for this assertion was obtained in Study Three by the finding that coaches did not typically have a structured plan for development.

There is a similarity to the theory of deliberate practice with respect to the idea that a performer requires external feedback regarding their performance. The coaches in the present studies reported seeking feedback about their performance from a variety of sources. Feedback can also be received from various sources without the coach soliciting it. For instance, some of the coaches interviewed suggested that they rely heavily on cues from the athletes such as body language to determine if they are being effective. The

question remains- how valid is the feedback coaches receive? Are there some sources that provide more valid feedback than others? Some coaches interviewed described a process by which they analyzed the feedback they receive, particularly the source. In fact, some coaches reported only soliciting feedback from their more experienced and successful athletes. The model proposed in this dissertation states that internal feedback is also necessary for expertise development. Internal feedback is not explicitly a part of the theory of deliberate practice.

In summary, the main differences between the theory of deliberate practice and the model for coaching expertise development described in this thesis is the lack of structure in coaching development and the self-adaptive nature of coaching development. Athletic development is typically directed by an external agent (the coach), whereas a coach directs his/her own development. Another difference lies in the fact that coaches do not always work to strengthen weaknesses, yet they are still able to achieve expert status. This concept could not apply to athletes. The component of external feedback being necessary for improvement is part of deliberate practice and the model for coaching expertise development.

Suggestions from Study Participants

Some suggestions for the applicability of the model (among other suggestions) were found in the interview transcripts. One interesting suggestion that could assist new coaches was to interview a group of experienced coaches and publish a document that highlights the mistakes these coaches have made throughout their careers. Findings from the present research, and other studies (i.e., Abraham et al, 2006; Jones, Armour & Potrac, 2003; Cushion et al, 2003; Irwin, Hanton & Kirwin, 2005) has contended that coaches often learn through trial and error. A publication of this type could potentially eliminate some of the "error" experienced by coaches and could expedite the process of learning. The same coach had some thoughts on open-mindedness. He suggested that closed-minded coaches require some mentoring to become more open-minded and that some closed-minded coaches may think they are open-minded. This idea has been taken

and used in the suggestions seen below regarding how open-mindedness can be integrated in coaching education initiatives.

Two novice coaches suggested that a check list be developed with regard to things a coach should be doing in order to become better. One coach recommended that this process form should include an analysis of a coaching situation and how to go about doing things better the next time and how to get feedback from athletes and other coaches. Another suggestion made by this coach was the concept of finding an accountability partner. This person should be someone the coach is comfortable with and is willing to be completely honest with the coach regarding performance and strengths and weaknesses. The coach would meet with this person on a regular basis and discuss coaching performance in terms of what the coach has done well and what the coach needs to improve. Essentially, this process would be reflection on performance from external feedback. Another suggestion for applicability of the model was to present the model to coaches and provide a list of questions to stimulate thought about development. This suggestion has been used in the following section.

Suggestions for Coaching Development

The following suggestions have arisen from the findings of the three studies in this thesis. Since the process of coaching expertise development is a self-adaptive process, that is, driven by the coach, resources should be put in place to assist coaches in directing their own development.

Motivation

The first suggestion involves providing motivation to the coaches. This may be of more importance at the developmental level of sport where the coaches are typically volunteers. Since the coaching expertise development process takes many years, it is not advantageous for sporting organizations to consist of coaches who only coach for a few years. They simply do not have enough time to develop. There is a need to facilitate the motivation of volunteer coaches to continue with coaching.

Motivation brings with it enhanced performance if the coach has intrinsic self-determined motivation (Deci & Ryan, 1985). Recall from Study Three that conditions that foster a coach's perceived autonomy, competence and relatedness all contribute to high quality forms of motivation, creativity and persistence. Coaching education initiatives can certainly foster autonomy by providing coaches with guidelines for development, without forcing the coach into a certain developmental path (gives the coach freedom of choice). Competence could be fostered by positive feedback on coaching performance. Engagement in professional development activities such as conferences (Carson & Chase, 2009), could also be assistive in fostering positive perceptions of autonomy, competence and relatedness, which will in turn, contribute to intrinsic motivation. Coaches should be urged to engage in such activities.

Structure

It was purported that the coaching expertise process is one of self-adaptation. According to the present research, coaches do not typically structure their development by means of plans to learn to become better coaches. The deliberate practice literature suggests that structure is necessary to development if one aims to become an expert. Coaches should incorporate more structure into their development in order to facilitate the self-adaptive nature of this development. Structure can come from precise planning in both the short term and long term. Again, planning can be facilitated by knowledge of both the Abraham et al. (2006) schematic and knowledge of Côté and Gilbert's (2009) integrative definition of effective coaching. For example, a coach may devise a plan on how to develop his interpersonal skills. Another starting point for planning could be using identified weaknesses, the coach could devise a plan for how to strengthen that weakness. One novice participant in Study Three gave a glimpse into how she plans. She starts with a mission statement that she wrote some time ago. Within this statement, long term goals are found. She re-visits this statement on a yearly basis and maps out what her next year should look like, then consults the document to devise shorter term goals and selects deadlines to reach those goals.

Learning Activities

Since some of the novice coaches interviewed for Study Three suggested that they are not certain of what types of learning activities/experiences there are for them to partake in, it would be useful to provide coaches with a list of activities. To enhance specificity, it would be fruitful to survey coaches in all sports and create a list specific to each sport. General suggestions include: reading; observational learning (as per studies one and two could be a coach in any sport at any level); mentoring (formal or informal); technology (websites, video); NCCP courses; formal education; conferences; workshops and participating in committees. More specific suggestions could include a list of books or websites coaches in a certain sport have found useful. This information could be posted on NSO websites.

Overcoming Barriers

As mentioned above, barriers to development were identified. These barriers include financial constraints, time constraints, lack of resources, lack of opportunities for learning, geographic location and a lack of discipline (which relates to a lack of time). Time constraints could certainly be ameliorated by administrative support. A lack of administrative support was an issue of contention with the coaches interviewed for Study Two. The sentiment reflected by the study participants is that they would be better coaches if they were able to spend more time on coaching (specifically with the athletes) and less time dealing with administrative issues. They indicated that they would also benefit from a more extensive support team. This team could include extra assistant coaches, consultants and other experts. The coaches interviewed by Reade, Rodgers, Holt, Dunn, Hall, Stolp, Jones, Smith and Baker (2009) for a report on the status of Canadian coaches felt the same way.

Open-Mindedness

Rationale was provided in this dissertation for why open-mindedness is essential for expertise development. Coaching education initiatives should address this by ensuring that in the early stages of development coaches are made aware of the need to be

open-minded and what can be afforded to them by being so. Open-mindedness was identified by participants as a skill that can be learned. Coaches should be introduced to the concept so they may learn to be more open if they are not already so. Recall that the study participants in Study Two defined open-mindedness as being open to: new concepts/ideas; outside opinions; growth/change; receiving feedback; introspection; trying new equipment; understanding athletes; learning. Open-mindedness also includes adaptability, flexibility and having a vision beyond the current moment in time. One of the study participants in Study Three suggested that coaches should evaluate their own open-mindedness with the caveat that coaches may not always assess themselves appropriately. Coaches do a self-assessment of open-mindedness but also seek an assessment from peers/colleagues and athletes with whom they feel comfortable. This assessment could be completed using a Likert-type scale. Questions could relate to all of the aforementioned factors of open-mindedness. For example, how open are you to new concepts and ideas? A score of 1 could indicate not open at all to 5 being completely open. The coaches' self-assessment could be compared to the assessments of peers/colleagues and athletes.

Psychological Underpinnings of Development

A finding of Study Two was that several psychological characteristics affect how open-minded a coach will be at any given time. These should be described to coaches, particularly new coaches, so that they may be addressed by the coach. For instance, a coach may feel he/she is not confident in a certain area. Since this will inhibit open-mindedness and, thus, the expertise development process, efforts should be made by the coach to increase his/her confidence level. Two suggestions come to mind. The first is that the coach should spend some time articulating what he/she is not confident in. It may be that the coach does not feel confident in dealing with certain coaching scenarios (i.e., conflict amongst team members). This knowledge could inform psychological interventions to deal with the lack of confidence. If the coach has a difficult time articulating the lack of confidence, a general intervention could include a motivational general-mastery (MG-M) imagery program. MG-M imagery interventions have been shown to be effective in bolstering the confidence of athletes (i.e., Callow, Hardy & Hall,

2001). An intervention of this sort could be useful in helping coaches become more confident.

Internal Mechanisms for Feedback

The coaches interviewed for Study Two delineated various ways they utilize internal feedback to learn to become better coaches. Introspection and reflection can be used for self-analysis and self-evaluation of coaching performance. Several researchers have suggested that coaches should use reflection (i.e., Knowles, Gilbourne, Borrie & Nevill, 2001) and they, in fact, do use reflection to become better coaches (e.g., Wiman, Salmoni & Hall, 2010; Irwin, Hanton & Kerwin, 2005). It would be useful to develop a program that could be used to train this skill that could be distributed to all Canadian coaches, specifically since the coaches interviewed indicated that introspection is a skill that can be learned.

External Sources of Feedback

The coaches in Study Two delineated a list of sources from which they seek and/or receive feedback. They include their athletes, peer/assistant coaches, parents (for young athletes), external experts and mentor coaches. In order for this to occur, both parties must be comfortable with the arrangement. The participants discussed the importance of developing relationships, particularly with their athletes, so that these potential feedback sources are willing to give feedback to the coach. All coaches should be made aware of the importance of seeking feedback from a variety of sources. All coaches must utilize this process. The participants outlined various methods for obtaining external feedback: emails sent to athletes and peer coaches asking for feedback, meetings with athletes and coaches, formal evaluations of the coach and casual conversations. In some cases, the coach will ask the team captain or a few veteran members of the team to collect feedback from the other players. To start engaging in this process coaches should make a list of sources he/she trusts and would like to seek feedback from. Once a short list of feedback sources has been completed, the coach should then ask the potential sources if they feel comfortable providing feedback and develop relationships with these sources if they show interest. The coaches interviewed

for Study One are accustomed to receiving formal evaluations through the university teams they coach. Several of the coaches interviewed were also national team coaches and expressed that they would like to receive formal evaluations through their athletes and NSO. As mentioned earlier, external feedback is necessary for coaching expertise development so it is incumbent upon the NSOs to facilitate this process. A Report on the Status of Coaches in Canada (Reade et al, 2009) found similar results- only one-third of the coaches interviewed in that study received formal evaluations.

Identification of Strengths and Weaknesses

The study participants described, in detail, the process they use to analyze their strengths and weaknesses as a coach. The deliberate practice literature suggests that this is an integral part of developing expertise in a given domain. In the case of an athlete, the coach will play a large role in such identification and efforts will be made to strengthen and overcome a weakness. In the case of coaches, weaknesses are attended to sometimes but in some cases a coach will simply find an expert in a given area to fill in instead of spending time strengthening the weakness. Coaching education should address the importance of this process and provide suggestions for how to effectively engage in it.

Coaches should undergo a performance profiling process that is similar to what they may do for their athletes. The caveat to identifying one's strengths and weaknesses is that a coach should only deal with improving one weakness at a time. The following quote from E5 represents this idea:

> I look for something in there that I'm not doing as well as I should be or the athletes perceive I'm not doing as well as I should be. But I limit it to one thing. I've learned over the years that trying to do many things, you don't do anything.

The first step is identifying what is essential for the coaching process. This may come from components of the schematic by Abraham et al. (2006) that was proposed and validated through expert coach consensus and components of the proposed integrative definition of coaching effectiveness and expertise provided by Côté and Gilbert (2009) to

use as an example of what coaches may base their identification of strengths and weaknesses on. Abraham et al. indicated the coaches set both process and outcome goals. The present research indicated that this process has not been refined by some of the coaches interviewed.

The coaches interviewed for these studies used internal means to identify this weakness but one may go to external sources to determine if this needs to be addressed. One suggestion is for a coach to seek help with this process from an experienced mentor coach. Another component of the Abraham et al. schematic is required knowledge for coaching. This includes sport-specific knowledge, knowledge of the "ologies" (i.e., sport psychology, biomechanics) and knowledge of pedagogy. A coach may identify that his/her knowledge of sport psychology is lacking. There are two choices in this instance: the coach may decide to learn about sport psychology from some of the sources identified earlier in the paper (i.e., books, websites and university courses) or the coach may decide to seek the assistance of an external expert in the area. Côté and Gilbert (2009) have suggested that coaches must have intrapersonal knowledge to be an effective coach. Intrapersonal knowledge comes from introspection and reflection. Coaches should spend time every day on reflection/introspection for the purpose of identifying weaknesses. The participants in the present studies suggested that the capacity for introspection can be learned and improve over time. Since this process is vital to development, coaches must learn to become more introspective. Part of this process may include writing daily journals that provide a self-assessment or evaluation of the coach's performance that day.

Mentoring

It is not a surprise that the participants in all three studies highlighted the importance of mentoring in the development of their expertise. All of the study participants have engaged in mentoring over the course of their careers. The elite group of coaches interviewed for Study Two was asked: Do you think there is anything that could have facilitated your development as a coach that was missing in your career? With respect to mentoring, the coaches felt that the experiences they have had have been beneficial but there is still room for improvement. The coaches would like to have had

more mentoring experiences and during these experiences, more feedback is required from the mentors. This feedback could specifically be obtained via formal evaluation. The coaches also expressed their concern with their efficacy in a mentorship role. They indicated that they often feel unsure if they are effective and believe that they require education on being an effective mentor ("mentorship for the mentors"). Some of the elite coaches also acknowledged the usefulness of being a mentor. A study by Young et al. (2009) showed that a group of national level Canadian track and field coaches had more mentors during their careers as compared to provincial, senior club and local club coaches. They purported that these coaches either sought these experiences more than their lower-level counterparts or had access to these experiences more often during the course of their careers. Although mentoring experiences may be limited by things such as finances and geographic location, coaches should be urged to seek as many mentors as possible. Videotapes could be used to overcome distance and financial barriers. A coach looking for mentorship could send videotapes and practice plans to a mentor coach for analysis. Conversely, elite level coaches could be video recorded during practice sessions and competitions and this video could be sent to coaches so they can benefit from observational learning, even if they have no access to more experienced coaches.

It would be useful to develop a list of potential mentors across the country and create a database that coaches could consult when trying to find a suitable mentor. The mentor list could also include the mentors' perceived strengths and areas of expertise. This type of mentorship may only occur via electronic mail or the telephone due to geographic constraints but it certainly could be a useful learning tool for coaches. A final thought on mentoring comes from a participant in Study Three. He suggested that mentors should be compensated for their time and that mentoring needs to occur for extended periods of time, not just a few hours here or there. To expand on this, NSOs could hire mentor coaches to travel across Canada to provide assistance to coaches.

Use of Outside Experts (Sport Scientists)

Several of the coaches interviewed for all three studies indicated that they often seek assistance from external experts; sport scientists being the most common sources of

information. The coaches interviewed for Studies 1 and 2 were based at a university at the time of the interviews and the elite coaches interviewed for Study Three were currently, or had been a national team coach. If they were not currently a national team coach, they were affiliated with a varsity crew. This means all of the coaches interviewed have access to sport scientists either by proximity or through the national team program. The same degree of accessibility would not apply to most coaches. There may also be accessibility issues for coaches in isolated areas. For this reason, a database similar to the one suggested for mentor coaches, should be developed. This database would include contact information for sport scientists across Canada and a detailed description of the scientists' area of expertise.

Think Outside the Sport

The coaches interviewed in all three studies indicated that there is much to be learned outside of their respective sports. This could come in the form of observational learning from coaches at any level in a different sport, reading books about different sports and mentoring with coaches in other sports or occupations outside of sport (i.e., business). Seeking mentorship from more experienced coaches in other sports may be particularly useful for coaches in rural areas, especially if there are few coaches in any one sport in the area.

In summary, several suggestions were made to enhance and facilitate a coach's self-adaptive process for developing coaching expertise. Some of these suggestions require assistance from NSO (financial and otherwise).

Limitations

The main limitation of the first two studies of the dissertation was they only included coaches (and athletes in Study One) who were integrated in the university athletics system. Many of the coaches interviewed were also professors at the time and for this reason, may have provided a different perspective than coaches in other sports systems. A large majority of coaches interviewed for Study Three were also university coaches. For this reason, future research should be done on coaches who are not part of

the university system to discover if the proposed model can be generalized to the entire population of coaches (all sports).

A main limitation in qualitative work is the small sample size. Although a limitation, theoretical saturation occurred during data analysis. In the case of this dissertation, difficulty was encountered with recruiting study participants, particularly for Study Three. This occurred since only coaches with a former or current national team coach designation were sought. The pool of coaches with these credentials is very small. The novice coaches interviewed for Study Three may also not be representative of all novice rowing coaches. It is not known exactly how may novice coaches received a recruitment letter due to the manner in which they were distributed (via mass email to rowing clubs). It could be that the coaches who responded to the request were particularly keen coaches.

It is unlikely that the proposed model is generalizable to all coaches in all coaching contexts. The model is focused on the development of those individuals who are highly motivated to become better coaches.

A final limitation could be that the author of this dissertation is a sport coach and for this reason could hold certain biases with respect to the coaching expertise development process. Steps were taken to ensure trustworthiness of data analysis (discussed in the methodology sections of thesis studies) to overcome this potential problem.

Future Studies

There are several avenues that could be explored in future research projects. The first is to investigate why novice coaches did not report undergoing a process of identifying their own strengths and weaknesses as a coach. Perhaps some of the psychological underpinnings mentioned in Study Two are at play.

Research on mentoring may also be fruitful. Recall that some study participants for Study Two indicated that they are not sure if they are a good mentor. It would be useful to investigate what makes a good mentor. Since mentoring is so important to the

developmental process, it would also be fruitful to investigate how the mentorship process can be made more efficient and effective.

Since the model for coaching expertise development has been revised to include motivation, future research should be done to delve into the role motivation has served in the coaching developmental process. This could include what keeps a coach motivated to continue and if there are any barriers to motivation.

Conclusions

The aim of this dissertation work was to improve our understanding of the processes supporting coaching expertise development. Coaching expertise development seems to be a self-adaptive process that requires motivation, as well as open-mindedness to facilitate the coach seeking learning experiences. Coaches use both internal and external mechanisms to obtain feedback on coaching performance. Central to the process of coaching expertise development is coaches must identify and process their own strengths and weaknesses as a coach. Results from Study Three indicate that novice coaches do not do this as frequently as elite coaches. To the degree the model presented here is valid; it is evident that much could be done to improve coaching development in Canada.

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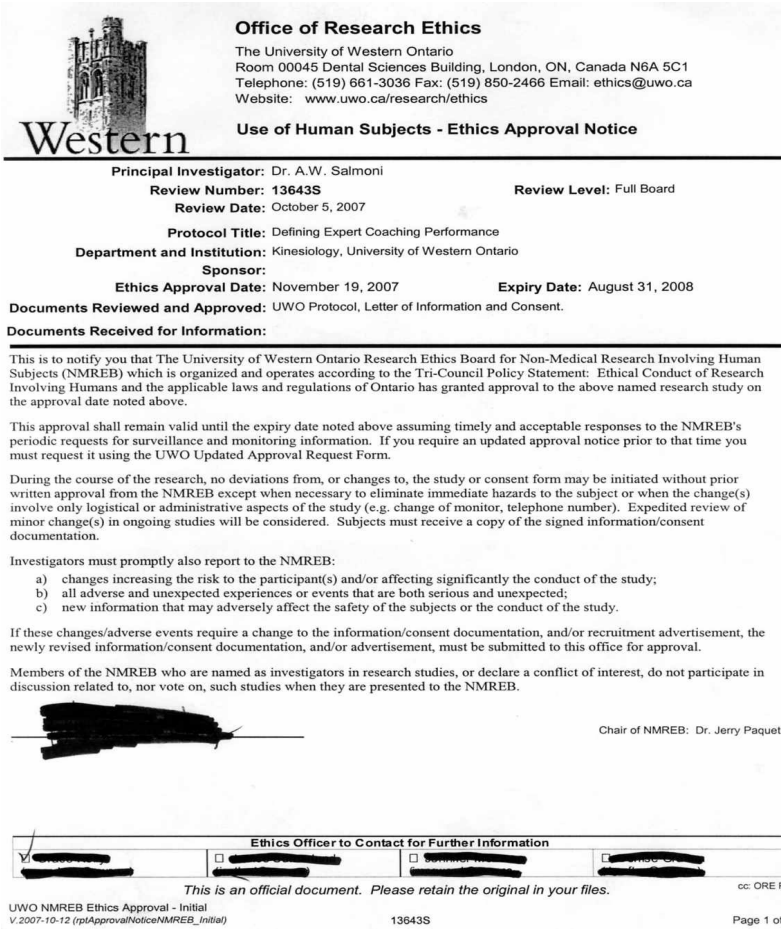
Appendices

Appendix A



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Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. A.W. Salmoni
Review Number: 13643S **Review Level:** Full Board
Review Date: October 5, 2007

Protocol Title: Defining Expert Coaching Performance
Department and Institution: Kinesiology, University of Western Ontario
Sponsor:
Ethics Approval Date: November 19, 2007 **Expiry Date:** August 31, 2008
Documents Reviewed and Approved: UWO Protocol, Letter of Information and Consent.
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

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[redacted]

Chair of NMREB: Dr. Jerry Paquet

Ethics Officer to Contact for Further Information

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UWO NMREB Ethics Approval - Initial
V.2007-10-12 (rptApprovalNoticeNMREB_Initial) 13643S Page 1 of

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Western

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. A.W. Salmoni
Review Number: 15273S **Review Level:** Full Board
Review Date: July 04, 2008

Protocol Title: Validating a proposed coaching expertise development model
Department and Institution: Kinesiology, University of Western Ontario
Sponsor:
Ethics Approval Date: December 17, 2008 **Expiry Date:** April 30, 2009
Documents Reviewed and Approved: UWO Protocol, Letter of Information and Consent.
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

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Chair of NMREB: Dr. Jerry Paquette

Ethics Officer to Contact for Further Information

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Western

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. A.W. Salmoni
Review Number: 15050S **Revision Number:** 1
Review Date: October 31, 2008 **Review Level:** Expedited
Protocol Title: The role of open-mindedness in the development of coaching expertise.
Department and Institution: Kinesiology, University of Western Ontario
Sponsor:
Ethics Approval Date: October 31, 2008 **Expiry Date:** December 31, 2008
Documents Reviewed and Approved: Revised study end date.
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices: Consolidated Guidelines; and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above. The membership of this REB also complies with the membership requirements for REB's as defined in Division 5 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date noted above assuming timely and acceptable responses to the HSREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the HSREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the HSREB:

a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
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Members of the HSREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the HSREB.

[redacted]

Chair of HSREB: Dr. Joseph Gilbert

Ethics Officer to Contact for Further Information

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Western

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. S. Salmoni
Review Number: 15738S **Review Level:** Full Board
Review Date: December 12, 2008

Protocol Title: An investigation into how Rowing coaches develop expertise
Department and Institution: Kinesiology, University of Western Ontario
Sponsor: Coaching Association of Canada
Ethics Approval Date: April 01, 2009 **Expiry Date:** June 30, 2009
Documents Reviewed and Approved: UWO Protocol, Email Introductory Letter, Phone Script, Letter of Information and Consent.

Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

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[redacted]

Chair of NMREB: Dr. Jerry Paquette

Ethics Officer to Contact for Further Information			
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Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. A.W. Salmoni
Review Number: 15273S **Revision Number:** 1
Review Date: April 13, 2009 **Review Level:** Expedited

Protocol Title: Validating a proposed coaching expertise development model
Department and Institution: Kinesiology, University of Western Ontario
Sponsor:
Ethics Approval Date: April 13, 2009 **Expiry Date:** August 31, 2009
Documents Reviewed and Approved: Revised Study End Date
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above.

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[redacted]

Chair of NMREB: Dr. Jerry Paquett

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Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. S. Salmoni
Review Number: 15738S **Revision Number:** 1
Review Date: June 8, 2009 **Review Level:** Expedited
Protocol Title: An investigation into how Rowing coaches develop expertise
Department and Institution: Kinesiology, University of Western Ontario
Sponsor: Coaching Association of Canada
Ethics Approval Date: June 8, 2009 **Expiry Date:** November 30, 2009
Documents Reviewed and Approved: Revised Study End Date
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above.

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Western

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. A.W. Salmoni
Review Number: 15273S **Revision Number:** 2
Review Date: September 8, 2009 **Review Level:** Expedited
Protocol Title: Validating a proposed coaching expertise development model
Department and Institution: Kinesiology, University of Western Ontario
Sponsor:
Ethics Approval Date: September 8, 2009 **Expiry Date:** December 31, 2009
Documents Reviewed and Approved: Revised Study End Date
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above.

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Western

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. A. Salmoni
Review Number: 15738S **Revision Number:** 2
Review Date: November 23, 2009 **Review Level:** Expedited
Protocol Title: An investigation into how Rowing coaches develop expertise
Department and Institution: Kinesiology, University of Western Ontario
Sponsor: Coaching Association of Canada
Ethics Approval Date: November 23, 2009 **Expiry Date:** May 31, 2010
Documents Reviewed and Approved: Revised Study End Date
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above.

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Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. A.W. Salmoni
Review Number: 15273S
Review Date: February 09, 2010

Revision Number: 3
Approved Local # of Participants: 14
Review Level: Expedited

Protocol Title: Validating a proposed coaching expertise development model
Department and Institution: Kinesiology, University of Western Ontario
Sponsor:
Ethics Approval Date: February 09, 2010 **Expiry Date:** May 31, 2010
Documents Reviewed and Approved: Revised study end date and number of study participants.
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above.

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[redacted]

Chair of NMREB: Dr. Jerry Paquette
FDA Ref. #: IRB 00000941

Ethics Officer to Contact for Further Information			
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Appendix B

Table 1. Categories and Sub-categories of Open-Mindedness

Category	Second-Order Category	First-Order Category
Definition provided by coaches		
	Open to new concepts/ideas	
	Open to outside opinions	
	Open to growth/change/new learning	
	Open to receiving feedback	
	Open to introspection	
	Open to trying new equipment	
	Open to understanding athletes	
	Adaptability	
	Flexibility	
	Vision beyond current moment in time	
Roles of open-mindedness		
	Assists during the act of coaching	
		Game calling/hands on coaching
		Less predictable in game situations

		Situational leadership
	Enhanced understanding	
		Understand how variations can influence performance (new spin on old stuff)
	Provides impetus for learning opportunities	
		Open to growth of knowledge (new trends in sport science)
		Facilitates the acquisition of knowledge/growth
		Stay ahead of the curve
		Awareness of changing sporting environment/trends in sport science
		Ask for help
		Apply change
		To eliminate old ways/habits
		Try what other successful teams/athletes are doing
		Opportunity to be inventive/innovative
		Allows coach to develop own style
Pitfalls to not being open-minded		

	Inhibits growth	
		Slave to principles/stifles free thinking
		Coach in the style you were coached
		Fall into a certain style and not be willing to change
		With more experience comes rigidity
Change in open-mindedness over career		
	How they changed	
		More open-minded as an expert coach
		Coach had a strict idea of "how it should be" as a new coach
		Participants thought they knew it all as a new coach
		More open-minded as a novice coach
		Expert coach is more judgmental
		Spectrum of openness changed-not as broad
	Why they changed	
		Acknowledgment that open-mindedness could be improved

		Learned to be more open-minded
		Changes in sport made coaches more open-minded
		Personal characteristics changed and made more open
Psychological underpinnings of open-mindedness		
	Requirements to be open-minded	
		Lack of fear
		Coach rises above ego
		Confidence
		Humbleness
		Pressure to perform stifles open-mindedness
		Vulnerability
	Psychological gains from being open-minded	
		Credibility as a coach (can impart knowledge to athlete)
		Respect from athletes
	Worry	
		Coach doesn't want to be set in ways

	Caveat	
		Coach wants to stay true to self

Table 2. Categories and Sub-Categories of Introspection

Category	Second-Order Category	First-Order Category
Definition of introspection provided by study participants		
	Self-analysis	
	Self-honesty	
	Intuition/gut feeling	
	Soul-searching	
Roles in coaching expertise development		
	Self-awareness	
		Coach becomes attuned to style/tendencies
		Coach gains knowledge of strengths and weaknesses
		Coach gains knowledge of coaching philosophy
		Coach learns about him/herself

	Self-evaluation	
		Coaching performance
		Coaching knowledge
		Coaching approach
		Reflection on actions taken
	Developmental outcomes	
		Grow and change for future
		Longevity in coaching
Change over career		
	Type of change	
		Increase in introspection
	Reason for change	
		Coaching Success
		Coaching Experience
Psychological underpinnings		
	Requirements to be introspective	
		Coach has to rise above ego
		Confidence
		Maturity

		Motivation for use of introspection	
			Coach will learn about him/herself
			Coach with gain respect of athletes
			Makes the coach humble

Table 3. Categories and Sub-Categories of External Feedback

Category	Third-Order Category	Second-Order Category	First-Order Category
External feedback sources			
	Who		
		Coaches	
		Athletes	
		Individuals intimately tied to the team	
		Individuals loosely tied to the team	
	Where		
		Built-in mechanisms	
			Formal communication

			routes
			Post-game meetings
			Ask team captains to collect from team
			Formal evaluations
			Send emails to athletes and assistant coaches
			Evaluation of players
			Group or Individual
		Informal solicitation	
			Casual conversation
			Observation of athletes
How feedback is analyzed			
	Source evaluation		
		Coach considers the source of the feedback	
	Quality evaluation		
		Coach evaluates the quality of the feedback	
	Analysis process		
		Coach receives external support	

			Meetings with athletes to discuss written feedback
			Coach compares practice to literature
	Evaluation impact of change		
			Coach considers philosophy
			Coach evaluates pros and cons of changing

Table 4. Categories and Sub-Categories of Identification of Strengths and Weaknesses

Category	Third-Order Category	Second-Order Category	First-Order Category
Internal mechanisms			
	Knowledge		
		Coaching experience	
			Coach learns from mistakes
			Based on coaching experience
			Wisdom
		Athletic experience	

			Based on athletic experience
	Introspection		
		Intuition/gut feeling	
		Coach is frank with self	
		Coach puts a mirror in front of self	
		Self-analysis	
External mechanisms			
	Outcome measures		
		Coach and athlete performance	
			Team performance/results
			Enjoyment/satisfaction of athletes
			Win/loss record
			Athlete improvement
			Observation of athletes
	External sources		
		Formal evaluation	
			Annual evaluations
		Interpersonal	

		interactions	
			Coaches
			Administration
			Athletes
Process of using feedback for development			
	Coach engages in learning situations		
		Reading	
		Talking	
		Going to clinics	
	Adapt coaching performance		
		Weaknesses	
			Change strategy
			Adapt new concepts
			Use/apply suggestions
			No drastic changes
			Minimize weaknesses
			Attempt to learn more
			Learn about changes in sport
			Learn about updates in sport science

	Conscious effort to deal with weaknesses
	Try harder
	Avoidance of certain situations
	Elite coach- style is established but built upon
Strengths	
	Spend less time on strengths
	Human nature to focus on what we are good at
	Develop around strengths
	Build on strengths
Develop a plan	
	Make a plan for development
External assistance	
	Bring outside experts in
	Ask for help

Table 5. Categories and Sub-categories of Mentor Coaching

Category	Second-Order Category	First-Order Category
Source		
	Coaches individual had as an athlete	
	Elite coaches	
		Respected coaches
		More experienced coaches
		National team coaches
	Peers	
		Mutual mentorship
Types identified by study participants		
	Formal	
		Through sport organizations
		Degree-related (college or university)
	Informal	
		Shadowing mentor coach
		Email interaction with

		mentor coach
		Verbal Interaction during training with mentor coach
		Discussions with mentor coach
		Idea exchanges with mentor coach
	Observational learning	
		Observation of higher level coaches within sport
		Observation of coaches at any level
		Observation of coaches in other sports
Developmental outcomes		
		Facilitates development
		Mentoring is best method of development
Coach as a mentor		
	Mentees of study participants	
		Assistant coaches
		NCCP formal

	assessments- coaches in training
Learning outcomes of being a mentor	
	Facilitates learning
	Facilitates reflection on approach/style
	Facilitates introspection

Appendix C

Hello Melissa

As co-editor of the International Journal of Coaching Science, I give permission to use "An Examination of the Definition and Development of Expert Coaching" in your thesis. Please let me know if you need anything more.

Philip Sullivan, Ph.D.

Associate Professor

Brock University | Department of Physical Education & Kinesiology

CURRICULUM VITAE

Melissa Wiman, B.Sc., M.Sc., Ph.D.

Education

- Ph.D. Candidate (Kinesiology)
  Psychological Basis of Physical Activity and Movement Control
  University of Western Ontario, London, Ontario, Canada
  Thesis: The Development and Validation of an Expertise Development Model for Sport Coaches
  Thesis Defended and Submitted in August 2010

- Master of Science (Human Development)
  Laurentian University, Sudbury, Ontario, Canada (November 2004)
  Thesis: A Comparison of the Response of the Trunk to Sudden, Unexpected Perturbations in Athletes and Non-Athletes

- Bachelor of Science (Kinesiology)
  Laurentian University, Sudbury, Ontario, Canada (May 2002)
  Thesis: A Three-Dimensional Analysis of a Throw Triple Salchow in Pair Figure Skating

Teaching Experience

- Instructor: Kinesiology Internship I
  May 2010-Present
  Laurentian University
  Duties included grading final reports and presentations, as well as keeping in contact with the students on a regular basis
- Instructor: Physiology II
  January 2010-April 2010
  Laurentian University
  Duties included preparing lectures, grading and providing assistance to students to facilitate learning
- Instructor: Kinesiology Internship I
  May 2009-August 2009
  Laurentian University
  Duties included grading final reports and presentations, as well as keeping in contact with the students on a regular basis
- Instructor: Introduction to Exercise Science, Wellness and Health: Lab Portion
  January 2003- April 2003
  Laurentian University
  Developed the lab portion for the existing theory course

- Graduate Teaching Assistant for Biomechanical Analysis of Human Locomotion (Professor: Dr. Volker Nolte)
  University of Western Ontario
  Duties included teaching weekly labs to third and fourth year undergraduate kinesiology students

Coaching Experience

- National Coaching Certification Program Level II Certified Professional Figure Skating Coach
  August 1996-Present
  Level III National Coaching Certification Program certification is in progress
  Experience coaching skaters aged 3 to 80 years at recreational, test and competitive levels

Academic Awards

- Research Grant from the Coaching Association of Canada: Value of $7000 (June 2008 to June 2009)
  Grant was awarded to investigate how elite rowing coaches develop coaching expertise
- Research Grant from the Coaching Association of Canada: Value of $5000 (September 2006 to August 2007)
  Grant was awarded to investigate National Coaching Certification Program uptake in Canadian Softball coaches

Academic Work Experience

- Research Assistant
  Centre for Research in Human Development at Laurentian University
  October 2002- December 2002
  Supervised by Dr. John Lewko
  Provided administrative assistance (i.e., literature searches and reviews)with on-going research projects and planning for new projects in the centre

Other Relevant Experience

- Internship
  United States Olympic Complex Coaching and Sports Sciences Division
  Colorado Springs, Colorado, U.S.A.
  May-June 2001
  Mentorship with Dr. Sarah Smith (senior biomechanist)
  Independent duties included a biomechanical analysis of a throw triple Salchow in pair figure skating

- Physical Training Consultant
  Experience with fitness testing, design and supervision of physical training programs for competitive master's rowers and figure skaters
  CPAFLA course was taken in 1999
- Mental Training Consultant
  Experience with mental skills assessment, design and implementation of mental training programs for figure skaters and dancers

Publications

Wiman, M., Salmoni, A.W. and Hall, C.R. (2010- In Preparation). Validation of a Proposed Model for Coaching Expertise Development.

Wiman, M. and Hall, C.R. (2010- In Preparation). An Imagery Intervention with Young Figure Skaters.

Wiman, M., Salmoni, A.W. and Hall, C.R. (2010- In Preparation). Open-Mindedness, Introspection, Feedback and Mentoring in Expert Coaching Development.

Wiman, M., Salmoni, A.W. and Hall, C.R. (2010). An Examination of the Definition and Development of Expert Coaching. *International Journal of Coaching Science. 4*(2), 37-60.

Technical Reports

Wiman, M., Salmoni, A.W. and Hall, C.R. (2009). Open-Mindedness, Introspection, Feedback and Mentoring: Their Roles in Coaching Expertise Development. Report submitted to the Coaching Association of Canada and Rowing Canada.

Wiman, M. and Salmoni, A. (2007). Canadian Softball Coaches' Views on National Coaching Certification Program Training. Report submitted to the Coaching Association of Canada and Softball Canada.

Refereed Conference Proceedings

Wiman, M., Salmoni, A.W. and Hall, C.R. (2009) Some Factors that Contribute to Coaching Expertise Development. International Council of Coaching Education Global Coach Conference Proceedings.

Wiman, M., Salmoni, A.W. and Hall, C.R. (2009). An Examination into the Definition and Development of Expert Coaching. Canadian Society for Psychomotor Learning and Sport Psychology Conference Proceedings.

Wiman, M. and Hall, C.R. (2008). An Imagery Intervention with Young Figure Skaters. North American Society for Psychology of Sport and Physical Activity Conference Proceedings.

Wiman, M. and Salmoni, A.W. (2007). Novice Softball Coaches' Views on National Coaching Certification Program Training. Coaching Association of Canada Coaching Research Symposium Proceedings.

Conference Presentations

- Some Factors that Contribute to Coaching Expertise Development
  Poster Presentation
  International Council of Coaching Education Global Coach Conference
  Vancouver, British Columbia, Canada
  November 2009

- An Examination into the Definition and Development of Expert Coaching
  Poster Presentation
  Canadian Society for Psychomotor Learning and Sport Psychology Conference
  Toronto, Ontario, Canada
  November 2009

- An Imagery Intervention with Young Figure Skaters
  Verbal Presentation
  North American Society for Psychology of Sport and Physical Activity Conference
  Niagara Falls, Ontario, Canada
  June 2008

- A Comparison of the Response of the Trunk to Sudden, Unexpected Perturbations in Athletes and Non-Athletes (Results)
  Verbal Presentation
  Ontario Biomechanics Conference
  Barrie, Ontario, Canada
  March 2005

- A Comparison of the Response of the Trunk to Sudden, Unexpected Perturbations in Athletes and Non-Athletes: Proposal for Research
  Verbal Presentation
  Ontario Biomechanics Conference
  Barrie, Ontario, Canada
  March 2004

- Sudden Loading of the Spine
  Poster Presentation
  Laurentian University Kinesiology Conference
  Sudbury, Ontario, Canada
  March 2003

Invited Conference Presentations

- Creating Excellent Coaches
  Rowing Canada Annual General Meeting
  Toronto, Ontario, Canada
  December 2008

Committee Work

- School of Kinesiology Equity and Diversity Committee
  University of Western Ontario
  July 2007 to June 2008
  Invited to the committee to provide a student's perspective on equity and diversity
  I ssues affecting the School of Kinesiology

- Kinesiology Graduate Board President
  University of Western Ontario
  July 2006-July 2007
  Representative of Kinesiology graduate students on the Kinesiology School Affairs Committee, Kinesiology Graduate Affairs Committee and the Faculty Council for the Faculty of Health Sciences

- Society of Graduate Students (SOGS) Council member
  University of Western Ontario
  April 2005-March 2006
  Represented Kinesiology graduate students and acted as a liaison between the students and SOGS

- Laurentian University Kinesiology Conference Organizing Committee Member for 2002 Conference

- Physical Education Council member
  Laurentian University
  September 2001-April 2002

- Sudbury Region Professional Figure Skating Coaches Representative
  1998-2000 and 2002-2003 Seasons
  Member of the Northern Ontario Section coaching committee and dealt with a variety of issues facing local figure skating coaches (i.e., ethical, administrative and conflict resolution)