

An Exploration of Teachable Moments in University Sport

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Abstract

Teachable moments (TMs) is a term that is used across various domains to refer to situations, occurrences, and/or events that present a potential opportunity to learn (Seals, 2018). TMs are recognized as important for educating others, as well as playing a role in professional and personal development. In sport contexts, TMs are a pathway for coaches to develop athletes (Hedlund, 1996). However, we do not fully understand what comprises TMs due to inconsistent usage of the term, and the paucity of sport-based, scholarly research on TMs. Much of our current understanding of TMs is based on studies from domains external to sport. This exploratory study aimed to (a) develop a broader conceptual understanding of how TMs occur between coaches and their athletes, and (b) explore university sports coaches' perceptions of TMs with their athletes.

In this study, data were collected through semi-structured interviews and a virtual TM recall document, whereby coaches logged events they perceived to be TMs with their athletes. Seven (7) university sports coaches completed an initial interview, while 5 of the 7 coaches completed between 4-8 recalls, as well as a second interview. A reflexive thematic analysis in combination with focused coding was applied, thus allowing us to develop a preliminary model of TMs in university sport contexts. In the first manuscript, titled 'Teachable moments in university coaching: Exploring a coaching catchphrase,' we present our model, and outline the main qualities and conditions that support the occurrence of TMs. In the second manuscript, titled 'Teachable moments: Practical examples from university sport,' we elaborate on different forms of TMs that were developed in the findings, and provide concrete examples of TMs that coaches encountered in their day-to-day coaching practices. Throughout both manuscripts, we

build our understanding of what comprises TMs in sport and discuss the implications for coaching practices and athlete development.

Table of Contents

Acknowledgements.....	ii
Abstract.....	iv
List of tables.....	x
List of figures.....	x
Introduction.....	1
Conceptual framework.....	3
Literature review.....	3
Teachable moments	3
Coach development.....	10
Constructivist views of learning	12
Epistemology	15
Methodology.....	15
Methods.....	17
Participant recruitment.....	17
Data collection	19
Interviews.....	19
Stimulated recalls.....	20

Data analysis	21
Quality of research	23
Ethics	24
Findings: Presentation of the manuscripts	25
Manuscript One	26
Teachable moments in university coaching: Exploring a sport coaching catchphrase.....	26
Abstract	27
Introduction.....	29
Teachable moments across different domains	29
Teachable moments in sport	30
Methodology	31
Participants.....	32
Data collection	32
Data analysis	33
Findings	34
Coaching approaches	35
Coach-athlete relationship	39
Awareness	40
Reflection	42
Opportunity	43
Meaning	44
Choice	45

Change	45
Discussion.....	46
Conditions for teachable moments.....	47
Coaching experience and teachable moments	50
Limitations and conclusions	51
References.....	54
Manuscript Two	62
Teachable moments: Practical examples from university sport	62
Abstract.....	63
Introduction.....	64
Methods.....	69
Participants.....	70
Data collection and analysis.....	70
Findings	73
Forms of teachable moments	74
Structured.....	74
Organic.....	75
Uncategorised	76
Examples of teachable moments in university sport.....	78
Discussion.....	82

Differences between structured and organic teachable moments	82
How coaches use teachable moments with athletes.....	87
Conclusion	89
References.....	93
General discussion	102
Theories of human learning and teachable moments.....	102
Experience and teachable moments	104
Content and communication of teachable moments	107
Practical implications: Why care about teachable moments?.....	110
Limitations and future recommendations	112
General conclusions	113
References.....	116
Appendices.....	136
Appendix A: Recruitment text.....	136
Appendix B: Informed consent.....	137
Appendix C: Interview #1 guide.....	132
Appendix D: Interview #2 guide.....	141
Appendix E: Online TM recall form.....	142
Appendix F: Ethics approval	144

List of tables

Table 1. Participant demographics.....25

Table 2. Forms of teachable moments: Further examples.....83

List of figures

Manuscript 1

Figure 1. The teachable moments in coaching model.....54

Manuscript 2

Figure 2. Forms of teachable moments in
coaching.....86

Introduction

Sport coaches have an important purpose to help their athletes develop and improve (International Council for Coaching Excellence, 2013). For coaches to accomplish this, they must have an awareness of their responsibility to provide learning opportunities for their athletes (Townsend, Cushion, & Smith, 2018.) These learning opportunities could develop in the form of *teachable moments (TMs)*. The phrase, ‘teachable moment’(TM) is often informally used within coaching contexts. When we investigate TMs, they seem to be learning events that hold potential to help coaches achieve their purpose of developing athletes.

Beyond sporting contexts, TMs are also connected to educational endeavours and learning; although across domains TMs are conceptually ambiguous and lack a strong empirical foundation (Cohen, Clark, Lawson, Casucci, & Flocke, 2011). Researchers have proposed their own versions of definitions for TMs, such as education scholar Havighurst (1952), who described TMs as a specific point where the timing is right for students to learn a particular task. Similarly, according to the Merriam-Webster (2020) dictionary, a TM is “a time that is favorable for teaching something.” Despite the absence of an overarching theory of TMs, they are recognized as an important complement to learning across many domains (e.g., healthcare, medicine, education.)

TMs in healthcare settings occur as interactions between practitioners and their patients, facilitated in such a way that it can often lead to positive health behaviour changes and/or healthy lifestyle habits (Chinai, Guth, Lovell, & Epter, 2018; Cohen et al., 2011; Lawson & Flocke, 2009; May, Walker, de Burgh et al., 2019; Rich, 2009). Much like healthcare, TMs in the domain of medicine are employed as an educational opportunity to encourage patient learning, as well as to provide practitioners with situations conducive to professional development

(Broderick et al, 2014; De Luise, 2014; Donovan, Linz, & Spagnoletti, 2014; McBride, Emmons, & Lipkus, 2003; Roberts et al., 2012). TMs are also considered in education, where teachers can capitalize on occurrences to enhance their students' learning (Avery, 2008; Dalton, 2010; Glasswell & Parr, 2009; Haug, 2014; Hyun & Marshall, 2003; Jones & Penney, 2019; Seals, 2019; Virtue, 2007; White & Maycock, 2012). Each of these areas of research and practice demonstrate that TMs are advantageous for learning, whether between practitioner and patient, practitioner and student; or educator and student. TMs can be random, unexpected opportunities to learn; and in some cases, those in a position of instruction also play a guiding and/or facilitatory role to create TMs (Seals, 2019). Coaching in sport focuses on the instruction and development of athletes. TMs do occur in sport, however our knowledge of what they are comprised of, how they occur, and how they are created, is somewhat limited.

Researchers in the domain of positive youth development (PYD) highlight naturally-occurring TMs as an important concept for the life skills development of young athletes (Bean & Forneris, 2017; Bean, Kramers, Forneris, & Camiré, 2018; Camiré, Trudel, & Forneris, 2012; Vella, Oades, & Crowe, 2013a). Researchers mainly referenced TMs regarding life skills development in youth athletes, but it is interesting to consider how TMs could be expanded upon in other sport contexts (e.g., university sport) and aspects of athlete learning (e.g., tactical, technical). TMs could be applied as a beneficial strategy to assist coaches in their practice. However, the majority of our current knowledge of TMs is based on literature from other domains and cannot directly inform practical recommendations for sport and coaching contexts. As such, we must consider how coaches understand TMs to build our capacity to employ these moments for the benefit of both coaches and athletes.

The purpose of this thesis is to explore the concept of TMs within a university sport context and develop a broader understanding of TMs as they occur between coaches and their athletes based on the perspectives of coaches. Our goal is to contribute to knowledge on how coaches view TMs, and how they can be integrated into practice, while simultaneously generating novel explorations in coaching literature. This thesis is comprised of an introduction, inclusive of a conceptual framework, review of literature, theoretical frameworks, epistemology, methodology, methods of data collection and analysis. The findings are presented in two manuscripts, followed by a general discussion, limitations of the study, and conclusions.

Conceptual framework

The design of this research project was constructed using the framework of Maxwell (2012). Maxwells' (2012) qualitative framework provided a format to organize and present the project through a constructivist lens, as well as align the design of the study with the researchers' goals and intended contributions. The study was exploratory in nature, as it is the first to specifically address the concept of TMs in a sport context. The aim of the study was to answer the following questions: (a) How do university sport coaches understand TMs? (b) What are the experiences that shape a coaches' understanding of TMs? And, (c) How do coaches use TMs in the development of their athletes?

Literature review

Teachable moments

Teachable moments (TM) are often referenced in relation to processes in education, learning and/or development. Generally, TMs are understood as an opportunity where some aspect of learning can be maximized (Bentley, 1995). The following paragraphs provide an

overview of how TMs are viewed in healthcare and medicine, in education, and lastly, sport, as sport involves teaching practices by the coach. Most of the research on TMs within these domains is in relation to teaching, work-integrated learning, and/or educational pursuits.

Healthcare researchers described TMs as events or circumstances facilitated by a health practitioner that can lead a patient to alter their behaviour in a positive manner (Anderson, 1994; Having, 2000; Lawson & Flocke, 2009; Stevens, Severson, Lichenstein, Little, & Leben, 1995). In a comprehensive review by Lawson and Flocke (2009), they found the term TM is applied with great variety in the level of intention and meaning. TMs can occur between a healthcare practitioner and their patient, or between a clinical instructor and their students. For example, Chinai et al. (2018) considered TMs to be a component of clinical education for nursing students, where successful instructors are prepared to adapt their teaching to inquiries of the students, thus creating a more individualized and meaningful learning environment and enhancing the students' experiences. Similarly, in ambulatory care settings, skilled clinical instructors possess strong interpersonal skills, can identify the skill level of their medical students and can seize TMs to encourage the students' learning (Bowling, 1993). Researchers hypothesized that the success of TMs for behaviour change and/or educating patients is dependent on the ability of the practitioner in question to creatively link the patients' health circumstances to health-related learning (Cohen et al., 2011). As such, the practitioners and/or instructors play an important role in being able to recognize and respond to TMs, as well as acquire working knowledge of how to create TMs relevant to their students' needs.

Lawson and Flocke (2009) reviewed the use of the term TM in literature, and found it can be divided into three categories: Category 1, the most commonly used, where TMs refer to a useful, but spontaneous opportunity to potentially facilitate change; Category 2, where TMs are

events with specific contextual factors that promote an increased capacity for change and may be retrospectively inferred by patient or client; and Category 3, the least frequently used, where the essential elements of TMs are speculated and linked to behavioural changes.

Just as TMs are highlighted as a factor of learning for practitioners and/or patients in healthcare, researchers recognized TMs as a part of professional development for medical practitioners (Donovan et al., 2014; Roberts et al., 2012). Researchers found that TMs provide a foundational aspect of the surgical education of junior residents (Roberts et al., 2012). Senior surgeons bear the responsibility to incorporate TMs into their interactions with residents and to address relevant topics by making use of surgical situations as they unfold (Roberts et al., 2012). TMs can occur between physicians and patients, and also between any of the stakeholders involved on a care team. Researchers demonstrated that when physicians strategically structure their interactions with patients, it can encourage the patients to adopt risk-reducing health behaviours, such as stopping smoking after an abnormal diagnosis (McBride et al., 2003). These interactions should be specific to the health needs of the patient, and physicians should consider the extent to which it will increase the patients' perception of risk, whether it will prompt a strong affective or emotional response, and whether it will redefine a patients' self-concept or social role (McBride et al., 2003; 2008). TMs should be relevant or carry meaning for the intended learner (McBridet et al., 2003), and could serve as a strategy for individuals fulfilling instructional roles to encourage meaningful and impactful learning opportunities with their students.

Both healthcare practitioners and medical professionals act as an educator/teacher and could employ the strategy of TMs with their patients and/or clients. There is evidence that TMs can be created and/or pre-planned, based on the level of skill and knowledge of the individual in

the educator position (Bowling, 1993; Donovan et al., 2014), though the main view of TMs is: spontaneous and/or impromptu situations that can be harnessed to encourage learning (Chinai et al., 2018; Roberts et al., 2012). Just as TMs in healthcare and medicine are primarily described as spontaneous, most of the literature in the domain of education also focuses on the spontaneous aspect of TMs.

Within education, TMs are often referenced as an essential component of students' learning (Wagner & Ash, 1998). Avery (2008) considers TMs as random occurrences that are independent of the educational curriculum, where the success of the moment is dependent on whether the teacher and learner respond to it. Haug (2014) explained TMs as events and/or scenarios in a learning environment that are unplanned. These unplanned TMs become an opportunity for students to extend their knowledge, if the teacher is able to identify and recognize such moments and capitalize on them for further learning (Haug, 2014). Hyun and Marshall (2003) highlighted TMs as serendipitous, randomly-occurring events that can enhance learners' knowledge. Other researchers have suggested that TMs can be planned or created in classroom environments, guided by the educational curriculum (Seals, 2019). Teachers can plan and address TMs with their students to enhance their learning (Virtue, 2007). Despite these forays into the planned aspects of TMs; overall, TMs are most-commonly conceptualized to be random events that astute teachers should grasp when they have the chance.

Yet, how are teachers trained to effectively identify and respond to seemingly spontaneous TMs? For Hyun and Marshall (2003), it should be a priority of teacher education programs to help teachers develop the skills to recognize and use teachable moments. Dalton (2010) explained how teachers should maintain a mindset that they can use every circumstance as a potential opportunity to impart lessons. Teaching involves facilitating growth and learning

(Wagner & Ash, 1998), and it requires that teachers are able to understand the capabilities and learning needs of their students. Some researchers focus on the ability and responsibility of teachers to create and/or implement TMs based on the needs of students (Seals, 2019; Virtue, 2007).

Recently, Seals (2019) proposed the idea of clearly distinct types of TMs. A range of four types of TMs is presented, with groupings determined by the predictability and proximity to an educational curriculum. Creatable TMs (Type 1) are described as highly predictable and closely connected to the curriculum (Seals, 2019), such as teachers working with students to choose interesting current events to create collaborative lessons (Virtue, 2007), or the teacher planning to use recent elections to illustrate learning objectives in a civics class (Syvertsen et al., 2009). Collateral TMs (Type 2) are presented as predictable but not directly related to planned lessons (Seals, 2019), such as a teacher using a challenging life event in a student's life to help them learn to cope with negative feelings (Shaw, 2004). Circumstantial TMs (Type 3) are viewed as closely connected to the curriculum but appear randomly and display elements of spontaneity (Seals, 2019), such as a physical education teacher addressing events related to gender and sport and tying it back to the curriculum (Krane & Barak, 2012). Conventional TMs (Type 4) are curriculum-independent and are unplanned, similar to the most common understanding of TMs (Seals, 2019). Examples of conventional TMs include a teacher addressing prejudicial comments during class discussion to remind students that they should seek to maintain a safe classroom space for their peers (McGlynn, 2001).

It is important to note that Seals (2019) classification of TMs is dependent on the presence of an educational curriculum, and that a curriculum provides teachers with a framework of learning objectives to incorporate with their students, which could assist in the recognition

and/or planning of the different types of TMs. However, even with the current knowledge on TMs, we are not aware of specific studies that provide explanations of how to prepare educators to recognize and respond to TMs, nor how to create and mobilize TMs for the benefit of their students. Indeed, Seals (2019) illustrated that there is a great deal we do not fully understand about TMs, while creating inspiration for further study into the concept.

Teachers should be attentive to the learning needs of their students and connect to their curricular objectives to facilitate student development (Glasswell & Parr, 2009; Wagner & Ash, 1998). ‘Scaffolding’ is an educational concept where teachers provide support to students to assist them in developing new skill levels through problem solving, modelling, and deliberate questions (Wood, Bruner, & Ross, 1976). TMs can be likened to scaffolding, in that the teacher uses the TM to support potential learning at the cusp of the students’ development. Just as teachers assume responsibility to guide the development of their students, sport coaches are also responsible for guiding the development of their athletes.

TMs in sport contexts are primarily referenced by researchers in the domain of positive youth development (PYD) as a strategy for coaches to encourage athlete development (Camiré, Forneris, Trudel, & Bernard, 2011; Camiré et al., 2012; Gould & Voelker, 2012). Most notably, TMs are described as an important component of the development of life skills in youth athletes (Bean & Forneris, 2017; Camiré et al., 2012; Gould, 2012; Turnnidge, Côte, & Hancock, 2014; Vella et al., 2013a). For example, a TM could occur as a coach discussing the transfer of life skills with their athletes, addressing how working in a team environment is a valuable skill for entering the work force (Camiré et al., 2011), or a coach encouraging athletes to act as leaders and include everyone in play during team sports (Gould & Voelker, 2012). TMs could be beneficial to athlete development in other aspects of sport aside from only life skills development

(e.g. technical, tactical, physiological). Hedlund (1996) highlighted how coaches should take full advantage of TMs for the development of their athletes across social, affective, and psychomotor teaching domains. Clearly, TMs are relevant to the role of coaches, though most of our current knowledge is relegated to youth sport contexts.

Researchers studying PYD describe TMs as naturally occurring, and as unplanned and reactive events to which coaches can respond (Bean & Forneris, 2017; Bean et al., 2018). Coaches must be efficient at recognizing and taking advantage of TMs in order to encourage the transfer of life skills beyond sport (Camiré et al., 2012). While coaches play a crucial role in whether athletes learn from TMs, parents also must seize TMs from sport to reinforce learning in the home environment for youth athletes to acquire the benefits of the TM (Holt, Tamminen, Tink, & Black, 2009; Neely & Holt, 2014). Based on the mentions of TMs in PYD literature, it is clear that TMs can be particularly beneficial to encourage learning in younger athletes. This sparks curiosity as to how coaches can practically use TMs to help their athletes, and if they are applicable in other sporting contexts (e.g., university sport).

Although PYD researchers highlighted the importance of TMs as potential learning opportunities for athletes, there is a dearth of research that directly addresses the conceptualization of TMs in sport contexts or the role that coaches play in the effectiveness of TMs for athlete development. As well, the mentions of TMs from the PYD domain focused on TMs for life skills development without mention of specific guidance for how coaches can use TMs. These TMs are described as naturally occurring and reactive (Bean & Forneris, 2017; Bean et al., 2018), whereas the findings of researchers in healthcare, medicine, and education demonstrate that TMs can also be created. If coaches are encouraged to employ TMs with their athletes, they will need a foundational knowledge of what comprises a TM, as well as how TMs

occur across diverse sporting contexts. This research seeks to fill this gap by understanding how a sample of university coaches view TMs, and provide examples of differences in the forms of TMs in university sport contexts. Studying TMs specific to sport can improve our ability to equip coaches to engage their athletes in TMs, thus providing athletes with a high-quality sport experience and driving innovation in topics on coach development.

As a profession, coaching involves the training and teaching of athletes and requires coaches to possess the ability to interact with athletes, and communicate lessons effectively (Bloom, 1996). The primary mission of sport coaches is to help athletes improve and develop (International Council for Coaching Excellence, 2013), and the readiness of coaches to respond to learning opportunities is crucial for high-quality sports programming (Vella et al., 2013a). TMs provide a way for coaches to help their athletes develop, but we do not yet understand how to effectively wield TMs to accomplish this. Before TMs can be applied as a coaching tool or intervention, we must understand the qualities that comprise TMs, and how these occurrences may vary across different sport contexts (e.g., expand the concept beyond youth sport contexts, develop knowledge of the qualities of TMs, grasp how TMs are used practically). As such, we seek to explore TMs through the lens of coaches and contextualize research findings to help coaches effectively engage TMs with their athletes.

Coach development

Coach development is a term referring to the different pathways and experiences that contribute to the overall growth and learning of sports coaches (Mallet et al., 2009; Mallett, 2010). More specifically, coaches learn and develop understandings of their working knowledge and can do so across many settings (Nelson, Cushion, & Potrac, 2006). Moon (2004) notes the importance of an individuals' perception of the situation through which they are learning. Thus,

learning situations that are the most meaningful for a coach will be the most beneficial for their development (Callary, Werthner, & Trudel, 2012). We must consider the ways coaches perceive their experiences, and how they learn, to understand how these factors may impact their approach to using TMs with their athletes.

Trudel and colleagues (2013) categorized coach learning into three groups: mediated, unmediated, and internal, as perceived by coaches who may experience learning. We will briefly describe each category and provide examples of how they may occur, as it is possible that each of these categories could contribute to how coaches conceptualize TMs.

Mediated learning situations are dependent on external others to deliver information. Mediated situations could be experienced through what Nelson and colleagues (2006) refer to as ‘formal’ and ‘nonformal’ learning contexts. Formal learning contexts involve structured, institutionalized, large-scale programs, such as certifications to coach at a high level of sport (Nelson et al., 2006). Nonformal learning contexts involve organized educational activities occurring outside of formal institutions, such as coaches attending a workshop offered by a highly qualified coach (Nelson et al., 2006).

Unmediated learning situations involve the coaches themselves seeking out the information they need, and/or accessing sources of this needed information (Trudel et al., 2013). Unmediated learning situations can be described by two categories, the first where coaches come to know the workings of sport subconsciously; and the second, where conscious efforts are initiated by the individual to solve problems or gain new insights (Trudel et al., 2013). This second category of unmediated learning situations could be likened to ‘informal’ learning (Nelson et al., 2006), that occurs through day-to-day experiences (e.g., daily interactions with athletes or colleagues), past experiences (e.g., previous athletic careers or coaching positions),

and seeking extra resources (e.g., listening to podcasts, reading books; Cushion et al., 2003; Gilbert & Trudel, 2001; Werthner & Trudel, 2006). Both mediated and unmediated learning situations involve knowledge external to what the coach already knows, either through formalized educational endeavors or day-to-day occurrences (Trudel et al., 2013).

Internal learning situations occur when no new information is coming from either mediated or unmediated situations (Trudel et al., 2013), and the coach reorganizes what they already know (Trudel et al., 2013). This can be understood as the way someone makes sense of the world through their cognitive structure: the sum of their prior experiences and what is known by that person at any point in time (Moon, 1999; 2004). It is the reconsideration of existing ideas within a coaches' cognitive structure that is crucial for internal learning, which can also be deemed reflection (Werthner & Trudel, 2006). Coaches who reflect are more in touch with the values and beliefs that drive their development (Stephenson & Jowett, 2009). Reflection allows coaches to learn through their individual experiences, while acknowledging the importance of these individual experiences in creating meaning (Gilbert and Trudel, 2001). We can gain insight into the meaning of human experience through reflection (Moon, 2004). It is important that we explore how someone may learn from their experiences, and the meaning they attribute to these experiences, as the meaning associated with an experience may determine whether or not it is a TM for the people involved. The combination of two theories of human learning provide the guiding theoretical framework for this thesis study.

Constructivist views of learning

We chose the work of Peter Jarvis (2006; 2009) and Jennifer Moon (1999, 2004) as the main theoretical frameworks for this study. Jarvis' theory of human learning (2006; 2009) is grounded within a lifelong perspective of learning, where it is argued that an individual learns

from the social situations they experience throughout life, and that these experiences are continually transformed cognitively, emotively, and/or practically; being integrated into that persons' biography (Jarvis, 2006). We understand biography as the sum total of one's experiences, and that biography shapes the perceptions that a person has of any given situation (Jarvis, 2009). Thus, the perceptions a coach has of mediated, unmediated, or internal situations influences whether these experiences will shape their view of what comprises TMs.

According to Jarvis (2006), experience should be viewed as episodic and can occur as a primary or secondary experience. Primary experience is a direct encounter with the external world, such as an athlete learning a skill by doing the skill, and secondary experience is mediated by another, such as a coach teaching an athlete a skill (Jarvis, 2006). Exploring the meaning someone attaches to their experiences will allow us to understand why particular events could be described as TMs for coaches. Callary, Werthner, and Trudel (2012) demonstrated how specific episodic experiences, deemed meaningful by the participants, have influence on individual coaches' processes of becoming knowledgeable. If we are to truly develop our understanding of the ways coaches view TMs, and in turn understand the TMs they believe are important for their athletes, then we should consider learning from the view of the coach and the meaningful experiences that may shape their definitions of TMs.

Moon (1999) is a learning theorist who focuses on the activities of learners that allows them to make sense of their world. Her perspective emphasizes personal meaning, which may cause changes in an individuals' frame of reference towards what is known at any single point in time (Moon, 2004). People learn in connection with their past experiences, as these prior experiences guide their perceptions, responses, and interpretations of the present; thus, some learning contexts may be more meaningful to one person than another (Moon, 2004). Meaning is

subjective, and is created through the individual judgements of a coach. These judgements shape whether an experience is impactful for that individual or not (Callary et al., 2012). Thus, for an individual to learn from an experience, and for an experience to potentially be viewed as a TM, the individual should move beyond simple acknowledgement of that experience and consider the meaning they associate with it.

Moon (2004) highlights two approaches to learning: surface, and deep. Surface learning occurs when someone takes in new information but does not allow it to alter their cognitive structure; that is, they do not reflect on what they may have learned (Moon, 2004). Deep learning occurs when someone seeks to fully understand the experience and can potentially result in a changed cognitive structure (Moon, 2004). For an individual to move from surface to deep learning, they pass through five stages: noticing (perceiving a stimulus), making sense (reproducing ideas that are not clearly linked), making meaning (assimilating new information into cognitive structures and understanding a subject), working with meaning (continued accommodation of knowledge and the development of structured ideas), and transformative learning (self-evaluation, reflection, and creative thinking in relation to what is learned; Moon, 2004). As the individual moves through the five stages of learning, what they take away from their experiences becomes increasingly dependent on the meaning they tie to the experience. Moon's (2004) work on the role of meaning in learning can be used to gain insights into how coaches define TMs, the experiences that shaped their understanding of TMs, and the implications of how they may address TMs to develop their athletes.

Epistemology

A fundamental aspect of research design is the epistemology, that relates to the nature, scope, and acquisition of knowledge (Denzin & Lincoln, 2018). As this study was intended to be exploratory and based on the individual perceptions of the participants, constructivism was an appropriate epistemology (Crotty, 1998). Constructivism is a worldview where multiple, socially constructed realities exist, influenced by interactions between individuals and context (Denzin & Lincoln, 2018) and each individual makes sense of the world through their own experiences (Crotty, 1998). As denoted by Jarvis (2006; 2009), the perceptions that a person holds of their experiences shapes that persons' knowledge. Similarly, Moon (2004) posits that learning occurs due to the unique meaning and importance that one attributes to their experiences. Knowledge construction is directed by the individual and filtered through their experiences and perceptions.. This project was an endeavour to develop knowledge of how university coaches understand TMs through their unique perspectives.

Methodology

In accordance with the constructivist nature of this study, a basic interpretive qualitative methodology (BIQM) was utilized to guide the research process (Merriam, 2002). BIQM is used when a researcher seeks to study the meanings that research participants hold of a situation or phenomena (Merriam, 2002). Data collection can be attained through interviews and the documentation of experiences, which are analyzed for patterns and themes (Merriam, 2014). Such methods of data collection focus on encouraging participants to describe phenomena in their own words (Edmonds & Kennedy, 2017). Using a BIQM approach is useful when a researcher is interested in how participants interpret their experiences, how participants construct

their worlds, and the meaning participants attribute to their experiences. Establishing meaning is closely related to the nature of constructivism, thus using a research design inclusive of constructivism and BIQM allows us to develop our understanding of the meaning of TMs for coaches, and how they may be beneficial for athlete development in the context of university sports.

During data analysis, we engaged in reflexive thematic analysis (Braun & Clarke, 2016; 2019), supplemented with focused coding as an analytical technique, inspired by grounded theory (Charmaz & Belgrave, 2012). Having begun with reflexive thematic analysis, the focused coding was employed to develop a model that attempted to display our interpretation of the conditions and qualities of TMs, and to further understand the process of how coaches come to perceive TMs. When there is little pre-existing theory about topics or processes, grounded theory analyses provide a way to address the complexities of a phenomenon (Holt, 2016). When researchers employ grounded theory data analysis, they move from studying complex realities to creating a conceptual understanding based on their interpretation of the data (Charmaz & Belgrave, 2012). Through the combination of a reflexive thematic analysis (Braun & Clarke, 2016; 2019) with focused coding (Charmaz, 2006) we sought to deeply explore the coaches' experiences of TMs and to render our understanding of the connections across the dataset in a visual model. There are currently no models that specifically address the conceptualization of TMs in sport contexts, and as such, we used this combined analytical approach to reflexively question the meaning of our findings, while sharing the coaches' perspectives of TMs.

Methods

Participant recruitment

Once we obtained approval from the University of Ottawa Research Ethics Board, participants for this study were recruited through the university sport program at one Canadian institution. Participants were selected through convenience sampling criteria (Patton, 2002), such that they were proximal to the institution and were willing and enthusiastic to participate. Participants were eligible for the study if they were currently working with university and/or university-club tier teams, in any coaching position ranging from assistant to head coach. There may be differences in understanding and potential use of TMs based on the number of years of coaching experience, thus we did not exclude participants based on years of experience to prevent the potential loss of valuable information. There were no further requirements for coaches to participate.

We aimed to recruit a minimum of five coaches, as a large sample size may not be necessary to obtain data saturation, which may occur within six to twelve interviews (Guest, Bunce, & Johnson, 2006). When new information is no longer being developed within the dataset, data saturation is obtained (Guest et al., 2006). The participants were initially contacted through a university high performance advisor. The advisor circulated a recruitment letter via email to all coaches currently working with university and university-club tier teams within the institution. Please see Appendix A for the recruitment text. In total, we recruited seven (7) participants and conducted a total of twelve (12) interviews, with two coaches completing only an initial interview, and five (5) participants completing both a first and second interview.

Following the initial contact through the high-performance advisor, the primary investigator (PI) contacted the same group of coaches a second time via email. Any coaches who

who were interested in participating were asked to contact the PI via her university email. Amongst those contacted, eight (8) coaches expressed interest, however the eighth was unable to participate due to scheduling conflicts. Due to COVID-19 social-distancing restrictions in place by February 2020, we deemed recruitment complete at seven participants. Our sample included four male coaches and three female coaches, who worked with both team and individual sports. See Table 1 for the demographic information of the participants, however the sport of each coach is not included to maintain confidentiality. Each participant completed an informed consent form prior to participating in the study and was provided with a copy for their records. Please see Appendix B for the consent form. The consent form briefed participants on the nature of the study, and the participants were notified that their participation was completely voluntary and that they were free to withdraw at any time without repercussions. The participants were also aware that their interviews would be audio-recorded, however their identities would remain anonymous during the synthesis and reporting of the data.

Table 1.
Participant Demographics

Participant	Male / Female	Years of Coaching Experience	Position
Coach 1	Female	23	Head coach
Coach 2	Male	32	Head coach
Coach 3	Male	8	Head coach
Coach 4	Male	11	Positional coach
Coach 5	Female	14	Head coach
Coach 6	Female	10	Assistant coach
Coach 7	Male	21	Head coach

Data collection

Interviews

Throughout data collection, our purpose was to understand TMs within university sport coaching. Interviews are recognized as powerful tools to gain understanding into the perspectives of participants (Wilson, Bloom, & Harvey, 2010). Experience is individualized and not explicitly observable, thus data about it is dependent on the ability of participants to reflect and discern aspects of their experiences, and to communicate these discernments (Polkinghorne, 2005). Considering this, each participant first completed a semi-structured interview that provided an opportunity for participants to reflect on and share their personal views of TMs as well as their approaches to coaching. During the initial interview, participants were invited to complete a series of online TM recall forms, once a week over the span of 2 months. Of the seven participants, five coaches agreed to complete the TM recall forms. The coaches completed between four to eight weeks of recalls, with the recalls delivered once per week. A total of seventeen recalls were collected. Upon completion of the TM forms, a second interview was conducted with these five participants. All interviews were conducted by the PI, and were framed by an interview guide consisting of open-ended questions (Smith & Sparkes, 2016).

The first interview focused on the coaches' years of experience, their current coaching role, their coaching philosophies, their understanding and experiences with TMs, and examples of TMs in their coaching. The second interview focused on the events the coaches recorded as TMs during the completion of their TM recall forms, as well as further exploration of their definitions and descriptions of TMs. See Appendix C and D for interview guides one and two, respectively. The interviews lasted an average of fifty-one minutes for the first round of interviews ($r = 38-59$), and twenty-eight minutes for the second round of interviews ($r = 12-32$).

It was the decision of the participants as to whether interviews were held in-person, over the phone, or via Zoom video calling (Zoom Video Communications, 2020), to maximize convenience for participants. Nine interviews were held in-person at a private office at the university and three were conducted via video call to respect the social-distancing requirements of COVID-19.

Stimulated recall forms

Stimulated recalls (SR) are a method used when researchers seek to gain further insight into the approaches and thought processes of their participants during an activity or event (Gass & Mackey, 2017; Stake, 1995). SR are an introspective method of data collection, providing an opportunity for participants to learn about themselves and to record their experiences (Lyle, 2003). SR is used extensively by researchers in the domains of education and nursing, and many variations of SR (e.g., interviews, video-replay, online modules; Douglas, Vidic, Smith, & Stran, 2016; Gilbert & Trudel, 1999; Lyle, 2003; Stodter & Cushion, 2019), have been used in sport as an efficient way for participants to provide examples and explanations of their actions and to document events relevant to research (Lyle, 2003).

As our goal was to understand how university coaches view TMs and may use them with their athletes, we employed a modified form of SR to provide a way for the participants to document occurrences in their day to day coaching lives that they viewed as TMs. Five participants completed between four and eight ($r = 4-8$) weeks of an online TM recall form, delivered via an online data collection medium (SurveyMonkey, 2020). Please see Appendix E for the TM recall form. On average, each coach completed 4 recalls ($r=1-8$), and a total of seventeen recalls were collected. Each week, the TM form was delivered on a recurring day chosen by the participant to accommodate their schedule. University sport is a context where

coaches face demanding schedules, thus using a weekly online TM form provided convenience and ease for participants without being too time-consuming (Knowles, Gilbourne, Borrie, & Neville., 2001). Upon completion of the online TM recall forms, participants completed a second semi-structured interview, that focused on recalling the events recorded in the last one to four weeks of their online TM forms.

Data analysis

In total, we conducted twelve interviews with seven participants. Five of the seven participants also completed a total of seventeen online TM recall forms. All interview recordings were transcribed verbatim, totaling one-hundred-thirty-seven single-spaced pages. Each participant was emailed their corresponding interview transcripts for respondent validation (Maxwell, 2012), where they were provided the opportunity to revise the transcripts, add, remove, or clarify any content. Apart from minor spelling clarifications, no changes were advised. The analysis was inductive and deductive. It was inductive given that there is no overarching theory of TMs in sport, and the interpretation of the data was largely driven by discussion of the interpretation of the experiences shared by the coaches. It was also deductive, as the refinement of these interpretations were guided by pre-existing literature on TMs in sport and other domains.

We used a combined approach to analysis, given that qualitative research is a creative and flexible endeavour (Maxwell, 2012). First, a reflexive thematic analysis (Braun, Clarke, & Weate, 2016; Braun & Clarke, 2019) was used to develop meaning from the overwhelming volume of information. Data familiarization was primarily achieved through the verbatim transcription of all interviews. During the initial analysis, the interviews were read and re-read multiple times, and notes were created to identify potential themes, codes, and general ideas

(Braun et al., 2016). After familiarization with the data, the transcripts and TM forms were explored using NVivo 12 (Qualitative Solutions Research, 2019, version 12). The NVivo software was used to organize data in the process of generating initial codes and interpreting the information.

Each participants' interviews (along with their recalls if they had participated in the recalls) were reviewed and were coded individually, to establish familiarity with each coaches' perspectives and experiences of TMs. The codes were refined into themes (e.g., opportunity, learning, athlete relationships, and coach experiences) to describe our interpretation of how coaches viewed TMs. The thematic analysis and extensive discussions with research supervisors, who fulfilled the role of critical friends (Smith & McGannon, 2018), led us to question the meaning of the themes, to reevaluate our interpretations of the data, and to explore connections between themes. Critical friends can stimulate the analytical process because they provide alternate interpretations and encourage reflection on the data (Smith & McGannon, 2018). Based on these discussions, we adopted a more focused coding technique with the goal of creating a model to understand and expand on the connections we viewed across the dataset (Charmaz, 2006).

The combination of a reflexive thematic analysis (Braun et al., 2016; 2019) and grounded theory-inspired focused coding (Charmaz & Belgrave, 2012) allowed us to construct a conceptual understanding of how TMs occur in sport, as well as the conditions and qualities related to TMs. The findings of the first manuscript are presented in the Teachable Moments in Coaching Model (Figure 1), which demonstrates our interpretation of the relationships between the themes developed through the initial thematic analysis. This approach was used to answer the first two research questions "how do university sport coaches understand TMs?" and "what are

the experiences that shape a coaches' understanding of TMs?" Following our foray into the conceptual nature of TMs, we used a thematic analysis (Braun et al., 2016) of the data of the 5 coaches who completed the recalls to develop themes that illustrated how coaches used TMs with their athletes. The themes were refined into 3 different forms of TMs, which were used to answer the third research question in manuscript 2, "How do coaches use TMs in the development of their athletes?" A short vignette exemplifies each form of TMs that are presented. The vignettes were based on events recorded in the coaches' TM recalls; where the recall was comprehensively detailed and the coach was able to provide an in-depth explanation of the event. The vignettes are intended to provide a creative, practical illustration of the forms of TMs developed through this analytical process.

Quality of research

We took steps to augment the quality of research throughout the course of this study. The use of a relativist approach is an appropriate means to ensure the quality of research in sport (Burke, 2016). We took a relativist approach with this study, as constructivism aligns with a relativist approach in that knowledge is created through an interactive process (Burke, 2016). In qualitative research, the focus is to understand the influence of the researcher throughout the study (Maxwell, 2012). The subjectivity of the researcher can become a resource for knowledge development (Braun & Clarke, 2019). Understanding the biases a researcher possesses can assist in developing meaning from the data (Braun & Clarke, 2019). As such, the PI engaged in reflective conversations with critical friends, in the form of research supervisors, to discuss potential biases, prompt deeper reflection throughout data analysis, discuss their different interpretations of the data, and to explore possible presentations of those interpretations in a model (Smith & McGannon, 2018).

During interviews, the use of open-ended questions encouraged participants to speak their minds (Rubin & Rubin, 2005). Any information that could identify participants was altered or eliminated to preserve anonymity. As noted above, the interview transcripts were sent back to participants for respondent validation (Maxwell, 2012). Respondent validation, in addition to serving as another data collection opportunity, provided the opportunity for participants to ensure the accuracy of their intended responses and provide any clarifications they felt necessary. Coherence refers to the way different parts of an interpretation create a complete and meaningful picture and can be internal (how parts fit together) or external (how findings fit against pre-existing theories) (Burke, 2016). Coherence was increased through our efforts to demonstrate the coaches' perceptions through the use of both interviews and SR, as well as through the choice to present the manuscripts as a series; wherein manuscript one provides a conceptual interpretation through which TMs can be understood, and manuscript two provides practical examples of TMs from an applied lens. Additional criterion for judging quality is the resonance of research, where it influences and/or moves the readers (Burke, 2016). Our creative representations of data in the form of vignettes articulates our efforts to impart the meaning and depth of the messages. As this study was exploratory, we strived to share the experiences of participants in a manner that depicts their perceptions and experiences, although it is ultimately the reader who constructs the meaning and value of the conclusions presented in this study.

Ethics

The research in this study was conducted after receiving ethical approval from the University of Ottawa Research Ethics Board. Please see Appendix F for the ethics certificate.

Findings: Presentation of the manuscripts

The findings from this thesis are presented in two manuscripts. In manuscript one, the Teachable Moments in Coaching Model (Figure 1) is presented, which demonstrates the key qualities and conditions of TMs. All seven coach participants, and all the corresponding data from the semi-structured interviews and TM recall forms were included in this manuscript.

Manuscript two provides an overview of structured, organic, and uncategorized TMs in university sport. The different forms of TMs are illustrated through three vignettes, depicting events that coaches documented in their TM recall forms. Figure 2 provides a diagram of the forms of TMs in coaching. Manuscript two includes data from each of the seven participants and their corresponding interviews and online TM recalls, and the vignettes draw on the five coaches who completed online recalls and a second interview. Following the presentation of the two manuscripts, this thesis concludes with a discussion of the findings and their relevancy to coaching literature, theories of human learning, and implications for future research.

Manuscript One

Teachable moments in university coaching: Exploring a sport coaching catchphrase

Abstract

Background: ‘Teachable moments’ (TMs) are described as occurrences important for learning, but as a phenomenon, are conceptually-ambiguous. In sport and coaching contexts, there is a dearth of research on the specific qualities and conditions constituting TMs.

Purpose: The aim of this study is to explore how university coaches understand TMs with their athletes, and to develop a model that highlights university coach-based perceptions of the qualities and conditions associated with TMs.

Participants, research design, and data collection: Seven (7) university sport coaches from one post-secondary institution in Canada participated in a multiple-methods study, completing two in-depth, semi-structured interviews, and a series of online TMs recall forms. Data consisted of a total of twelve (12) interviews and seventeen (17) online recalls. The in-person interviews focused on the coaches’ perceptions of TMs, while the online recalls documented a written collection of TMs from each participant’s daily coaching practices. A basic-interpretative-qualitative methodology guided the initial design of the study, and a grounded theory approach was adopted during analysis to develop a model for understanding conditions and qualities of TMs.

Data analysis: An initial thematic analysis was used to develop themes concerning the conditions and qualities that coaches’ associated with TMs. Through discussions of the interpretation of findings, a focused coding technique was employed to expand upon connections between the qualities and conditions. The combined analytical approach led to the development of a preliminary model that aids in understanding the processes of TMs and provides a conceptual basis through which to explore the

phenomenon. Throughout analysis, critical friends were involved in the discussion of the connections and interpretation of findings.

Findings and discussion: Our literature review demonstrated that previous research situates TMs as spontaneous, naturally occurring opportunities for learning. In this study, we present a model that illustrates our understandings of university coaches' perspectives of TMs. Conditions which support the occurrence of TMs seem to be athlete-centred coaching approaches, the communication of the TM, the level of awareness of the coach, and reflecting on the TM. TMs in sport can be described as opportunities for learning, meaningful for the people involved, involving a choice to engage with the TM, and leading to change in athletes. TMs can also be understood as a flexible concept: being naturally occurring and/or organic, planned and/or structured, or somewhere in-between. We highlight the need to continue to clarify our understanding of TMs, and discuss the potential for TMs to become a tool to facilitate learning when coaches interact with their athletes.

Keywords: varsity sport coaching, pedagogy, experiential learning, reflection.

Introduction

A teachable moment (TM) is a term and/or concept commonly used to explain an opportunity for an individual to learn from a specific occurrence, though the conceptual basis of TMs is abstract (Cohen, Clark, Lawson, Casucci, & Flocke 2011). Despite this, TMs are considered an important component of learning and professional development across many different domains, such as healthcare (Chinai, Guth, Lovell, & Epter, 2018; Cohen et al. 2011; Lawson & Flocke 2009; May, Walker, de Burgh, Bartrop, & Tofler 2019), medicine (Donovan, Linz, & Spagnoletti 2014; McBride, Emmons, & Lipkus 2003; Roberts, Brenner, Williams, Kim, & Dunnington 2012), education (Avery, 2008; Hyun & Marshall 2003; Seals 2019), and sport (Bean & Forneris 2017; Bean, Kramers, Forneris, & Camiré 2018; Camiré, Trudel, & Forneris 2012; Vella, Oades, & Crowe 2013). Relevant to our study on university sport, there is a lack of common understanding as to what constitutes TMs. The purpose of this research was to explore how university sports coaches understood TMs, how coaches described TMs with their athletes, and to further contextualise the meaning of TMs in the domain of sport. To be clear, while TMs likely contribute to coaches' development, this study looks at coaches' use of TMs with their athletes, for athlete learning. Given the dearth of literature on TMs in sport, the our literature review will draw on studies from several relevant domains.

Teachable moments across different domains

In healthcare research and practice, TMs are described as events, when facilitated by a healthcare practitioner, are spontaneous in nature and can lead a patient to alter their behaviour in a positive manner (Lawson & Flocke, 2009). TMs are also described as interactions between healthcare practitioners and their patients, where the practitioner takes action in an attempt to make the occurrence relevant to the patient

(Cohen et al., 2011). Similarly, in the domain of medicine, TMs are employed when physicians meaningfully structure their interactions with patients to encourage the patient to adopt specific health behaviours (Borrelli et al., 2016; McBride et al., 2003). As well, TMs occur when senior physicians mentor junior physicians, using specific situations that can encourage learning on the part of the junior physicians (Roberts et al., 2012). Aside from medicine and healthcare domains, TMs are highlighted in the domain of education.

Within education, TMs are traditionally described as random occurrences that may solicit a response by educators (Avery, 2008; Dalton, 2010), and as a specific point where the timing is favourable for students to learn (Havighurst, 1952). Though the randomness of TMs is often the main focal point, researchers have highlighted the potential for different types of TMs. Seals (2019) proposed a typology of different kinds of TMs in relation to educational curricula, ranging from created and predictable to spontaneous and unpredictable. Creatable and predictable TMs are closely connected to the educational curriculum, whereas the spontaneous and unpredictable TMs are less so, while still presenting an opportunity for a valuable lesson (Seals 2019). It is important to note that TMs in education and TMs in sport cannot be directly compared, as coaching does not often follow a curriculum.

Teachable moments in sport

We have yet to see TMs as the primary investigative object of research in sporting contexts. While a precise understanding of TMs in the sport literature is vague, the term appears to be widely used in sport coaching. Naturally-occurring TMs are highlighted as a means to promote the development of life-skills in youth athletes (Camiré et al. 2012; Turnnidge, Côté, & Hancock 2014). These events are described as unplanned and reactive (Bean et al. 2018) and coaches are encouraged to take advantage

of occurrences such as losing a competition, and address these as a TM to teach athletes about life skills (Camiré et al., 2012). Although this research in sport recognised the importance of TMs, further investigations can explore how coaches can effectively mobilise TMs to provide enhanced learning experiences for athletes. As coaches play a crucial role in the development of their athletes, it becomes relevant to examine how coaches view TMs. This can lead to a conceptual basis through which we can begin to propose and test recommendations on how to implement TMs as a coaching strategy.

This study was guided by two research questions: (a) How do coaches understand TMs specifically in the context of university sport? and (b) What experiences contributed to shaping this understanding? The model based on the answers to these questions may provide practical information for coaches curious about how others in their field view TMs. It could also provide inspiration for coach development researchers to consider how to effectively educate coaches on applying TMs with their athletes.

Methodology

As this study was intended to be exploratory and based on the opinions of the participants, constructivism was a suitable epistemological foundation (Crotty, 1998). A basic interpretive qualitative methodology (BIQM) was utilised to guide the design of the study and data collection process such that we could understand the meaning of TMs from the perspective of coaches (Merriam, 2002). During data analysis, we sought to present our interpretations of the lived experiences of participants (Merriam, 2002). During data analysis, a grounded-theory inspired analytical technique (Charmaz, 2006) was applied to develop an initial model that attempts to explain our understanding of the connections between the conditions and qualities of TMs.

Qualitative methodologies are creative and flexible (Maxwell, 2012), and researchers should thoughtfully engage with their data to construct meaning, in turn developing knowledge of phenomena (Denzin & Lincoln, 2018). It is important to note that, though the grounded-theory analytical approach of focused coding was used, a grounded theory methodology was not adopted, nor was a full grounded theory study of TMs completed. As there are no models of TMs in sport contexts, we attempted to develop a model which provides a conceptual foundation to explain our understanding of university coaches' perspectives of TMs, and the qualities and conditions that enable them to use TMs with their athletes.

Participants

Our participants were recruited within the university sport program at a post-secondary institution in Canada. They were selected through convenience sampling (Patton 2002). Seven coaches agreed to participate, of whom three were female. The participants' years coaching ranged from 8 to 32, with an average of 17 years. They worked with various team and individual sports, and held positions ranging from positional and assistant coaches to head coaches.

Data collection

Data were collected through a combination of semi-structured interviews (Smith & Sparkes 2016) and online stimulated TM recall forms (Gass & Mackey 2017; Lyle 2003). Over the course of a twelve-week time period between January and March 2020, each of the seven participants completed one semi-structured interview. Five participants completed online TMs recalls and a second semi-structured interview. Each interview was audio-recorded and transcribed verbatim, prior to undergoing respondent validation, where coaches were provided the opportunity to revise, remove, or clarify any aspects of their interview transcripts (Maxwell 2012).

The first interview guide was divided into three major sections: (a) coaching and athletic experience, (b) coaching styles and philosophies, and (c) understanding experiences with TMs. This allowed the participants to reflect and share their perspectives on TMs, and the role they may play in their coaching.

Subsequently, each participant was invited to complete a series of online TM recalls, which provided a record of events they deemed to be TMs with their athletes. The TM recalls were delivered via email once a week to each coach. The recalls included sections about when and where the TM occurred, descriptions of the TM, why it was a TM, and whether the TM was related to the coaches' planned activities; and coaches could provide an open-ended written answer. Five coaches completed the recalls, and on average each coach completed four recalls (range = 1-8 recalls per coach). Within one week of their final online TM recall, the five coaches completed a second semi-structured interview. This allowed them to elaborate on the events they had recorded as TMs and to share any new insights and reflections they had regarding TMs, as well as provide feedback about the structure and delivery of the TMs recalls.

Data analysis

The data collected for this project were initially analysed through a reflexive thematic analysis (Braun, Clarke, & Weate, 2016; Braun & Clarke, 2019). Data familiarisation, initial coding, theme development, and theme refinement led to our understanding of the qualities of TMs and conditions that support the occurrence of TMs. Each participants' interviews, along with their corresponding recalls (if they had participated in the recall portion of data collection), were individually coded. The codes were based on the coaches' descriptions of TMs, their past experiences, and TMs with their athletes. Potential meanings of the codes were discussed with critical friends, where we considered interpretations of the qualities of TMs, how the coaches viewed

TMs, and the constituents that contributed to these views (Smith & McGannon, 2018). Ongoing discussion of the nature of TMs inspired us to explore connections across the dataset and to investigate possible relationships between the themes. We decided that applying focused coding as an analytical strategy would allow us to expand upon our discussions and generate a model to explain our interpretations of the relationships between themes (Charmaz & Belgrave, 2012). Through the thematic analysis, we first generated themes that described the qualities of TMs, underlying contextual factors, and supporting conditions. (Braun et al., 2016; Braun & Clarke, 2019). When combining these themes with focused coding, we constructed a conceptual model of our interpretation of the connections across the data, to provide a visual guide to begin to understand the nature of TMs in sport (Charmaz, 2006).

Findings

The findings of the study are presented in Figure 1: The Teachable Moments in Coaching Model (Figure 1). The model represents our current understanding of the main qualities and conditions of TMs. First, the relationships between the themes are briefly summarized, and then the underlying themes of coaching approaches and coach-athlete relationship are explored, along with further conditions considered important in supporting the occurrence of TMs. We then present themes about the descriptive qualities of TMs, followed by a discussion of the findings.

As presented in Figure 1, we interpreted coaches' understandings of TMs as issuing from their past experiences and coaching philosophies, which inform how they approach their role and interact with their athletes. When a coach is focused on the needs of their athlete and the athletes' holistic development, it contributes to a positive coach-athlete relationship. This relationship can be built through time spent together, and founded in trust and vulnerability. If a coach has a strong relationship with their

athletes, can communicate clearly about a TM, is aware of the opportunity for a TM and of the meaning that should be associated with a TM for their athlete, they can make the choice to engage in the occurrence, which may lead to change and/or learning in the athlete. Reflection on the TM or the associated change can serve to hone awareness of future opportunities for TMs, as well as enhance the meaning of the occurrence. Taken together, the reflection on the TM and its' meaning can also strengthen the communication between the coach and athlete, thus contributing to the coach-athlete relationship. These themes and conditions for TMs will be further expanded upon in the next section.

Coaching approaches

The overarching theme of coaching approaches referred to the ways that coaches viewed their position, interacted with their athletes, and met the responsibilities of their role. For our participants, their coaching approach was an important foundation for how TMs took place and the other conditions that may support the occurrence of TMs. The key elements of their coaching approach were comprised of their past experiences and their coaching philosophies.

Coaches described their philosophies about coaching as a belief in empowering athletes, coaching athletes beyond the sport context, and understanding the athletes with whom they were working. A coaches' values and philosophy underscore the actions, interactions, and approaches that they employ. As such, a coaches' view of TMs arise from the core values that comprise their coaching philosophy. According to Coach 1, when describing the development of her coaching philosophy, her coaching approaches were related to her core values:

Someone made a comment to me, they compared me to Midas and how everything I touched turned to gold and sort of how I did it. And I always replied,

“Well, it’s not about the game.” But I never knew what that meant until my advanced coaching diploma, and I asked myself: how do I encapsulate, you know, there is a lot of medals, and what is it that I do? And I started looking kind of at my core, what matters to me: My core values are accountability, passion, and excellence. Holding people accountable isn’t easy, but when you strive for excellence and the bar is extremely high, you surround yourself, you attract people who want those same challenges.

Similarly, the core values that contribute to a coaches’ philosophy also inform how they view their interactions with athletes. If coaches are focused on their athletes development, they can seek out TMs to help their athletes develop beyond the sport context, as well as hone their relationship with their athletes. For example, Coach 2 highlighted how his coaching approach aimed at helping athletes not only develop sport skills, but also as human beings:

But here you're not just coaching players. You're coaching young women that are at university. And that is part of even our philosophy in our recruiting processes, that we're working with young women from a holistic point of view and that through sport, we're doing a lot of other things as well and hoping that they're developing as human beings, along with the highest level of performing athletes that we can support in that environment.

TMs occur in interactions between coaches and athletes. Interactions such as these occur in the context of a coaches’ coaching approach, and are based on the subliminal qualities of the coaches’ philosophy and their past experiences. The coaches acknowledged that many of their past experiences, whether as an athlete or when becoming a coach, had shaped their current coaching approaches and understanding of

TMs, as noted by Coach 3 in reference to his past experience as an athlete shaping his current approaches and ability to relate TMs to his athletes:

The biggest thing that I've benefited from was being an athlete relatively recently. I knew that when I was in the sport, a lot of the challenges that I saw were from coaches from a different generation that didn't understand some of the hurdles that athletes face nowadays. And I think being able to be relatively close in age, like six or seven years older than the athletes that are now competing was definitely a big advantage. I think that's part of why I got roped into this team. Like the other coaches are mid 40s. Having somebody that's 15 years older makes a bit of a difference when it comes to communicating, especially if you're working with athletes in this age demographic.

Similarly, Coach 7, when asked about how he developed his view of TMs, reflected on the combination of his life experience, job experience, and athletic experience as shaping his perspectives and his coaching approaches: 'All of those things have helped to make me who I am as a coach and get us to where we are now. But just all of it together.... The sum of all those experiences'.

As well, Coach 5 described the value of relationships, and how positive relationships in her past played an important role in the values she finds important, and how these shaped her approaches to coaching:

I think probably one of the biggest parts that is so important to me is just those relationships, with people that I've met. They have been really, really valuable and really meaningful. And it's not necessarily just the coaches that I've worked with that have been really important. It's also sometimes the athletes. Some of the athletes that I've worked with are people that I would now consider really

great friends and just really awesome people and I've kind of invested in their successes, not only as an athlete, but as a human.

Much like the past relationships that influenced Coach 5's value of relationships, a coaches' past experiences contribute to whether they use a coaching approach focused on meeting the needs of the athlete or learner. We describe this as athlete-centred coaching. When coaches have an athlete-centred coaching approach, it can create a supporting condition for TMs, as coaches are already focused on providing their athletes with opportunities to learn. Coach 2 noted that his decisions to address TMs were related to his coaching approach and his focus on the holistic development of his athletes, where he based his decisions on how his athletes would be affected:

We're trying to work with the whole person of the young women that we're working with. And so even in every technical, tactical or performance decision we make, there's a lot of discussion about "how does this affect us as people?", ... like what we ask of them and the sacrifice in the schedule we run and all those kinds of things, we're constantly paying attention to the value of them as complete humans right now.

Coach 1 further expanded on this approach and discussed how she adapted TMs to different learning styles among the athletes: 'That is my job as a coach, you have different kinds of learners.... You need to be able to create teachable moments for all your athletes based on their needs. That is the challenge.'

Coaches developed their coaching approaches through their philosophy, which is informed by their past experiences. Coaching philosophy and past experiences also shape how a coach understands TMs. When a coach's approach is centred on the needs and development of the athlete, it can support TMs as well as contribute to the development of the coach-athlete relationship.

Coach-athlete relationship

Aside from coaching approaches, the theme of coach-athlete relationship refers to the elements of the coach-athlete relationship conducive to the occurrence of TMs. Just as coaching approaches create an underlying context where TMs occur, the coach-athlete relationship encapsulates the TMs between coaches and their athletes. Trust, vulnerability, and time are compounding factors for the development of a coach-athlete relationship. For example, Coach 4 described the importance of developing trust in his relationships with his athletes, as when his athletes trust him, they are more likely to learn; which can be likened to how an athlete-centred coaching approach supports TMs. He explained how his athletes develop the most when they trust him:

I think for me, the most important thing is how players feel when they train with me. If guys don't want to be with you, you're not going to get the most out of them. So, yeah, I want to be knowledgeable. I want them to know that I can help their games, but I need them to trust me.

The communication between coaches and athletes stems from the coach-athlete relationship. When this relationship is founded in trust, the communication between coaches and athletes can support the occurrence of TMs. The manner in which TMs are conveyed depends on the coach-athlete relationship and the coaches' approach; which are both based on a coaches' past experiences. This was exemplified by Coach 3, when he explained how his own experiences developed his desire to communicate TMs to help his athletes learn:

I had to kind of figure everything out as I went. And I had to make all the mistakes at least once, if not dozens of times.... I want to help athletes either avoid that or I want to help them do it once and learn from it.

When coaches have positive communication with their athletes, they can articulate the intended lesson associated with a TM. A coaches' ability to communicate supports the

occurrence of TMs, as expressed by Coach 4 in relation to how he tried to tailor learning opportunities for his athletes. He highlights that coaching and communicating are synonymous:

I think at the end of day, coaching is communication. So, if you have strong communication skills and you understand that not everyone perceives things the same way, then you kind of go about your communication in different ways for different people, in different learning styles.

We view the ability of a coach to communicate clearly with their athletes as a supporting condition for TMs. The communication of TMs should be rooted in the foundation of a positive coach-athlete relationship, wherein the coach understands their different athletes, and approaches coaching with an athlete-centred focus.

Awareness

Along with positive relationships and clear communication, a coaches' awareness of potential TMs is an important precursor that helps create the condition for TMs to occur. Here, awareness is the coaches' knowledge and recognition of, and attention to TMs. Coaches play a role in the impact that TMs may have on their athletes, and their awareness of opportunities for learning can benefit their athletes. Coach 2 highlighted how coaching involves the responsibility to become 'acutely aware' of how he shapes TMs for his athletes:

I'll come in here and I'll slam the door and I'm pissed at myself because I've been grumpy that day, or sharp with somebody, or not representing what I wanted to. It still happens. But it's what I perceive coaching in a team environment to be.... It's why I value my walk down the hallway and a player comes out of the team room and they're on the way into the practice. I'm like, 'Oh, this is a moment that I can do well in or do poorly in. I can help. I can hurt.' And I am... What's

the right word? Acutely aware all the time. And I don't know if that's just my personality more than anything else. But I am. I may not have been acutely aware of that when I started, but I'm very acutely aware of it now.”

Moreover, the point of TMs seemed to be that the coach was attentive and able to recognise them as they occurred, particularly in the case of TMs that are organic and unplanned. Coach 7 explained that his ability to realise an event as a TM was an important constituent for them to occur:

Recognition... because if you don't know it's a teachable moment, how are you going to realise it? Or what is the point? It's a teachable moment, I think maybe you do have to have that bit of epiphany or that light bulb moment. I'd like to think of some of them as organic, and it isn't always the coach being like 'I told you so.' I mean, you can't just say something and expect an immediate change.

If a coach is aware of potential TMs and attentive to facilitating opportunities for their athletes to learn, it provides further occasions through which coaches can encourage their athletes' development. Coach 2 summarised the potential for each moment to be a TM, if he was aware of it:

To be honest, and the fact of the matter is, I view every minute as a teachable moment, the minute I cross paths with an athlete or even a coach that I'm working with. I just don't know if there's ever not a teachable moment....

It is also important to account for the involvement of athletes in TMs. TMs occur in the interaction between a coach and athlete, and an athletes' awareness and willingness to learn can shape how a TM unfolds. Coach 5 expressed that her athletes' awareness and willingness to acknowledge TMs were important, even if it was connected to an event that insinuated failure: 'With something like a teachable moment, you have to be willing to acknowledge and address that things are not going perfectly....I think that's

an obstacle for some people that I run into fairly often. Being able to accept that feedback..." Athlete-centred coaching, communication, and awareness can be considered necessary conditions for TMs to occur, or to increase the likelihood of occurrence. These conditions could be beneficial prior to and/or during TMs. In the aftermath of a TM, we propose reflection as a beneficial condition.

Reflection

The theme of reflection is explained as thinking back on TMs after the event, and how this process served to enhance the content or lessons of TMs. Coaches explained that reflection was beneficial for helping athletes make meaning of events that could be TMs. As well, coaches saw reflecting on TMs as a pathway that could lead to change in their athletes and increase their athletes' awareness of TMs. Coach 1, when describing her athletes' ability to notice TMs, explained how reflection was a tool to improve her athletes' self-awareness:

When you're answering questions, you're reflecting, you're self-reflecting... you start to become self-aware. And then when you're self-aware, that is when you can recognise what changes are needed and then you make a choice to make the change or not. I try to get them to think, to reflect.

Reflection on TMs was also viewed as a form of encouragement for athletes to engage with TMs and identify the learning that occurred. Coach 5 highlighted how reflecting on a TM was important to develop meaning from the occurrence, and to reinforce the associated learnings:

We can reflect afterwards why we did it and what we got out of it. So it's not a teachable moment if it's just hung in the air and left to flap in the wind. There has to be that wrap up, like 'What did you take away from this?' Because maybe the athlete didn't take away what you thought they did from it, or maybe they

took away the exact opposite of what you thought. And it's really important that what you think you're having them walk away with is what is useful for them.

In sum, we discussed the conditions of athlete-centred coaching approaches, communication, awareness, and reflection as the basis upon which coaches can build TMs with their athletes. From these conditions, we can further explore the qualities and nature of TMs in university varsity sport.

Teachable moments described: Qualities and nature

From our research findings, we identified four qualities that coaches associated with TMs : 1) opportunity, 2) meaning, 3) choice, and 4) change. It was also noted that TMs seemed to occur in different forms, as both organic and/or naturally occurring, or structured and/or planned. We interpreted that TMs are meaningful opportunities that coaches choose to engage in, which may lead to change and/or growth in their athletes. Each of the main qualities of teachable moments is described in the following section.

Opportunity

TMs can be described as opportunities. These opportunities can be considered occurrences with potential to become a TM, or where the circumstances were favourable to address a topic or lesson. Coach 1, when explaining how she understood the connection between coaching and TMs, described coaching as an art form that involves being aware and capturing the opportunities for TMs:

I know that there are moments, they are teachable moments... as a coach that you have opportunities to make a real impact and you have to recognise what they are and then you have to capture them appropriately. And I think that is an art and I think that is the art of teaching and the art of coaching.

Similarly, Coach 2 described the opportunities for TMs as being dependent on his and his athletes' awareness . He noted that having an open mind was a crucial part of shaping the direction of TMs :

A big part of the definition of awesome teachable moments, are the ones that the minute you're there with an athlete or a person or someone you're working with and you recognise that they have an opportunity here. But I don't care where it goes. So, it's just a total open mind, a total blank slate. You might have an idea of what the end result might look like, but you don't really care how you get there.

These opportunities, whether organic or structured, provide promising conditions to engage athletes in potential learning.

Meaning

Although there may be the opportunity for a TM, we view TMs as something that should be meaningful, impactful, and/or relevant to the athlete. Coach 6 explained that, whether related to life or sport, connecting TMs to things that mattered to her athletes was important for helping them generate meaning: 'I think it's when you're able to compare it to something that might just help them later in life, not only on the court.'. Likewise, Coach 1 described how TMs, though they may be only a brief occurrence, could have lasting influence on her athletes: 'A teachable moment, I think that's why you coach. It's this lasting impact. But it is a very brief occurrence'.

Coach 3, when explaining that TMs should be significant, noted that athletes should be able to delineate the benefits and/or outcomes of the TM, and highlighted that coaches should acknowledge any potential benefits of TMs with their athletes:

‘I think it has to be significant and I think it has to almost be binary. Like there are a few ways where it could work and ways that it couldn’t work. You have to highlight why there is one way that could work better.

The significance and/or meaning of a TM could be considered the influential quality of the occurrence, as these moments can shape the learning of the people involved. When TMs are meaningful, they can impact an athlete, playing a role in shaping or changing them.

Choice

The coaches noted that choice is involved in whether or not, first the coach, and then the athlete, engage with the opportunity for a TM. Coach 1 explained that TMs require the willingness to learn:

Well you [the coach] need to make a choice, whether or not you are going to see this teachable moment, whether or not you [the coach] want to use it as a teachable moment. You’re teaching someone in the moment, they need to be willing to learn to. And if they’re [the athlete] not open to it... That’s why I think timing is really, really important, and how you do it. They need to be willing to learn as well. I think that is a bit of a choice, isn’t it?

Choosing to engage with TMs involves both the coach and the athlete. Even if a coach addresses a TM, it is still the athlete who controls whether the TM leads to learning, regardless of whether the coach believes the athlete learned something. TMs can be described as opportunities that may be conducive to learning, are meaningful; while involving the choice to engage with the moment and choice of what to address through the TM, ideally leading to learning and/or change.

Change

Coaches perceived change, growth, and/or realization in their athletes as the

culmination of TMs. These occurrences may become a permanent feature of an athletes' cognitions, and can have implications for how they conduct themselves in the future.

Coach 1 explained that she understood TMs as ideally leaving a lasting impact, and that these occurrences could have an aspect of permanency, should the athlete learn from the TM: "For me..., there's a lasting impact. You can never unlearn from a teachable moment. It's that it's now, it's here, it's wherever it's stored in our brains. And I think it's just there for life." Along with leading to change or leaving a lasting impact, TMs can be described as resulting in changes, having lasting influence, or providing tangible lessons for athletes. In discussing the tangible lessons of TMs, Coach 4 expressed how ideally his athletes would acquire new knowledge or a useful skill for the future: "I think probably...the end product in the sense that it's repeatable. It's something that... it's stuck with them and they're able to use that tool over and over and over and over again". Likewise, Coach 6 stated that she hoped TMs would lead to something tangible that her athletes could use later in life: "Hopefully.... they're able to carry those lessons forward." Although TMs are perceived as ideally leading to change and/or learning, it is not a guaranteed outcome. It could be that there is not instantaneous change, but that the TM contributes to how an athlete develops over time. As well, it is important to consider the perspective of the athlete on the takeaway and/or change that occurs as a result of a coach-led TM.

Discussion

TMs were described by the coach participants as: opportunities having the potential for learning and growth, being meaningful to the people involved, necessitating choice to address and engage in the opportunity, and leading to lasting and durable change. The coaches viewed TMs as both organic and structured. TMs in sport contexts are generally characterised as naturally occurring (Bean et al. 2018), though

our findings demonstrate TMs can also be created. We have yet to see TMs as the primary investigative object of research in sporting contexts. Our findings provide a foundation to explore the underlying conditions and qualities essential for coaches to effectively use TMs. As well, we provide a model to expand our knowledge of the characteristics of TMs specific to sport, and to further contribute to understandings of TMs across domains.

McBride and colleagues (2003) proposed a heuristic that depicts three crucial characteristics of health events most likely to become TMs. The heuristic demonstrates that health events are likely to be potential TMs depending on the extent to which the event increases a person's perception of personal risk, whether it prompts a strong affective or emotional response, and the extent to which it may redefine one's self-concept or social role (McBride et al., 2003). Based on this heuristic, experiences can become TMs based on the subjective perceptions of the individuals involved. Our results demonstrate that meaning is a crucial quality of TMs, and meaning is subjective (Jarvis, 2006). Therefore, we suggest that TMs could be any ordinary event deemed impactful or meaningful for the people involved, if these people develop awareness of the opportunity to learn, and if they choose to address the moment. However, we must remember that the meaning of TMs is dependent on the unique experiences of the people involved and their choice to engage in the moment. For coaches and athletes, the coach plays a facilitatory or guiding role in shaping TMs, but the agency of the athlete ultimately determines the meanings associated with their experience, and whether or not they learn.

Conditions for teachable moments

The supporting conditions of athlete-centred coaching, communication founded

on a positive coach-athlete relationship, awareness, and efforts to facilitate reflection may lead to greater learning after the TM occurs. We describe athlete-centred coaching approaches as coaching actions and methods that seek to empower the athlete, develop and value the athlete as a holistic being, and to provide support and encouragement (Denison, Mills, & Konoval 2017). Research demonstrates that coaches contribute to positive sport experiences when they focus on understanding the needs of their athletes (Light & Harvey, 2015). Further, coach-athlete relationships play a critical role in the development pathways of athletes (DeFreese & McGee 2019; Kim, Kim, & Won 2018). Athlete-centred coaching approaches contribute to positive and healthy coach-athlete relationships (Erickson & Côté 2016). Coaches are then able to develop trust with their athletes, thus gaining understanding of the kinds of TMs that may be relevant and meaningful for the specific athlete, and take action to communicate these TMs. It is also important to acknowledge that athletes can initiate TMs, and the communication between coaches and athletes is collaborative. Particularly in university sport contexts, athletes attribute much of their positive life skills development to themselves (Rathwell & Young, 2018a; 2018b). As such, though the supporting conditions for TMs may enhance the occurrence, the role of the athlete should be considered a key determinant in the course of a TM.

Though coaches may be aware of TMs, the ability to effectively communicate the TM in a way that is meaningful and engaging for the athlete requires skill. A distinguishing feature of great coaches is their ability to communicate effectively (Bloom 1996). The manner of communication, when effective, can serve to bring awareness to athletes and further develop the intended lessons of a TM. However, when coaches are unable to communicate TMs, the potential of the moment may be lost or missed. TMs serve as opportunities for learning, but TMs rest on the ability of the coach

to communicate about them, to be aware of them, and to help athletes become aware; should the athlete choose to engage in the TM. Professionals who support the practices of coaches, such as coach developers, can address communication as a focal point to prepare coaches to effectively manage TMs with their athletes, and provide coaches with knowledge of how to facilitate positive interactions which may encourage athletes to engage in TMs. Discussing conditions that support TMs can serve to hone coaches' awareness of opportunities to help their athletes learn, as well as improve their knowledge of how to structure an environment conducive to learning.

Awareness, a component of mindfulness, involves the processing of stimuli with a high sensitivity to details (Hofmann, Sawyer, Witt, & Oh 2010). Coaches can attempt to enhance the effectiveness of TMs by learning to pay attention to the details around TMs, opportunities for TMs and the associated lessons, the potential outcomes of the TMs, and how athletes may engage with the moments.. Jarvis (2006) describes 'disjuncture', where people face an experience that their prior knowledge was not equipped to address, thus creating feelings of discomfort that may serve to stimulate reflection and learning. TMs could engender disjuncture, whereby athletes engage in the TM and gain awareness of a deficit or feel discomfort. The TM, then, becomes a collaborative event facilitated by the coach, where athletes can choose to engage, learn, and change.

In this study, reflection on TMs after they had occurred was demonstrated to be a supporting condition. The coaches highlighted that TMs are most effective when the athlete can engage in some level of reflection. Research indicates the effectiveness of reflection for enhancing the development of coaches (Gilbert & Trudel 2001; 2005), as well as improving the sport experiences of athletes (Chow & Luzzeri 2019). As expressed by Moon (1999), learning occurs through reflection. If an event is just

experienced but not fully engaged with at a deeper level, change and deep learning are not as likely (Moon 1999; 2004). When athletes can reflect on TMs and understand the meaning which they develop through their experiences, they become more attuned to the outcome of lesson of the TMs, thus learning more than if they had not practiced reflection. The coach can play an important facilitation role by encouraging athletes to engage in reflection, which could further promote the growth and development of athletes through TMs. Similarly, coaches themselves can reflect on TMs and draw on their experiences to develop strategies to enhance their abilities to create, manipulate, or respond effectively to future events, overall expanding their skills as a practitioner. From the perspective of a coach developer, TMs could serve as an avenue to encourage coaches to become more reflective, thus promoting a form of coach learning (Gilbert & Trudel 2001; 2005).

Coaching experience and teachable moments

Experience in coaching is considered an influential component of becoming an effective coach (Trudel, Culver, & Werthner 2013). As such, we explored the role of experience in coaches' understandings of TMs. Our participants shared how their past relationships, athletic careers, institutionalised educational pursuits, and other life events were influential in the development of their coaching approaches. Jarvis (2006) argues that we are the product of the meaning we ascribe to our cumulative experiences. The life experiences that coaches deemed meaningful and impactful influenced their perceptions of TMs. Though TMs can be conceptualized as occurrences that may lead to change and/or learning, how coaches develop their understandings of TMs is not restricted to a singular experience or event. Instead, the accumulation of TMs throughout a coaches' lives shapes their views of TMs. The development of these views should be appreciated as a process of the learning that is influential for the coach.

Similarly, when coaches develop their philosophies, they should be aware of how their histories affect their view of TMs, and their use of them with athletes. Viewing TMs within the context of a coaches' life should be a directive for coach developers to consider other coach-development endeavours as they relate to a coach's' cumulative experiences. In doing so, coach development opportunities may take on new meaning for participants and could provide more engaging learning experiences.

Limitations and conclusions

Although this study provided insight into university coaches' understanding and descriptions of TMs, some limitations need to be acknowledged. First, as this was an exploratory study, the number of coaches who participated in the study was a small sample from one institution. Given the specific context of university student-athletics, studies at other universities, colleges, and other similar institutions should be considered, to develop the empirical data available. Second, future studies should consider using samples of coaches from diverse contextual backgrounds, such as recreational sport contexts, where the competitive demands faced by coaches and athletes differs from that of university sport. As well, expanding the parameters of studies to include the perceptions of both coaches and athletes can generate knowledge of the athletes' role in TMs. Given that this study was situated in university sport, which is a context where athletes are entering emerging adulthood and assume more agency in their learning (Rathwell & Young, 2018a; 2018b), we must consider the agency of athletes and their role in how TMs occur. We cannot assume that PYD implications favouring the coaches' role in facilitating TMs carries the same relevancy in university sport contexts. Coaches in this setting may overestimate their influence in their athletes' development (Rathwell & Young, 2018b). As such, future studies should explore and document TMs through the perspectives of athletes. Doing so could provide alternate

understandings of the qualities and conditions associated with TMs. Finally, this study addressed TMs in sport at a general, conceptual level. Future studies should explore the specific characteristics of TMs, investigate the unique details of organic and structured TMs, and examine the connections between supporting conditions and the actual occurrence of TMs.

In sum, the purpose of this study was to examine coach perceptions of TMs in the context of university sport at a Canadian post-secondary institution. More specifically, we explored how coaches described TMs, and contributed to a practical understanding of how TMs may occur. Based on our findings of the coaches' perspectives, we proposed a preliminary model that could be used as a guide to understand the qualities and conditions of TMs. Clarifying and testing the underlying elements proposed in this model can develop our knowledge of the applied nature of TMs, and how they may affect athlete learning. This could lead to an eventual theoretical framework of TMs, providing a foundation to educate coaches on understanding and effectively using TMs as a coaching strategy.

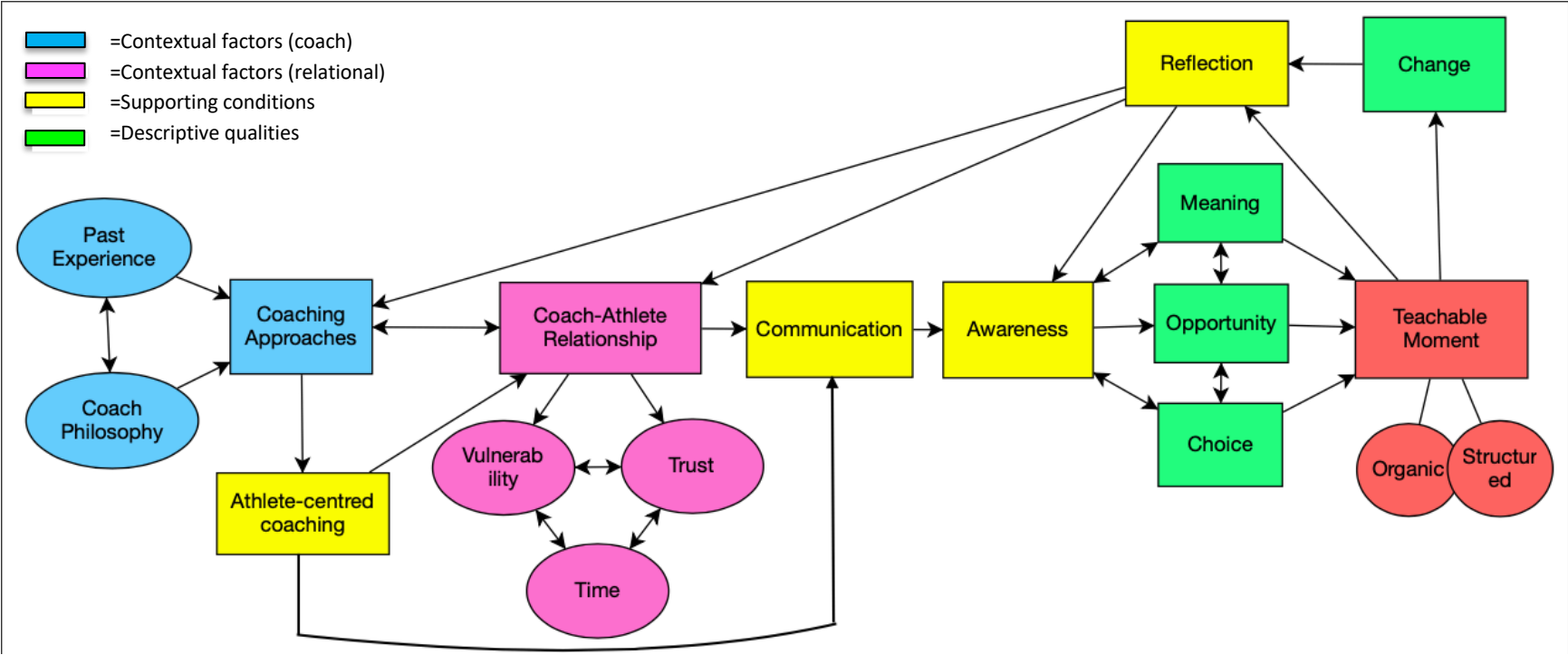


Figure 1. The Teachable Moments in Coaching Model (Wray, Culver, & O'Connor, 2020)

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Manuscript Two

Teachable moments: Practical examples from university sport

Abstract

Teachable moments (TMs) are occurrences that may provide a learning opportunity for the people involved. In sport contexts, TMs are recognised as beneficial for athlete development, but few studies document how coaches use TMs with their athletes. As such, this study examined how university sport coaches integrated TMs into the development of their athletes. Semi-structured interviews were conducted with seven university sport coaches. Additionally, five of these seven coaches completed a series of online TM recall forms, as well as a second interview. Data were analysed using a reflexive thematic analysis to develop the different forms of TMs in university sport. The forms of TMs are depicted through three illustrative vignettes, which provide examples of TMs that coaches discussed in their online recall during data collection. Differences among the forms of TMs are discussed, as well as content and/or lessons that coaches may attempt to address through TMs.

Keywords: varsity sport coaching, sport pedagogy, coach-athlete interactions

Introduction

This study examined how university sport coaches integrated teachable moments (TMs) into the development of their athletes. In sport contexts, TMs are recognised as beneficial for athlete development (Hedlund, 1996; Vella, Oades, & Crowe, 2013), but there are few studies that document how coaches use TMs for the development of their athletes. Commonly, TMs are viewed as occurrences that may lead to learning or behaviour change (Borelli et al., 2016; Kells et al., 2013; McBride, Emmons, & Lipkus, 2003). TMs are applied across many different areas to encourage learning. Examples of TMs from health and medical domains include the diagnosis of cancer to encourage patients to adopt healthy lifestyle changes (McBride et al., 2008), during medical rounds as a learning opportunity for physicians-in-training (De Luise, 2014), and using hospital stays to encourage patients to cease smoking (Kells et al., 2013).

Within the domain of education, TMs are understood as learning through lived experiences, (Hyun & Marshall, 2003) and as everyday interactions between student and teacher that can influence student learning (Glasswell & Parr, 2009). Researchers also note TMs present a method to develop conceptual thinking skills through inquiry-based teaching approaches, such as posing scenarios or questions to students to promote problem-solving (Haug, 2014). TMs can enhance students' engagement in their learning (Seals, 2019), where the teachers play a crucial role in addressing TMs (Haug, 2014). TMs can be considered an essential component in facilitating learning, as they provide an opportunity for teachers to interact with students at their level of development (Wagner & Ash, 1998). The term 'scaffolding' refers to an educational concept, whereby teachers enable students to solve problems, carry out tasks, or achieve a goal that would be beyond their unassisted efforts (Wood, Bruner, & Ross, 1976). When teachers engage their students in TMs, the TM could be compared to a scaffold as a method to assist with

learning. Thus, teachers need an understanding of what constitutes TMs and should be prepared for the responsibilities of addressing TMs with their students.

TMs may be viewed as a teacher inviting their students to think about a science lesson in relation to natural surroundings external to the classroom (Haug, 2014), or when a student expresses an interest in a certain topic or subject and the teacher chooses to expand upon this and discuss the topic with the entire class, whether it is relevant to the curriculum or not (Haug, 2014). These different TMs can address a wide range of subjects, and the teacher plays an important role in maximizing TMs for the benefit of their students (Seals, 2019), much like a coach plays an important role in maximizing TMs for the benefit of athletes. When teachers are able to adapt and address TMs in a way that becomes purposeful and interesting for their students, it becomes a powerful pedagogical technique that can challenge students' perceptions (Willman, 2009). TMs in education seem to be viewed as an important strategy for teachers, and education researchers have sought to expand their understanding of the nature of TMs in practice.

Four different types of TMs have been described as they relate to the presence of an educational curriculum (Seals, 2019). This typology of TMs includes Type 1, or Creatable TMs, which are closely related to the curriculum and very predictable, and Type 2, or Collateral TMs, which are predictable but not directly related to a planned curricular lesson (Seals, 2019). Type 3, or Circumstantial TMs, are random and/or spontaneous but closely connected to the curriculum and Type 4, or Conventional TMs, are unplanned and totally independent of the curriculum (Seals, 2019). These four types of TMs range in predictability and proximity to the educational curriculum, providing teachers with a guide to understand the TMs they may encounter in their classrooms. Though relevant, the Seals (2019) typology may not be directly

applicable to TMs in sport, as coaches primarily do not work from a standardized curriculum (Gilbert & Trudel, 2001).

In sporting contexts, coaches bear a responsibility to help their athletes develop and improve (International Council for Coaching Excellence, 2013). Coaching involves the training and teaching of athletes. Effective coaches are those who can engage with their athletes in a meaningful and empowering manner (Côté & Gilbert, 2009), as well as adapt to the needs of their athletes (Denison, Mills, & Konoval, 2017). If TMs in educational settings can enhance student development, then TMs in sporting contexts should present a similar benefit for athlete development.

TMs in sport are primarily described in the context of positive youth development (PYD) as events that can promote the life-skills development of youth athletes (Camiré, Trudel, & Forneris, 2012; Turnnidge, Côté, & Hancock, 2014; Vella, Oades, & Crowe, 2013). However, TMs in sport are not much expanded upon beyond the youth sport context, though they warrant investigation across other sport contexts (e.g., university sport, high performance sport, parasport). The underlying processes of TMs and how coaches understand them in university sport are explored in manuscript 1 in this thesis (p 27.) As well, beyond life skills development, TMs can be applied to help athletes in their learning of the technical and tactical aspects of sport, (Hedlund, 1996). In the context of PYD, a TM might be a coach addressing a tough loss with their athletes (Camiré et al., 2012), explaining to athletes why they should show respect to officials during competition (Turnnidge et al., 2014), highlighting that athletes should play a game fairly (Gould & Voelker, 2012), or remaining humble during a victory (Vella et al., 2013). As demonstrated in PYD literature, coaches have the power to address TMs with their athletes and can do so by providing concrete examples of how the TM may benefit the athletes in the

future (Camiré, Forneris, Trudel, & Bernard, 2011). These TMs are understood as unplanned and reactive (Bean & Forneris, 2017; Bean, Kramers, Forneris, & Camiré, 2018), arising from both positive and negative occurrences (Bean & Forneris, 2017). For coaches to maximise the benefit of TMs for their athletes, they should become efficient at recognizing and taking advantage of these events, to encourage the transfer of life skills beyond sport (Camiré et al., 2012).

Researchers in the domain of PYD laid an early foundation of our understanding of TMs for youth in recreational sport contexts. There remain many gaps in the literature on how coaches use TMs with their athletes across different sporting contexts (e.g., university sport settings.) For instance, researchers in healthcare, medicine, and education domains have demonstrated that TMs can be applied with both youth and adult learners (Borelli et al., 2013; Hyun & Marshall, 2003; McBride et al., 2003; 2008; Seals, 2019); but we lack such knowledge specific to sport contexts, given that our current knowledge of TMs in sport is based on PYD literature. As well, TMs in other domains are presented as both predictable and related to curricula and spontaneous and unrelated to curricula, but, as noted, sport coaches do not usually follow a curriculum (Gilbert & Trudel, 2001). Granted, recent PYD literature on TMs provides an examination of a curriculum (or program) for the development life skills in which coaches follow specific plans (Kramers, Camiré, & Bean, 2020). This however is not common in sport coaching, nor found in university sport, where the addressing of life skills by university coaches is less systematically developed (Rathwell & Young, 2018). Furthermore, while the literature on TMs in a PYD setting emphasizes the importance of parents reinforcing the life skills learned through TMs with their children, the role of parents is far less applicable in university sport (Rathwell & Young, 2017).

While acknowledging that it is the athlete who does the learning, as per a constructivist view of learning (e.g., Moon, 2004), the coach often also plays an important role in orchestrating

the learning environment (Wallace & Jones, 2006). Coaches in youth sport contexts are involved in the facilitation and/or engagement in TMs (Bean & Forneris, 2017; Bean et al., 2018; Camiré et al., 2012; Vella et al., 2013), thus it is important to investigate how TMs occur through the eyes of coaches. In the two-way interaction between coach and athlete, this study focusses on coaches in university sport. Building our understanding and sharing examples of coaches' perceptions of TMs in university sport can inspire dialogue about the role that coaches' play in athlete learning, how this contrasts to athletes' views of their role in their learning (Rathwell & Young, 2018a), and how coaches can engage more deeply with their athletes in learning opportunities. Such knowledge will be beneficial from a coach developer standpoint. This study was guided by the overarching research question "How do coaches use TMs in the development of their athletes?", with the primary purpose to develop our understanding of the types of TMs that coaches perceive in university sport coaching. As well, generating practical knowledge of TMs can assist applied practitioners to refine their awareness and future use of TMs.

In this paper, the language is based on the perceptions and words of our participants. The work of researchers studying PYD contributed to our initial understanding of TMs, allowing us to view some forms of TMs in sport as unplanned and reactive events to which coaches can respond (Bean, Kramers, Forneris, & Camiré, 2018). The term 'organic' is used when referring to these, and other forms of unplanned and/or naturally occurring TMs. It is clear that TMs exist in multiple forms, and 'structured' refers to those that are planned and/or expected. The terminology associated with the different forms of TMs reflects the manner that participants described these occurrences; however, we respect that there may be differences in perception as to what comprises types of TM.

Given that this study is intended to provide practical insights into how coaches use TMs with their athletes, the forms of TMs presented in the manuscript are based on the perspectives of coaches. Other attempts to categorize TMs (e.g. Seals, 2019) provided inspiration in understanding that TMs can exist in different forms. However, Seals' (2019) proposed typology is aimed at classifying TMs into a system. Our focus is not to formally define or categorize TMs, but to provide insight into the different ways TMs may occur in sport settings, and how coaches understand these occurrences. Seals' (2019) typology is specific to the domain of education. While research into the nature of TMs in sport is novel, using his categories could cause assumptions from education to shape the view of TMs in sport, whereas the perspectives of sport and coaching practitioners should inform this understanding.

Methods

This study was designed following a basic interpretive qualitative methodology (Merriam, 2002), in accordance with a constructivist view. For Merriam and Cafarella (1999) “constructivist stance maintains that learning is a process of constructing meaning; it is how people make sense of their experience” (p. 260). Constructivism entails gathering the individual perceptions of the research participants to explore, in this case, the coaches' experiences of TMs with their athletes in their coaching practices (Crotty, 1998). The data collection process was designed to develop our understanding of TMs between coaches and athletes, while gathering data of the coaches' interpretations of TMs in their daily coaching practices (Merriam, 2014). Data were analysed using a reflexive thematic analysis approach. This approach helped us to develop our understanding of the forms of TMs that coaches engage in with their athletes; as informed by the perspectives of the coaches and preexisting TM literature from the domains of PYD and education (Braun & Clarke, 2019; Braun, Clarke, & Weate, 2016).

Participants

Our participants consisted of seven university sports coaches at a Canadian post-secondary institution, including three who were female. We selected our participants through convenience sampling (Patton, 2002). The coaches worked with both team and individual sports (e.g., rowing, rugby, basketball, volleyball, ice hockey), and held a variety of positions, such as head coaches, assistant coaches, and positional coaches. The sport of each participant is not identified, to maintain confidentiality. The participants spent an average of 17 years coaching, with a range of 8 to 32 years. We obtained approval from the University of Ottawa's research and ethics board, and each participant completed an informed consent document prior to data collection.

Data collection and analysis

Data collection involved semi-structured interviews (Smith & Sparkes, 2016) and online TM recall forms (Gass & Mackey 2017; Lyle, 2003). Between January and March 2020, all seven of the study participants completed a semi-structured interview. Five of these seven participants completed a series of four to eight weeks of online TM recalls between January and April 2020, as well as a second semi-structured follow-up interview within one week of completing their TM recalls. Seventeen recalls were collected in total. Two participants did not complete the online recalls or second interview due to scheduling restrictions and the impact of COVID-19 during the final stages of data collection. All audio-recorded interviews were transcribed verbatim through nVivo 12 (Qualitative Solutions Research, 2019) and were subject to respondent validation, where participants were sent their transcripts and provided the option to clarify, remove, or change anything they felt necessary (Maxwell, 2012).

The first interview focused on coaching experiences, coaching philosophies, and exploring the coaches' perceptions of TMs, and these results have been reported in manuscript

one (this thesis, see p 27.). These questions meant to inform about how coaches came to their understanding of TMs. Following the first interview, participants were encouraged to complete the online TM recalls. These recalls were delivered electronically via email once a week over an 8-week time period. The recalls documented events with athletes that coaches considered to be TMs. The recalls included open-ended response sections to describe the TM, why it was a TM, and whether it was related to planned activities, to gauge the nature of how the TM occurred. As such, the recalls acted as stimuli for the second interviews and improved the ability of the interviewer to situationally probe how coaches used different types of TMs. Each coach completed an average of 4 recalls (range=1-6 recalls), and a total of 17 recalls were collected. After the TM recalls, the coaches completed their second interview and elaborated on the events documented in their recalls. The first section of the findings presented in this manuscript were informed by the interview data of all seven participants to develop our general understanding of how coaches perceived the different forms of TMs in sport. The second section of the findings, presented as a series of illustrative vignettes, draws on the data of the five coaches who completed the online TM recalls and a second interview. The general forms of TMs explored in this manuscript (see Figure 2, p. 99) are based on the perceptions of all coach-participants, and the vignettes served as a presentation strategy to illustrate examples of the different forms of TMs that coaches' documented in their recalls.

Data were analysed through a constructivist perspective using a reflexive thematic analysis (Braun et al., 2016; Braun & Clarke, 2019). The data analysis was focused on interpreting the TMs between coaches and their athletes, and was guided by pre-existing TM literature from the domains of PYD and education. Thematic analysis provides insight into peoples' experiences, thus allowing us to explore the coaches' understandings of how TMs may

be used to develop their athletes (Braun et al., 2016). All interviews were transcribed verbatim and re-read multiple times to ensure data familiarity. Numerous iterations of codes were generated and refined, based on the coaches' experiences with TMs for developing their athletes and their views of the possible different forms of TMs. Our interpretations of the forms of TMs were developed into themes through ongoing discussions with the research supervisors, who fulfilled the role of critical friends (Smith & McGannon, 2018). Continued discussion led to the finalization of themes, and consensus on the format of the forms of TMs to be presented in the first section of the findings. These forms of TMs were developed through the prevalence of the themes across the dataset (Braun & Clarke, 2016). In the second section of the findings, a series of vignettes are presented to provide a practical illustration of each of our proposed form of TMs.

Creative analytical practices (CAP) are approaches where researchers imaginatively and creatively represent data (Parry & Johnson, 2007). One form of CAP, vignettes, are a qualitative research tool that can help represent the perceptions of participants in an accessible and interesting way (Hughes & Huby, 2002). As well, vignettes allow authors to present findings in a meaningful manner and offer insight into the experience of participants (Hinchman & Hinchman 1997). In sport, vignettes are presented to connect readers to the experiences of participants (e.g., Denison, 1996; Winchester, Culver, & Camiré, 2011; Paquette, Trudel, & Duarte, & Cundari, 2019). Each of the vignettes presented in the findings is based on one specific TM that a coach participant documented in a recall, and that was subsequently discussed in their second interview.

The three TMs depicted through the vignettes were chosen to provide a practical representation of the forms of TMs developed through the thematic analyses of the entire dataset. The vignettes are not representative of the entire dataset, but instead create insight into how TMs may occur between coaches and their athletes. The examples we present were chosen based on

the level of detail and discussion provided by one coach; that is, the three examples of TMs were well-documented with great attention to detail in both the recall and the second interview.

Further examples of each of the forms of TMs can be found in Table 2. It is important to note that each TM is unique and of equal value; one form is not better than the other. The vignettes provide an example of a structured TM, an organic TM, and an uncategorised TM; a form that is considered more fluid in its nature, containing elements of both structured and organic forms.

Findings

The findings of this study reveal practical examples of different forms of TMs that coaches use with their athletes. Three forms of TMs were developed during data collection and analysis, as illustrated in Figure 2. The forms of teachable moments are structured, organic, and uncategorised. Structured TMs refer to those that are planned and/or purposely structured, whereas organic refers to those that are unplanned and/or naturally occurring. Uncategorised TMs involve a diverse set of occurrences ranging between structured and organic. Following this overview, we illustrate each form of TM through a vignette characterising the TM that the three coaches respectively addressed with their athletes, as documented through their online TM recalls and second interviews. Table 2 provides further examples of each form of TM, as generated in our findings.

We present the forms of TMs in the format of a venn diagram (Meriam-Webster, 2020), as a venn diagram demonstrates the dynamic and overlapping nature of TMs, particularly those that are uncategorised. We can clearly identify forms of organic and structured TMs in sport, similar to those acknowledged in other domains (e.g., Rich, 2009; Seals, 2019). However, TMs also occur in forms that do not fit strictly into the dichotomy of only organic or structured. As such, we propose uncategorised TMs as a flexible ‘middle-ground,’ open to the interpretation of

the audience, and to inspire further empirical research. In the context of coaching, the uncategorised form of TMs may consist of different sub-forms, which could be more closely related to either the organic or structured forms.

Forms of teachable moments

Structured

Our coach-participants viewed TMs as a complex phenomenon, existing in varying forms. Several coaches characterised that some TMs may be planned or purposefully implemented, which we call structured. The former, structured TMs, were generally viewed as planned to some extent and being within the coaches' control. Coach 4 highlighted how he believes that he is the creator of TMs for his athletes, and he is in control of the occurrence:

I think it's on me. Well, I think they can be random, but I think it's something you can create and play with, especially in my world, where I have the ability to control sessions and go slower, with a more individual basis rather than group. I feel like I can really tailor teachable moments through the coaching process.

Coach 5 explained how she would build TMs into her training plans to address a specific objective with her athletes, demonstrating that TMs can cover a variety of topics, such as technical and tactical sports skills: "I think one of those things is we'll do drills where they don't mimic the ideal performance, but they exaggerate or place a constraint that forces somebody to do a particular movement in a certain way". Structured TMs are planned and/or expected in advance, moderated by the coach, and intended to address specific objectives. Actions such as eliciting a specific sport skill through a drill during practice, modifying the application of a skill by applying constraints, or facilitating a behaviour within a group through team policies could all be examples of structured TMs. As well, TMs that are structured should be based on knowledge

of a team or an athlete's developmental needs and tailored in an effort to provide that athlete with the most beneficial opportunity to improve.

Organic

Organic TMs were viewed as occurring without much planning or prior knowledge of the opportunity. These TMs involve actively looking for naturally occurring situations that provide the potential for a TM and having the awareness to realise that potential. Coach 2 discussed always looking for TMs with his athletes, and asking self-reflective questions to hone his awareness:

I don't think I consciously build them in. I think the concept is that we're always on the lookout for them.... I would say that I'm very proud that that's one of our strengths in this program. When I go back to telling you that, I think we question a lot. I think we question a lot during practice, not just after this is or that, and the questioning, that's the whole point. You're just on the lookout constantly and asking constantly, "What are we doing right now? What is helpful right now? What's possible right now? A lot of times we say nothing's possible right now. What then? OK. Yeah. I don't think there's a teachable moment right now. Let's just let them have their thing". And maybe that, on its own, is a decision. But that's my point. I think we challenge ourselves. We have to look out for it, I think all the time.

Organic TMs involve the coach scouting for the opportunity and cultivating the course of the TM, should the athlete take notice and choose to engage in the learning. Coach 7 explained how coaches play the role of 'facilitator,' and act as a guide for naturally-occurring TMs:

I think maybe that organic is sort of, at their own pace, if you're providing that foundation and structure. And those are your sort of guardrails. I'm just maybe controlling the

parameters, not controlling the actual specific moment or outcome. Maybe you just sort of create guardrails, or you are the guardrails, I guess, on the road. The athlete can actually go wherever they want on the road. But as long as they're not going off the freaking cliff. I think maybe that's what I mean by control. I think you're sort of just that guiding factor. And they will get to wherever they're going sort of on their own terms, organically...

Organic TMs may arise due to contextual or environmental factors, and the coach should be able to recognize and respond to the opportunity, as well as articulate an intended lesson. For example, in the instance of COVID-19, the unexpected season-long cancellation of sports competitions provides many opportunities for organic TMs, where coaches can choose to encourage their athletes to focus on their resilience, well-being, and development in other areas of life.

Both structured and organic TMs provide coaches the opportunity to help their athletes develop, either through a prior knowledge of what the coach hopes to target through the TM, or through awareness of an opportunity to highlight an important learning point. However, TMs also exist beyond the forms presented above, as demonstrated within the uncategorised form.

Uncategorised

Some forms of TMs may fall outside the boundaries of being either structured or organic, as TMs are dependent on the surrounding contextual conditions, and the people involved. Coach 1 explained how TMs could be both structured and organic, and that the coaches' level of awareness is a crucial component:

I think it is both. Being able to pick up on them is really important, because those are probably the best ones, but I think you can set up teachable moments. I think you can

create an environment where... You will create these instantaneous “Aha” moments for the kids. Actually, “aha” is a really good description of a teachable moment.

Being aware is a quality that coaches can foster to be more prepared to address all forms of TMs with their athletes. The level of awareness of a coach could help them differentiate between forms of TMs, and how these TMs may help their athletes realize or learn. This could build their repertoire for understanding the flexibility of TMs between organic and structured, thus becoming more adaptable in their coaching approaches. TMs cannot, and should not, be divided into only two categories, as this could place restrictions on the flexibility with which coaches’ develop their understanding of TMs. Coach 6 highlighted that TMs were both random events generated during games that she could talk about with her athletes, as well as things she could purposely choose to address to help her athletes learn:

I try to be as open as I can to talk about any kind of subject. And I feel like tough conversations are so important, and yet people are so afraid of having those conversations and it sucks. But yeah, it’s not necessarily random things only during the game, but it’s all these things that you can plan, those events that just open the eyes of young athletes.”

We understand TMs as a flexible concept: being structured by coaches, generated organically, or falling somewhere in-between. Whereas structured TMs involve a pre-conceived intent to address a topic with athletes, and organic TMs occur without the coach actively attempting to implement a TM, uncategorised TMs illustrate that there should not be two distinctive labels for TMs. Instead, TMs can display an overlap in form, within the clearly-demonstrated endpoints of organic and structured. Uncategorised TMs, which can have some combination of the characteristics of structured and organic TMs, have unique identifying characteristics based on the experiences and perspectives of the people involved and on contextual factors. As such, we

propose viewing TMs as dynamic and flexible, with fluidity between organic and structured, and leaving room for interpretation, which we have presented in Figure 2. In the following section, we present a series of vignettes to provide a practical illustration of each form of TM.

Examples of teachable moments in university sport: Three vignettes

Each form of TM is illustrated through a vignette based on an actual TM that a coach documented in their online TM recalls. Of the 17 recalls collected, the TM presented in each vignette provides the most substantive example of each form of TMs. The vignettes are not by any means a strict categorical system, but instead are intended to give the reader insight into how coaches may perceive TMs as they occur in sport contexts. As well, the vignettes can stimulate conversation about what the phrase TM means to coaches, such that they may become more reflective of how they engage their athletes in these opportunities for learning.

Vignette of a Structured teachable moment

The TM with my athletes was during an indoor practice. It's our off-season right now, so I'm very focused on developing and refining our offensive skills. We were working on a specific offensive pattern that is an important component of our system of play. It's a challenge, because they have the skills for the pattern, but they didn't understand the tactic of going wider on the offensive to try and improve their scoring capability. Every practice we've been doing drills over and over to try and get the pattern of running, passing, and receiving passes, and I've explained the purpose to them, but some still couldn't understand it.

During the season, we knew we were struggling with this, but we just didn't have the flexibility to spend as much practice time on it as we should. We have a really young group of athletes, so we always had lots to work on. However, now that we don't have the stress of

competition and developing our game plans, we can focus a lot more on improving things and developing understanding for next season.

With this offensive skill, I had planned the practice to try and create the opportunity for them to gain understanding of the purpose of the tactic. As we ran the offensive pattern, some of the athletes started to realise the benefit of going wider and how it was beneficial for scoring. Now, obviously some of them still don't get it, but in my coaching experience, you can generally see how things are going to go before they happen, and you can plan your practices to stimulate the opportunity for them to learn, and then you hope they get it. Part of it too, is that it's off-season and they are not as overwhelmed, so it makes it easier to build those TMs into the practices.

Vignette of an Organic teachable moment

I had a TM happen after one of our afternoon practices. It took place in the form of an unexpected discussion with an athlete about her performance. She came to see me because her training had plateaued, and she wasn't seeing the results she hoped to see but couldn't figure out why. We first talked about the key components of performance: sleep, psychological strategies, and general nutrition. I don't normally discuss nutrition with athletes, but if they have questions or need assistance, I'm always happy to chat. During this discussion, she focused on nutrition. This inspired her to do a food-journal for a week, and then come back to go over it together.

After her week of tracking her food, it turned out that she was under-fueling. She was plateauing because she didn't realise the quantity of food she needed to consume to sustain her performance. We had a really good conversation about some foods that she could add to increase her caloric intake, and habits she could adopt during the day that would positively affect her energy levels.

This TM was not related to any activities that I had planned for the team that week, but it was relevant to one athlete's performance, so it was important to address. She left the discussion with more knowledge of how to improve her performance, and she was going to implement the needed changes. She really bought into it because I was able to clearly explain the science of fueling and recovery to her, and we had the tangible data of her food journal to show that she really needed to eat more. Like I mentioned before, I don't plan to discuss nutrition with each individual athlete, but she had noticed something was off, and came to me to try and figure out a solution. Even though this wasn't planned, it was really beneficial to this athlete.

Vignette of an Uncategorised teachable moment

We had a TM take place while travelling for competition. During an away game, one of our players forgot her uniform. We made the decision not to let her play, instead of scrambling to try and find an extra uniform. We could have very easily 'solved' this issue for the athlete, but we used the event as a lesson for not just her, but also for the entire team.

All our players know that we have a policy not to bring extra uniforms with us to games, and she had to deal with the consequences of forgetting her uniform. It isn't personal, it's just that they are responsible for their kit and need to be detail oriented. We implemented this policy years back, because we realised that people will likely forget stuff; things like that happen from time to time in sport. It also holds us to consistent standards as coaching staff, and makes us live out the things we say we value, like responsibility and accountability to the team... Because what if it had been a high-stakes game, and we needed that athlete to play? We don't want the circumstances to change how we react to the event. So, we build in these policies and processes that hold us to a standard as a team. We try to create these opportunities in advance to try and

teach or reiterate something important to the athletes, even though it might not happen all the time.

This situation... it actually turned out that a lot of athletes weren't following the protocol for cleaning and returning their uniforms after games. We discovered some communication issues with the team, and it ended up being a TM for the whole group. Because... we can work towards how we can operate together better, and we can take this TM and overlay it into all aspects of the team. It's not just forgetting a uniform, it's how you pay attention to the details of the practice or the game plan; double-checking and triple-checking and just being prepared; and how you also have a responsibility to the team to be ready.

Table 2.
Forms of teachable moments: Further examples.

Form of TM	Description
Structured	The coach formatted the practice environment for athletes to have time for free-play. During free-play, the coach asked specific questions to encourage athletes to work on key areas of focus which were pre-planned for the session. Athletes began to work on these during their free-play, gaining more success with the skills as they applied the techniques of their own accord. (Coach 1).
Organic	An athlete was struggling with a health issue and was feeling stressed and/or worried about performance capabilities. The coach chose to take the time to relate the stress the athlete was feeling to the skill of adapting their perspective of the situation. The athlete realized that they could control how they thought about performance and take steps to manage stress, both within sport and external to sport. (Coach 5).
Uncategorised	During end-of-season competition, the coach chose to use a high-pressure game as a developmental opportunity for newer players to gain exposure to playing in stressful and high stakes situations. End-of-season play had not been guaranteed but was expected to occur. Prior to end-of-season, the coaching staff had decided to either approach the games as developmental opportunities or to play to try and advance, depending on standings. (Coach 2).

Discussion

Differences between structured, organic, and unstructured teachable moments

This study examined how university sport coaches use TMs for the development of their athletes. We created vignettes as a representation of three different TMs that coaches documented through their online TM recall forms, as occurring in their coaching practices. The findings presented insight into differences amongst structured TMs, organic TMs, and TMs that have qualities of both, as illustrated through the vignettes. It is important to note that the vignettes are based on the individual experiences of three coaches from a variety of backgrounds;

and as such are not intended to provide an overarching categorical system for TMs. Rather, the vignettes provide practical examples of how TMs may occur in sport contexts, and how the coaches addressed them. This knowledge can be applied to refine coaching strategies to be more aligned with the learning preferences of athletes.

As observed from the vignettes, each form of TM has distinguishable qualities. We propose structured TMs to be occurrences that are purposely structured or implemented where the coach possesses a higher degree of control over the situation. Structured TMs arise through the intent and proactivity of the coach, and their ability to produce an environment where they can engage their athletes in a TM. Coaching can be referred to as a form of art (Woodman, 1993), wherein it is both an individual and social process (Cushion, Armour, & Jones, 2003), centred around the connections between coaches and their athletes (Armour & Jones, 2000). Structured TMs provide a method for coaches to practice their art, by meaningfully crafting occurrences through which they can address topics that are beneficial for their athletes.

Structured TMs could also appear as events that are not specifically planned in advance by the coach, but are predictable and not completely random, having a certain likely frequency of occurrence. Thus, the coach would expect the situation to occur and could preemptively make the choice to structure a TM based on an eventual occurrence. When considering structured TMs, it is the responsibility of the coach to create TMs. A coaches' ability to structure TMs could be attributed to learning through years of coaching experience. Coaching experience is a primary source of learning and development (He, Trudel, & Culver, 2018), and as coaches become more experienced, their ability to plan and execute TMs should become more refined. Similarly, as coaches become more experienced, we could expect that their awareness of TMs might be more acute. This awareness is founded on the coach's ability to consciously synthesise the many

complexities of coaching supported by reciprocal trust (coach-athlete), vulnerability, communication, coaching philosophy, as well as the ability to adapt on the fly, as demonstrated in manuscript one (this thesis, see p.27.) This ability might be comparable to the concept of ‘the coach’s eye’, as often used in the context of talent identification (Christensen, 2009).

Awareness is an important condition for all TMs, particularly those that are organic, as they demand a heightened degree of consciousness on the part of the coach. Organic TMs require coaches to be able to decipher the meaning of seemingly random occurrences and choose how to address these in a manner that is relevant and beneficial for the athletes. Notwithstanding, awareness also plays a role in structured TMs, as coaches must be aware of the content they want to address through the TM, how they plan to implement it, and why it is important for the athlete. When coaches recognise the individual needs of their athletes and take time to listen to them, they can meet the athletes’ needs and support athletic development (Jones, 2009). This can be understood as caring in coaching and can help athletes grow in desirable ways (Dohsten, Barker-Ruchti, & Lindgren, 2020). Coaching in a manner that demonstrates care is founded on the strength of the coach-athlete relationship and a deep understanding of the needs of their athletes. Caring further promotes positive coach-athlete relationships (Lindgren & Barker-Ruchti, 2017), thus creating space for further TMs and more opportunities for athletes to learn.

All forms of TMs require coaches to gain understanding of the needs of their athletes. Structured TMs provide space and/or time for coaches to think about the needs of their athletes in advance, and to reflect on potential TMs that could address those needs. This is exemplified in the first vignette, where the coach had specific knowledge of a deficiency in her athletes’ abilities, and took steps to engage the athletes in a TM that would reduce this deficiency. Facilitating organic TMs involves coaches being aware of, and able to rapidly synthesise and

connect knowledge of their athletes needs to the spontaneous opportunity for a TM. This is illustrated in our second vignette, when the coach took the time to respond to an issue that an athlete brought up. Based on his knowledge of the athlete, and knowledge of situation as it unfolded, this coach chose to use it to teach the athlete about topics that he thought could be of benefit to her. Accordingly, coaches who coach in a caring way might be more aware of the needs of their athletes (Dohsten et al., 2020), and better equipped to address organic TMs. In turn, by sharing the experiences of coaches who are aware of their athletes needs, other coaches can gain insight into practices that may allow them to develop their knowledge and abilities to address organic TMs.

We propose organic TMs to be naturally occurring and/or random, where the coach has a lower degree of direct control. Though organic TMs may be products of the environment, the coach still maintains a responsibility to artfully engage their athletes in the occurrence, and to communicate potential lessons of the TM. Organic TMs can also be unpredictable, or predictable but with a low frequency of occurrence. As with structured TMs, organic TMs provide the opportunity for coaches to address meaningful topics with their athletes. Due to the increased uncertainty of organic TMs, and their unpredictability with respect to coaching control (Fox, 2006), coaches should be willing to adapt to the TM as it unfolds. Even if the final outcome is unknown, coaches can still impart important lessons to their athletes. Coaches could also improve their own abilities by choosing to ‘go with the flow’ of the TM. This could become an asset to future coaching scenarios that require adaptability, though individual differences amongst coaches may predispose some to find this adaptation easier than others.

Organic TMs are commonly referred to in the domain of education, and teachers are considered the facilitators of these unexpected events (Virtue, 2007). Teachers play an important

role in providing students with positive learning experiences (Cheong Cheng & Tung Tsui, 1996). Similarly, coaches play an important role in the sport experiences of athletes (Vella et al., 2013). Coaches could be viewed as the gatekeepers of organic TMs in sporting contexts, depending on their choice to deviate from their plans and further explore organic TMs with their athletes, thus providing athletes with a more individualized and creative sport experience.

As illustrated in Figure 2, though there are distinct elements that comprise structured and organic TMs, there are also TMs that contain elements of both. We deem these TMs uncategorised, and propose that they exist in many different sub-forms. These sub-forms can include mostly organic, mostly structured, or possessing a mixture of traits. The uncategorised form of TM is an area that should continue to be studied in greater detail in the future. TMs were clearly identified in other domains as both naturally occurring and/or organic; as well as planned and/or structured (e.g., McBride et al., 2003; 2008; Seals, 2019.) However, this research revealed TMs reach beyond the dichotomy of organic and structured, and can display a mixture or overlap of the traits in organic and/or structured forms. One key factor that must be considered in conceptualizing forms of teachable moments is the nature of coaches' and athletes' perceptions. An occurrence that one coach believes to be a structured TM may appear organic to another coach, or may not even be considered a TM by a third coach. Athletes could perceive these TMs completely differently. Due to the subjective nature of experience (Jarvis, 2006; 2009), the forms of organic and structured TMs can provide an endpoint to help guide coaches' understanding of the fluidity of TMs that may not necessarily 'fit' into an explicit category.

The uncategorised form of TMs creates space for interpretation; and further expansion of our knowledge of TMs within the spectrum of organic to structured. Since TMs are conceptually ambiguous (Cohen, Clark, Lawson, Casucci, & Flocke, 2011), we are only now beginning to

explore their theoretical basis in sport (see manuscript 1, this thesis, p. 27.) As such, we do not propose rigid definitions or a categorization system for TMs in this thesis, nor do we attempt to create a ranking system by which we judge their effectiveness. Instead, we strive to enhance our knowledge of how TMs are employed in the sport context, and formulate guidelines to help others refine how they understand and apply TMs. Acquiring these practical insights can contribute to the development of strategies to use the different forms of TMs in manners that are most conducive to promoting athlete development.

A deeper understanding of TMs could guide coaches in the topics they may choose to address with their athletes through a TM. Stimulating conversation on TMs in sport contexts can encourage coaches to share valuable lessons and/or strategies to effectively integrate TMs, hence facilitating an approach for collaborative learning amongst coaches. Similarly, coach developers can integrate TMs into coach education as a topic to help coaches' improve their effectiveness in developing athletes. Côté and Gilbert (2009) summarize coaching effectiveness as the combined application of professional (sport-specific and pedagogical knowledge), interpersonal (interacting and communicating with others), and intrapersonal knowledge (understanding self and reflecting). Each form of TM requires aspects of professional, interpersonal, and intrapersonal knowledge. When coaches possess a strong knowledge base in each of these areas, they should be able to distinguish amongst TMs and understand how to harness occurrences most beneficial for their athletes. Regardless of the form of a TM, the primary purpose should be to provide an opportunity for athletes to learn and develop.

How coaches use teachable moments with athletes

Coaches employ various forms of TMs with their athletes, and these TMs can relate to an array of topics. In our study, coaches discussed TMs that focused on developing sport and

competitive abilities in their athletes, as well as life-related topics. TMs can also serve to address both sport and life topics at the same time, depending on how the coach maneuvers the messaging of the TM. The content of a TM can impact the approach a coach uses to interact with their athletes. For example, if an organic TM arose out of a sensitive event, it would require the coach to communicate with their athletes in a manner respectful of the occurrence. Similarly, if a coach built a structured TM into their practice plan, it would require knowledge of their athletes' abilities and developmental needs. Artfully addressing TMs with athletes should be considered a mark of an effective coach. For coach developers, providing practical examples of effective TMs can be beneficial for demonstrating qualities of expert coaches. This can aid less-experienced coaches become more knowledgeable about TMs and provide exposure to strategies to manage the contextual elements of their sport to enhance athlete learning.

Contextual factors play an important role in how TMs occur (Seals, 2019). When TMs occur in sport, contextual factors such as being in-season or off-season will impact on the nature of TMs, and how coaches engage their athletes. During off-season, there is generally less pressure and fewer scheduling demands, versus in-season, where practices and competitions place greater demands on the attention of both coaches and athletes (Haff, 2016). Off-season is commonly devoted to technical and tactical skills and overall athletic development (Haff, 2016). When coaches are planning for skill-development, structured TMs could be more prominent, as can be seen in the first vignette. As well, the content of TMs in the off-season could be different than TMs in-season. TMs in-season may be more organic, and address topics related to competition, and life in general.

Similarly, the sport context must be considered in relation to the application of TMs. Coaches working in university sport tend to overestimate their role in reference to their athletes'

development (Rathwell & Young, 2018). Athletes who are entering emerging adulthood, such as those in university sport, have more agency than young athletes in PYD contexts, and perceive a higher degree of self-influence regarding their development (Rathwell & Young, 2017). The agency of athletes is an important factor in how coaches facilitate and/or create TMs in university sport, as the effectiveness of a TM could rest on the athletes' willingness to buy-in to the moment. Knowledge of the content of TMs at different phases of training could lead to the more refined implementation of TMs to maximise the value of potential learning for athletes. Furthermore, coaches can hone their awareness of the importance of collaborating with their athletes in TMs, and become cognizant of their athletes' agency, thereby serving as a means to empower that agency.

Conclusions

This study provided insight into different forms of TMs that are used by university sport coaches at a Canadian university. Within the parameters of this master's thesis, we focused on interviewing coaches to gain insight into their perception and practice of teachable moments. When examining how university sport coaches used TMs in the development of their athletes, we expanded our understanding of the different forms of TMs in sport context. Structured TMs are planned and/or more predictable, providing coaches with a higher degree of control of the occurrence. Organic TMs are unplanned and/or naturally occurring, requiring heightened awareness and adaptability on the part of the coach. Uncategorised TMs display a mixture of both structured and organic and cannot be defined by any singular grouping, but serve to inspire further research into the nature and forms of TMs in sport. It is important to clarify that TMs should not be defined by distinct categories, but that they exist along a spectrum, ranging from structured to organic.

In this study, we portrayed practical examples of what different forms of TMs look like in sport, as perceived by coaches. TMs are highlighted in youth sport as benefitting the life skills development of athletes (Bean et al., 2018; Camiré et al., 2012; Turnnidge et al., 2014; Vella et al., 2013) and our study further explored how different forms of TMs may be avenues for athlete development in the university sport context. As demonstrated through vignettes depicting structured, organic, and uncategorized TMs, coaches can address a wide variety of topics, including sport-specific abilities and life-related topics. TMs are intertwined with the individual qualities of coaches and their athletes, and occurrences that may be beneficial for one athlete, may not be so for another. Understanding TMs can provide a tangible method to help coaches gain insight into developing the craft that is coaching, and to create and/or recognise TMs as beneficial for their athletes. This diligence and care on the part of the coach lends credence to the notion that coaching is a form of art (Woodman, 1993).

The role of a coach is to provide athletes with opportunities for holistic development, but it is also important that coaches are provided with developmental opportunities so they can hone their coaching practices. Reflection is an important method of learning for coaches (Gilbert & Trudel, 2001). Reflecting on how TMs occur in sport and the different types of TMs, can unearth areas for coaches to develop themselves; such as their level of awareness regarding potential TMs, the nature of their relationship with their athletes, and the kinds of lessons they are sharing with their athletes. Coach developers might use scenarios and/or videos to uncover TMs and their qualities. Through analysing these qualities, coaches can become more in touch with how they use TMs and identify areas for improvement in practice. TMs, then, can become a tool for coach developers to stimulate coach reflection. Taken together, information such as this can help

coaches become more effective practitioners, and ultimately provide better sport experiences and developmental opportunities for their athletes.

Research limitations are noted. Since TMs are subjective and contextually dependent, future studies could explore how TMs are perceived by athletes or expand the research with a larger, diverse sample of coaches. As well, further empirical research could develop and refine TMs at a theoretical and conceptual level. In turn, this could lead to the eventual design and testing of training modules for coaches who wish to strategically engage with their athletes using TMs.

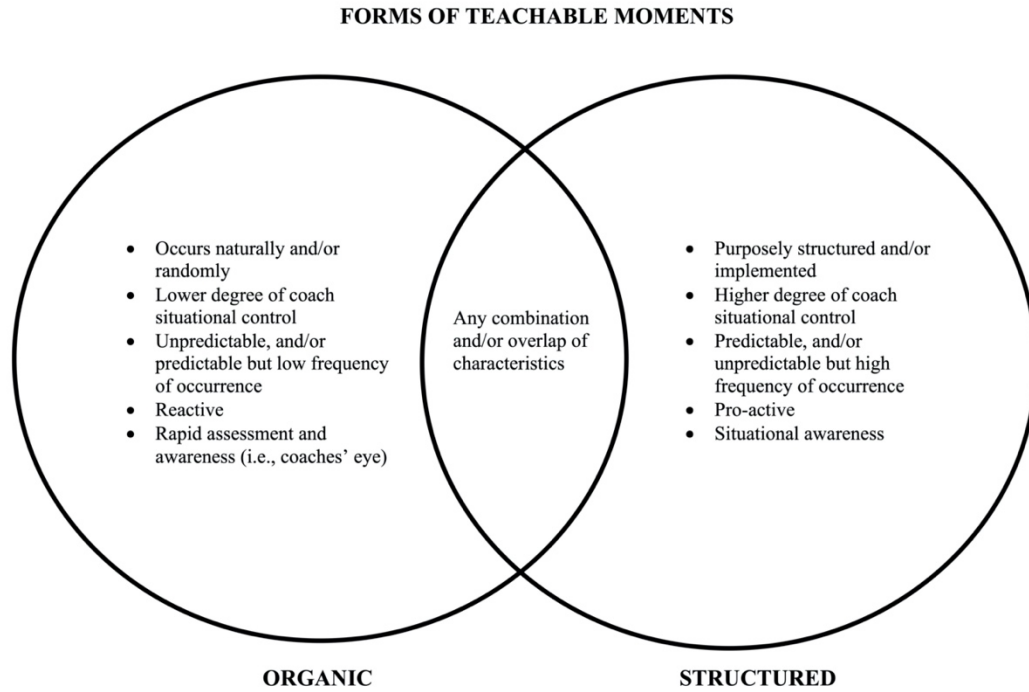


Figure 2. Forms of teachable moments in university sport coaching (Wray, Culver, & O'Connor, 2020).

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General discussion

Overall, the purpose of this masters' thesis was to answer three main research questions: (a) How do university sports coaches understand TMs? (b) What are the experiences that shape a coaches' understanding of TMs? And, (c) How do coaches use TMs for the development of their athletes? These questions were presented in two manuscripts. In the first manuscript, "Teachable moments in university coaching: Exploring a sport coaching catchphrase," we presented a model and discussed how coaches understood TMs, as well as the experiences that may contribute to how a coach comes to understand TMs. In the second manuscript, "Teachable moments: Practical examples from university sport," we provided an overview of three different forms of TMs based on examples of how coaches used TMs with their athletes.

The following discussion addresses the connections between human learning theories and TMs. First, we discuss the social nature of TMs and the meaning attached to social interactions. Following this, we expand upon the role of experience in TMs, and how coaching experience could be a component of coaches' abilities to engage their athletes in TMs. We also discuss expertise in teaching, and how this parallels expertise in coaching. Finally, we explore the communication and content of TMs, and how the articulation of these occurrences may or may not bring meaning into the moment. We conclude by acknowledging the subjectivity of TMs, and their value as a tool for athlete development.

Theories of human learning and teachable moments

TMs are inextricably linked to human experience, and the meaning attached to individual experiences. As noted earlier, Jarvis (2006; 2009) describes learning as a continuous, lifelong journey, wherein an individual learns through the social situations they experience. TMs are social in nature, often arising through the interactions and communications between people.

However, though a social interaction may provide optimal conditions for a TM to occur, there is no guarantee that the people involved in the interaction will view the occurrence as such. It could be argued that any and all social interactions could produce TMs, if meaning is attached to those interactions, and if the interactions occur in a way that promotes meaningful development for the people involved.

Jarvis (2006) explained that it is the cognitive, emotive, and/or practical transformation of human experience that leads to learning, and that the integration of these transformed experiences shapes our biographies. Similarly, Moon (1999) emphasized the importance of personal meaning and its' connection to past experiences. A persons' past experiences guide their present interpretation of occurrences, and this interpretation, along with the meaning attributed to an experience, may or may not cause that person to learn at a deep level (Moon, 2004). Deep learning takes place when someone seeks to fully understand their experiences (Moon, 2004). Considering TMs in the light of transformed experiences and lifelong learning, when people assign meaning to an occurrence and deem it a valuable TM from which they have learned, it will become an underlying lens that filters their future perceptions of TMs.

Assuming that TMs attributed a high value of meaning will play a greater role in how an individual interprets their present, this will influence the TMs that a person may recognize and/or choose to address. This continuous filtering and integration of TMs into ones' biography could cause TMs over the course of a lifetime to become cyclical and reliant on past TMs, as well as shaping the way they may engage in TMs with other people through their social interactions. Since biography is the sum total of ones' experiences and is subjective (Jarvis, 2006), the occurrences that one views as TMs throughout their lifetime could serve to illustrate and summarise the life lessons of that individual. Thus, TMs become a form of sharing the human

life story, raising questions about TMs being passed down amongst generations of people. We will not discuss the potentially generational nature of TMs here, as much more in-depth and conclusive research is required before such a feat can be attempted.

Experience and teachable moments

Within healthcare and education domains, instructors are encouraged to develop their ability to identify and facilitate teachable moments with their learners. For example, successful clinical instructors in nursing are deemed as those who can recognize and respond to the learning needs of their students, integrating TMs to promote the learning of their students (Chinai et al., 2018). Similarly, effective teachers are those whom provide positive learning experiences for students by purposefully adapting TMs to maximize learning for their students (Cheong Cheng & Tung Tsui, 1996; Willman, 2009). Both of these examples denote the element of success and/or effectiveness of practice. Berliner (2001) states that extensive deliberate practice is required to become a highly effective teacher. However, expertise is oftentimes viewed as a human characteristic, when in fact it is the interaction of a person and their environment (Rich, 1993). Acquiring experience in a particular context does not necessitate the development of expertise (Berliner, 2001). Taken together, one could assume that instructors who become well-practiced at integrating TMs would be successful as practitioners.

Fenstermacher and Richardson (2005) distinguish between ‘successful’ and ‘good’ teaching, where successful teaching is about whether the intended learnings are achieved or not (the what of teaching); and good teaching is judged by norms for professional behaviour and standards applied to the tasks of teaching (the how of teaching). Expert teachers are opportunistic and flexible in their teaching, sensitive to the social situations where they work, and can perceive meaningful patterns in the domains where they are most experienced (Berliner, 2001). Thus,

expertise in teaching could be summarized as a balance of ‘successful’ and ‘good’ (Berliner, 2001), and we can add that effective teachers can engage their students in TMs (Seals, 2019).

Teaching and coaching involve developing students and athletes, respectively. In sport, the years of coaching experience is often denoted as one mark of expertise and/or effectiveness as a coach (Nash & Collins, 2006). Coté and Gilbert (2009) coined coaching effectiveness as “the consistent application of integrated professional, interpersonal, and intrapersonal knowledge to improve athletes’ competence, confidence, connection, and character in a specific coaching context” (p. 316). Mere years of experience does not guarantee coaching effectiveness (Coté & Gilbert, 2009). In terms of coach development, one might consider how a coach can learn to effectively use teachable moments as a learning strategy? A coach with extensive years of experience but without the necessary exposure and/or practice of how to integrate TMs may not possess the capability to effectively engage their athletes in these moments.

TMs require that coaches apply professional, interpersonal, and intrapersonal knowledge, while developing athletes. The effective use of TMs requires that the coach understands the technical and tactical aspects of their sport (professional knowledge), develops strong coach-athlete relationships based on excellent communication (interpersonal knowledge), and engages in reflection leading to the awareness to pick up on potential TMs (intrapersonal knowledge). Despite a coach having extensive years of coaching experience; their cumulative past experiences, coaching philosophy, coaching approaches, and relationships with athletes all play an important role in determining how they understand and use TMs. The challenge is to engender the development of optimal conditions through which coaches can master the creation and/or facilitation of TMs, while still recognizing the individuality of how coaches come to understand TMs.

Despite traditional coach education focusing on professional knowledge (e.g., skills and drills), over the last few decades coach education researchers have begun to focus on the interpersonal (e.g., Culver & Trudel, 2000; Jowett, 2007) and intrapersonal (e.g., Gilbert & Trudel, 2001; Cushion, 2018; Peel et al., 2013). Continued research into how these types of knowledge are best developed is warranted. For example, in education, Dalton (2010) noted that teachers must have a mindset to use every circumstance as an opportunity to impart lessons to their students, similar to one of our most experienced coach participants (Coach 2) who highlighted that every moment can be a TM. Research could examine how that type of mindset, related to intrapersonal knowledge, can be nurtured. It might be that the manner in which coaches skillfully engage in TMs with athletes could become a new mark for understanding coaching effectiveness.

Teachers are held to curricular standards, and oftentimes face the challenge of meeting curricular objectives at the cost of bypassing potentially valuable TMs that are unrelated to the curriculum (Seals, 2019). The difference between educational environments and sport contexts is the presence of a curriculum. Teachers follow a curriculum that provides a guideline for topics of study and learning objectives. Although some sporting contexts may require coaches to follow a form of contextually based guidelines, coaching is not commonly considered a curriculum-based profession. It is the responsibility of the coach to set the developmental objectives for their athletes, and to decide the pathway to meet these objectives. Recently, models of athlete development (e.g., Long Term Athlete Development, Canadian Sport for Life Society, 2016) were created to provide a framework for athlete development. Notwithstanding, coaches are rarely provided with precise prescriptions for their practices (e.g., Gilbert & Trudel, 2001). Coaches need to identify and grasp the developmental needs of their athletes, and weave

meaning into how they interact with their athletes. This is not to say that employing TMs in one profession is more challenging than another, but to recognize and acknowledge the importance of a contextual understanding of TMs, and need for insight specific to various domains of practice.

Content and communication of teachable moments

As previously discussed, TMs provide coaches with the opportunity to address a wide array of topics with their athletes. These issues may be sport related, as well as topics that may benefit athletes in their lives outside of sport. In the domain of PYD, naturally occurring TMs are described in relation to the development of life skills in young athletes (Bean & Forneris, 2017; Bean et al., 2018; Camiré et al., 2012; Vella, et al., 2013a). In the current study, we expanded our knowledge of the content of TMs, based on what coaches encountered in their daily practices. Our research findings shed light on how varsity coaches used teachable moments to discuss sport specific issues, competitive strategies, as well as issues that resonated with athletes outside of sport. TMs on sport-related abilities included specific tactical skills, competitive strategies of play, technical skills and drills, and physical fitness. TMs for life outside of sport included topics such as relationships, emotions, nutrition, career and/or educational challenges, amongst other things. Aside from content, the style of delivery of TMs must also be addressed, as the topics of the TM could be related to the delivery and style of communication used by the coach.

Communication represents one of our proposed supporting conditions for TMs. It is also considered to be a feature of highly successful coaches (Bloom, 1996). Coaching does not occur in isolation, and the effectiveness of a coaches' work depends on their individual and group interactions (Côté & Gilbert, 2009). Interpersonal knowledge, one of three types of coaching knowledge considered important to achieving coaching expertise, allows coaches to communicate in an appropriate manner with their athletes and other people (Côté & Gilbert,

2009). As well, coaches with interpersonal knowledge can relate to their different athletes within their particular social contexts (Côté & Gilbert, 2009). These interactions drive the relationship between coaches and athletes and are paramount for success as a coach and for the overall development of athletes, as well as whether they may learn from TMs facilitated by the coach (Smoll & Smith, 2002).

Jowett (2007) proposed that the quality of coach-athlete relationships is determined by the closeness, commitment to the relationship, complementarity, and co-orientation between coaches and athletes. Closeness refers to mutual feelings of trust and respect, commitment to the relationship involves coaches and athlete's long-term orientation towards a relationship, complementarity is the cooperation between coaches and athletes, and co-orientation is the alignment towards similar goals (Jowett, 2007). When these qualities are present, coaches and athletes are interdependent (Jowett, 2007) and this relationship can serve to promote an optimal learning environment for athletes (Smith, 2010). Coaches develop interpersonal relationships through communication and can engage their athletes in TMs via their communicative abilities. As coaches build relationships with their athletes, they can promote an optimal learning environment and the relationship becomes a critical foundation for communication.

The tone of delivery and/or the communication style of a TM could be in a constant state of flux, depending on the content of the TM. What we mean by this, is that how a coach addresses TMs with their athletes changes in relation to contextual factors. The coaches' ability to tailor their communication to appropriately match the context surrounding the TM could play a role in whether athletes views the TM as a valuable experience. In coaching, tone, and even silence, are described as having psychological meaning conveyed by a coaches' interactive behaviour with athletes (Culver & Trudel, 2000; Erickson & Côté, 2015). Qualities of tone are an

important component of interpersonal communication, and the resulting effects of a coaches' interactions with their athletes is influenced by the psychological meaning conveyed to athletes (Horn, 2009). As such, the tone of a TM could determine whether or not it actually benefits the athletes. Coaches must understand how to effectively communicate with their individual athletes and adapt their communication to appropriately convey the meaning of a TM to their athletes.

We must remember that the meaning of a TM can be subjective, and dependent on the perceptions of the people involved (Moon, 2004). Coaches and athletes may hold different views of the same occurrence deemed to be a TM by the coach. It seems then, that TMs could be viewed in both a positive light and/or a negative light. Coaches possess the ability to discipline and/or punish their athletes, and knowledge of how to appropriately manage this ability is an important part of the role of a coach (Seifried, 2008).

Though there is often a negative connotation associated with discipline and/or punishment in sport (Seifried, 2008; 2010), in some instances, disciplinary occurrences may present as TMs. For example, a coach could view a disciplinary occurrence as a beneficial TM for their athletes, as seen in the example of the athlete who forgot their jersey and was, according to the team rules, not allowed to play (Coach 2), whereas the athletes could view the occurrence as a negative event and may or may not learn from it. The openness and willingness of the athlete to engage in a TM ultimately determines whether, and what, they will learn. When coaches are effective communicators and establish a close relationship with their athletes, negative moments can serve an educational purpose, and athletes would be more inclined to view negative occurrences as TMs.

In sum, most of our understanding of TMs is based on how they are applied to young athletes and the development of life skills (Bean & Forneris, 2017; Bean et al., 2018; Camiré et

al., 2011; Camiré et al., 2012; Gould & Voelker, 2012; Vella, et al., 2013a). Although we must acknowledge the differences between the contexts of PYD and university sport (e.g., mainly in the level of agency of athletes), TMs can also serve similar life skills developmental purposes at other levels of sport. At the university level, if coaches have an understanding of how to create TMs, they can wield many aspects of sport to encourage their athletes to develop valuable life skills. For example, retirement from university sport presents a challenging time for athletes and coaches could use the end of an athletes' career as a TM for resiliency and transitional skills. (Jewett, Kerr, & Tamminen, 2019). Negative events such as bullying (Mishna, Kerr, McInroy, & MacPherson, 2019) could also be addressed as TMs to instill awareness of healthy relationships and humanity. Numerous occurrences could have the potential to enhance athletes' development, across all levels and contexts of sport. One consistency is the importance of the coach as orchestrator (Wallace & Jones, 2006) in creating and/or recognizing and effectively engaging their athletes in TMs. As such, it is important to build our knowledge of TMs across diverse sport contexts, and from a wide range of perspectives.

Practical implications: Why care about teachable moments?

Thus far, we provided insight into the conceptual nature of TMs specific to a university varsity sport context and situated within the research literature. Below, we briefly summarize the main 'takeaways' from our findings. This list is not exhaustive but serves as a succinct guide for readers to gain a general overview of our findings on teachable moments.

- **WHAT:** TMs are occurrences that can be used to provide athletes with potential learning opportunities. Some TMs happen organically as a product of the environment, and others can happen through careful structure, planning, and intention. TMs could be the result of

both positive and/or negative occurrences. The main determinant of TMs is whether both the coach and athlete can engage in the moment to find meaning and connection.

- **WHEN:** Realistically, the occurrence of relies on the coach and athlete. Any event can serve to function as a TM, if the people involved are committed to creating and/or seeing the potential lessons and thinking of how they can use these lessons to grow and change
- **WHY:** TMs are synonymous with opportunity. Whether organic or structured, TMs allow time and space to equip athletes with further skills and the potential to increase their knowledge, whether that be life or sport specific. TMs can be reciprocal; coaches can learn just as much in the moment as athletes, if they possess the consciousness and are pro-active to learn.
- **HOW:** TMs are at their best when the relational foundation between coach and athlete is based on trust and vulnerability, and time is put into developing and maintaining this relationship. Coaches should have a deep understanding of their athletes' needs and things that are relevant to the athlete. As well, coaches should be aware of their role in creating and/or recognizing TMs, which fosters a pro-active approach to facilitating athlete learning. The purpose of the TM should be communicated with clarity, in a way that allows athletes to understand and connect with the intended lesson. After a TM, reflecting on the occurrence can 'drive home' any potential lessons, or create new lessons.

This brief bullet summary provides a capsule message to convey key findings to readers and coach practitioners. As we endeavour to expand our knowledge-sharing and discussions, these takeaway points can generate further reflection among coaches on how to integrate TMs with their athletes, and encourage conversation about the roles of both coaches and athletes in the

collaborative effort to generate learning opportunities. Ultimately, TMs should be used by coach developers as a method to inspire innovation, reflection, and connection in coaching practice.

Limitations and future recommendations

This research revealed future areas of study upon which to expand our knowledge of TMs. Our research aimed to investigate the concept of TMs in sport coaching, and explore how TMs may provide future interventional potential for coaches and athletes. How our preliminary model, the Teachable Moments in Coaching Model, stands up across various sample populations should be investigated. In doing so, we can generate a depth of data that may support and/or extend the understanding of TMs presented in this study. As well, it can provide additional insight into how TMs could become an instrument to enhance coaching practices and how we can train coaches to make the most of TMs.

Though our study was limited, there are a number of areas of interest that should be investigated in the future. First, our sample population consisted of university coaches within one post-secondary institution, thus the data is not generalizable to all coaches. In future studies, a wide range of populations (e.g., athletes, sport officials and administrators, support staff, parents), from diverse sport contexts (e.g., youth sport, para-sport, high performance sport) should be included, to identify any discrepancies of how TMs are viewed by different stakeholders across these sport contexts. Similarly, since our study relied on self-report measures for the online TM recalls, it would be beneficial to generate data involving the collaborative reporting of TMs, or methods of observation and discussion (e.g., focus groups, partner interviews). This could lead to discussion of perceptual and experiential differences of TMs. The TM recalls used in the data collection of this study were original in their design and implementation. The recalls afforded a simple, effective tool to document TMs through the

perspective of coaches. However, future attempts to emulate this data collection design should consider diversifying the format of the TM recalls, and tailoring the delivery options to the preference of the participants (e.g., phone or video-call based TM recalls, hard-copy journal, app-based, or via text-message). Doing so could increase the accountability of coaches and their likelihood of completing a greater number of recalls, as well as encourage more depth in the details ascribed to each TM recall.

Another area for potential future research would be to implement a longitudinal study design. Our study, while extending on the one-shot interview (Culver, Gilbert, & Sparkes, 2012), was short-term. Employing a strategy to study TMs over multiple phases and/or seasons of sport could provide further evidence of the use of TMs, as well as document the forms of TMs that occur more commonly. Data such as this could allow coaches to develop their abilities to plan and create TMs for their athletes, and to implement strategies to maximize the potential learning that could result from these common or re-occurring TMs. Finally, our study provided a general overview of TMs in sport, as well as proposing a preliminary model to begin to theorize and identify TMs. It was beyond the parameters of this thesis project to deeply investigate each component of the model. Future research could examine sub-sections of the model in-depth, to solidify and test the proposed relationships that comprise TMs. We hope that TMs continue to be studied in sport, as there is always a need to continue to refine and develop the available knowledge.

General conclusions

This masters' thesis was completed with the intent to explore university sport coaches' perceptions of TMs. The two manuscripts presented in this thesis respectively discussed how coaches perceive TMs in university sport contexts as well as the experiences that shape the

coaches' perceptions of TMs, and how coaches used TMs in the development of their athletes. The qualities and conditions for TMs were derived from our interpretations of the coaches' descriptions of TMs, and their own experiences with TMs. We proposed that coaching approaches, coach athlete relationships, communication, awareness, and reflection were crucial conditions for the occurrence of TMs, and that the main qualities of TMs were meaning, opportunity, choice, and change. Aside from the core qualities of TMs, we also identified that TMs exist in varying forms, ranging from structured to organic, as well as being uncategorised, where they are flexible and contain a mixture of the qualities of both structured and/or organic. Regardless of the form, coaches can engage their athletes in TMs to try and promote their development. Coaches addressed both sport-specific topics and life-related topics through TMs. Though there is still much work to be done to fully understand TMs in sport contexts, we attempted to conceptualize TMs based on the perceptions of coaches.

TMs are occurrences and/or events, either structured, organic, or somewhere in-between, that present an opportunity to engage athletes in a meaningful and relevant learning experience that may lead to changes within the athlete. The coaches' perception is influential in determining whether a TM is opportune, and coaches are faced with the choice to address TMs with their athletes, although the athlete must also be aware of, and make the choice, to engage in the occurrence. Coaching involves the responsibility of guiding athletes to become better, and TMs provide another cause for potential athlete development. Coaches' approaches to their practice is influenced by their past experiences and coaching philosophies (Cushion et al., 2003). When coaches approach coaching with an athlete-centred view, wherein the development and well-being of the athlete is a priority, they can cultivate relationships with their athletes that are grounded in trust and vulnerability. These relationships provide the foundation for clear

communication between coaches and their athletes, and through ongoing communication and the nurturing of their relationships with athletes, coaches can gain an awareness of the kind of TMs that may be valuable for the development of their athletes. As well, when athletes reflect on TMs, it could stimulate further learning and/or develop deeper meaning connected to the occurrence (Moon, 2004). Coaches have the important role of orchestrating their coaching environment and encouraging and facilitating their athletes' reflection on TMs. This responsibility, along with the intricacies of helping athletes develop in both sport and life, and addressing TMs in a manner that benefits athletes, serve to illustrate the skill and artistry required in being a coach.

The contributions of this masters' thesis are related to the dearth of knowledge regarding TMs in sport contexts. Although TMs are highlighted as beneficial for learning and development, we still do not have a definitive understanding of what comprises TMs, the specific mechanisms underlying the concept, or of the different forms that TMs can take. This thesis makes a dent in this lack of knowledge. As we develop our knowledge of TMs, we can begin to understand how to engage with these occurrences in a manner that is most beneficial for the individuals involved, thus providing greater opportunities for potential learning that is meaningful and individualized.

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Appendices

Appendix A: Recruitment Text

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Letter of Information for Coaches

Project title: An exploration of teachable moments in coach learning: Experience and learning opportunities for coaches

Principal Investigator: Nicole Wray, Master of Arts Candidate, Faculty of Health Sciences, School of Human Kinetics, University of Ottawa,

Supervisors: Dr Diane Culver, Associate Professor, University of Ottawa & Dr. Eileen O'Connor, Associate Professor, University of Ottawa

Hello Coaches,

My name is Nicole Wray and I am a Masters' student at the University of Ottawa in the School of Human Kinetics. You are receiving this letter as an invitation to participate in a study which will investigate teachable moments (TMs) in sport. The goal of this research is to begin to understand TMs as based on the perceptions of sport coaches and to explore the role of TMs in the development and practices of coaching in sport.

As a participant, you will be engaging in a project comprised of two main activities: two interviews and a brief weekly online written component. These activities will take place over the course of approximately eight weeks. As a participant your insights will be integral for gaining a deeper understanding of meaningful learning opportunities for coaches and their athletes, while simultaneously participating in a potential professional development activity.

Your participation in this research is completely voluntary and you may resign from participation at any point during the study, without consequence. We are aiming to recruit 6-10 coaches, from a variety of sports.

The interviews will be conducted at the University of Ottawa. If you are interested in participating in this study and contributing to the field of coach development, please contact me so that we can discuss next steps.

Thank you for your consideration.

Nicole Wray, MA (c)

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Appendix B: Informed Consent

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Consent Form for Varsity Coaches

Project Title: An exploration of teachable moments in coach learning: Experience and learning opportunities for sport coaches

Principal Investigator: Nicole Wray, Master of Arts Candidate, Faculty of Health Sciences, School of Human Kinetics, University of Ottawa

Supervisors: Dr Diane Culver, Associate Professor, University of Ottawa & Dr. Eileen O'Connor, Associate Professor, University of Ottawa

Invitation to participate: I have been invited to participate in a research project conducted by Nicole Wray, BHK, through the School of Human Kinetics at the University of Ottawa. This project is part of a Masters' thesis, under the supervision of Dr. Diane Culver and Dr. Eileen O'Connor

Purpose of study: The purpose of the study is to explore varsity sport coaches' perceptions of teachable moments (TMs) and the role of TMs in the development and practice of coaching in varsity sport.

Participation: My participation in this project will involve a number of activities, consisting of but not limited to: two interviews and between one and eight weekly online recalls. My participation in these activities will take place over approximately eight weeks during the data collection period. I will be audio recorded during my two interviews and will submit weekly written recall notes for up to an eight-week period. I will have access to the recorded and transcribed materials from my individual interviews and the summary of my recalls. The approximate time for each activity is estimated to be 30 to 45 minutes per interview and ten minutes to write weekly recalls. The interviews will take place at an agreed-upon location which is convenient for myself and the primary investigator. The weekly recalls will be completed online through SurveyMonkey.

Assessment of risks: My participation in this study entails very limited foreseeable risks. However, if I experience any discomfort, Nicole Wray has assured me that she will make every effort to minimize this discomfort. I may decide to discontinue my participation at any time without consequence.

Benefits: Teachable moments are recognized in other domains as an important means to enhance learning but are not thoroughly understood in sport contexts. This research aims to explore a sport-based understanding of teachable moments and their relevancy for coach and athlete development. The research findings will contribute to the development of knowledge in the field of coach learning. As a participant, I will be contributing to knowledge on practices in the field of coach development. Through my engagement in discussions and written responses, I will reflect on my career path and role as a coach.

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Privacy of participants: I have received assurance from Nicole Wray, Diane M. Culver, and Eileen O'Connor that the information I share during data collection (i.e., interviews and recalls) will remain strictly confidential. Participants will be asked to maintain confidentiality and anonymity during activities. The identity of participants will be protected through the use of pseudonyms and numerical coding. Any information related to athletes will remain confidential. The content from these interviews will be used for the completion of this project and resulting publications and conference presentations. I understand that the topics discussed during these interviews is to remain confidential.

Confidentiality and conservation of data: I have been assured that the verbal interview recordings and transcripts will be kept in a secure manner in the researchers' office during the research and all recalls will be kept in a password locked encrypted file, on a password locked computer. In ten years, all material data will be shredded and electronic data will be erased. During the retention period, all physical data will be stored in a secure manner in the supervisors' office.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be destroyed.

Acceptance: I, _____ [Name of participant], agree to participate in the above research study conducted by Nicole Wray, in the School of Human Kinetics, at the University of Ottawa.

If I have any questions about the study, I may contact Nicole Wray, Diane M. Culver or Eileen O'Connor.

If I have any questions regarding the ethical conduct of this study, I may contact the Office of Research Ethics and Integrity, University of Ottawa, ~~Tabaret~~ Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5
Tel.: (613) 562-5387, Email: ethics@uottawa.ca

There are two copies of the consent form, one of which is mine to keep.

Participant's name	Signature:	Date:
Researcher's name	Signature:	Date:

Appendix C: Interview #1 Guide

Interview # 1

Date:

Time:

Location:

Demographics:

For purpose of interview, can you state the date, your name and position?

Participant Name:

Position:

Years in Current position:

Section A: Career Path and Coaching Experience

1. What is your current coaching role?
 - a. How many athletes do you work with?
 - b. What are the responsibilities associated with your role?
 - c. Who do you regularly collaborate with?
2. Can you give an overview of your career as a coach?
 - a. How long have you been coaching?
 - b. Can you highlight any specific experiences that stand out as particularly important for getting you to where you currently are? (Describe.)
 - c. What kind of formal education and/or training have you participated in?
 - d. Is there any particular educational and/or training experience that has made a significant impact on your development as a coach? (Describe.)
3. If you could share one thing from your own experiences, what would you share as a lesson that others may learn from?
 - a. Why do you find this to be an important lesson?

Section B: Coaching Philosophy (Values/Style/Purpose)

1. Can you describe your coaching philosophy?
 - a. What do you value as a coach, can you give an example?
 - b. Can you give an example of how you apply your philosophy?
2. How do you think your athletes would describe your coaching style?

Section C: Teachable Moments

1. How do you understand or define a “teachable moment” (TM)? (Give a definition.)
 - a. What qualities do you associate with a TM? (e.g. Describe the setting, how it occurs, what it entails, qualities of the occurrence, how do you know it’s a TM.)
 - b. How did you come to understand TMs in this way?
2. Can you think of any events or experiences that you believe were TMs* in your development as a coach? (*Based on their definition)
3. Can you describe any events that you believe were TMs* that may have contributed to the development of your athletes? (*Based on their definition)
4. In your opinion, what makes these examples TMs?

- a. Do TMs occur in your coaching approaches, or do you use TMs with your athlete?

Section D: Conclusions

1. Is there anything else you would like to share?

Appendix D: Interview #2 Guide

Interview #2

Date:

Time:

Location:

Section A:

1. What was your experience completing the TM recalls?
 - a. Pros
 - b. Cons
 - c. Recommended improvements
2. Thank you for filling them out, I've read the recalls. In your recall on *[insert date]*, you mentioned this event as a TM, can you tell me a little bit more about it?
 - a. Ask about the nature of event, who was involved. (Describe the setting, how it occurred, what it entailed, characteristics of the occurrence.)
 - b. Was this event closely related to your planned activities? (Describe, did they foresee it happening or plan it.)
 - c. What was the specific lesson associated with this event?
 - d. Why was it important?
 - e. Looking back, would you have approached the event differently? *(dependent on what is recorded in recalls.)
 - f. How do you think your athletes may describe this event, or the lesson?
3. In our first interview, this is what you shared with me as your understanding of TMs. After completing this exercise, is there anything you would like to add or change? *[Each participant will be provided a colored card with their definition of a TM on it.]*
 - a. If added/changed definition, why? OR If not added/changed, why?
 - b. Will your.../ How will your (current) understanding of TMs influence your future approaches to the development of your athletes?

Section B: Conclusions

1. Is there anything else you would like to share?

Appendix E: Online TM Recall Form

Teachable Moments Weekly Recall

Please take this opportunity to record any memorable teachable moments that may have occurred with your athletes this week.

1. First and Last Name

2. Date & Time: When did this occur? (Date & approx. time: e.g. Jan 1st, 2020, mid-morning.)

3. Location: Where did this occur? Was this during practice, competition, or another relevant situation?

4. Training Phase: What phase of your annual training plan (e.g. pre-competition, competition, transition, etc.)

5. Please describe the teachable moment. Include details such as who was involved, what happened, and how it occurred.

6. Why was this a teachable moment?

7. What were the main takeaways or lessons?

8. Was this teachable moment related to your planned activities? Please describe. Include details such as whether it was a purposeful event or not, how this was or was not related to your planned activities.

9. Any other important details related to the teachable moment?

Appendix F: Ethics Approval

26/11/2019

Université d'Ottawa

Bureau d'éthique et d'intégrité de la recherche

University of Ottawa

Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

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