What you think – What you do – What you get?

Exploring the link between Epistemology and PJDM in Cricket coaches

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Abstract

Decision making in elite sport has long been of interest, however only recently has the decision making process of coaches gained an increase in attention. Whilst a number of decision making models have been proposed, it still remains unclear as to how a number of these models may actually interact with one another as opposed to them being individual, discrete and isolated elements. This review is rooted within Cricket, given the idiosyncratic nature of the sport and the unique challenges faced by coaches within it. As a result, the review examines the existing literature around professional judgement and decision making (PJDM) and how this may be applied specifically to coaching in cricket. Secondly, we consider the integration of PJDM principles with coaches' epistemology and the epistemological chain. Finally, against this theoretical backdrop, we offer some implications for current practice and future research in this demonstrably important and complex area.

Keywords: Decision making, Epistemology, PJDM, Cricket

The area of decision making (DM) has been studied in a wide range of contexts, although clear guidelines on how the process may consistently be optimised have proved elusive. As Kahneman and Klein (2009) identified; "the intuitive judgments of some professionals are impressively skilled, while the judgments of other professionals are remarkably flawed" (p. 518). Accordingly, the underpinning reasons as to 'why' a particular decision has been taken are of great interest. Investigation has spanned areas such as business (Baker, 1981; Geva, 2000; Kourdi, 2003), medicine and nursing (Lopez, 2009; McLemore, Kools & Levi, 2015; Pattison, O'Gara & Wigmore, 2015) and sport (Abraham & Collins, 2011; Muir, Morgan, Abraham & Morley, 2011; Richards, Collins & Mascarenhas, 2009), reflecting the statement by Smith, Shanteau and Johnson (2004) that "sound judgment and decision making are the crux of many professions" (p.4)

In seeking to improve DM, a number of perspectives have been proposed; for example, naturalistic decision making (Chase & Simon, 1973; deGroot, 1946, 1978) and Heuristics and Bias (Goldberg, 1970; Meehl, 1954), to try and explain how perceived experts in various domains make decisions. Most recently, however, at least in coaching, the focus has turned to two alternative but interlocked perspectives. Firstly the ideological and over-arching philosophical positioning of practitioners known as 'epistemology'. This is compared with the more micro- and meso-level DM process identified as professional judgement and decision making (PJDM).

This review is concerned with the DM of sports coaches and, more specifically, those working within cricket. As with many sports, DM (of both players and coaches) is of significant interest, especially when the constraints of the sport are considered. Unlike numerous other sports, cricket presents many unique challenges in relation to playing and training for the game for those involved; for example.

- With three different formats of the game existing, ranging from matches that last from 3 hours to five days outcomes, strategies and practice routines required by coaches and players for the various formats are all significantly different.
- Unlike most team sports, the coach has limited access to players when they are performing in competition. In a five-day match, for example, it is the captain that is responsible for making bowling changes, manoeuvring the field and developing tactics. This merits comparison to the team sports of football and rugby, where it is often the coach who instigates changes on the field of play. Other team sports enable this coach centric approach to an even greater degree, with time outs and substitutions enabling an ever greater potential dominance of on-field DM.
- At the international level, the playing conditions in which matches take place can be significantly different, based on the county in which games are taking place. For example, fast and bouncy pitches in Australia verses slow and turning pitches in India and Sri Lanka.
- Cricket is a seasonal, outdoor sport played on vast grass areas with diameters reaching up to 150m (WADSR, 2015). In contrast, training and practice sessions during the off-season are forced to take place in indoor facilities which severely restrict the type and fidelity of practices available to coaches and players.

Against these significant challenges, it is interesting here to note previous work on DM in cricket by Cotterill (2004), which describes;

> Cricket is a game where decision-making is of paramount importance. For each discrete passage of play (ball that is bowled) the batter needs to make a decision about the shot that is going to be played, the bowler needs to make a decision about the type of ball that is going to be bowled, the wicket keeper needs to decide where to stand, and the captain needs to make decisions regarding the positions of the fielders. As a

> result, effective decision-making is a crucial component of performance, and one of the key factors that distinguishes expert compared to novice players. (p. 89)

What is not mentioned within the above passage are the complexities faced by the cricket coaches as to the most effective way to prepare both individuals and groups of players as teams, ready for optimum performance. Given the challenges already identified and the previous work of Epstein and Hudert (2002), expertise in DM is characterised by "the ability to solve ambiguous problems, tolerate uncertainty, and make decisions with limited information'' (p. 227) interest in the DM of coaches becomes clear. As a result, this purpose of this paper is threefold. Firstly, to review the existing literature around PJDM and how this may be applied specifically to coaching in cricket. Secondly, we consider the integration of PJDM principles with coaches' epistemology. Finally, and against this theoretical backdrop, we offer some implications for current practice and future research in this demonstrably important and complex area.

Professional Judgement and Decision Making (PJDM) in sport – What do we know?

Research into PJDM has received substantial attention in the past half century in a range of fields including medicine, law, economics, political science, cognitive science, psychology, teaching, artificial intelligence, and the military forces (e.g., Evetts, 2001; Husted & Husted,1995; Simon, 1986). Only recently, however, has attention turned to the field of sport and, more specifically, a range of practitioners including sports psychologists and coaches (Collins & Collins, 2015; Martindale & Collins, 2007). Existing research has often focused on isolated and discrete areas of knowledge in an attempt to understand and explain the underlying decision making process of practitioners. These areas of knowledge have been heavily researched and include but are not limited to; sports psychology, exercise physiology

plus strength and conditioning, motor control, sports specific, pedagogic, social, political, inter- and intra-personal (Abraham & Collins, 2011; Abraham, Collins & Martindale, 2006). However, PJDM should not be considered as an application of a single area of knowledge at a given point in time but rather, as the means through which decisions are reached on the particular combination or blend of knowledge most suited to the immediate and longer term context, together with decisions on how this might best be applied.

It is becoming increasingly recognized that professional practice, at least in fields where humans are concerned, is characterized by complexity, uncertainty and unpredictability to which practitioners are required to exercise their judgment and wisdom (Coles, 2006). In a more applied sense, it has been suggested that professional practice is largely a series of decisions in terms of assessing which issues require attention, setting goals, finding or designing suitable courses of action, and evaluating and choosing among alternative actions (Simon, 1986). This is supported by the work of Carr, (1995) who identifies;

> Professional action is not 'right' action in the sense that it has been proved to be correct. It is 'right' action because it is reasoned action that can be defended discursively in argument and justified as morally appropriate to the particular circumstances in which it was taken. (p.71)

To briefly revisit the existing literature around DM, it has been proposed that there are two main ways in which decisions are reached; either classical decision making (CDM) or naturalistic decision making (NDM). CDM is where decisions are made as a result of careful consideration and a 'weighing up' of options (Abraham & Collins, 2011; Edwards, 1954). NDM, by contrast, is where decisions are made very quickly (often on the spot) as a result of previous experience(s) (Klein, 1998). Both CDM and NDM are valuable tools for decision makers in order to effectively "deal with uncertainty by weighing alternatives and taking

creative risks" (Conly, 1988 p.397) whilst at the same time being aware of the expectations (context, norms, etc.), goals and others that they are working alongside (adapted from Conly, 1988).

A practical example of NDM comes from recent research done in the field of adventure sports coaching with coaches having to make on-going, in-session decisions based on ever changing and potentially dangerous environments and changes in the perceived competence of often novice participants involved (Collins & Collins, 2015). In such dynamic and complex environments, the distinction between novice and expert decision makers becomes more apparent. Novice practitioners – at the early stages of development- are often still involved in the reproduction of behaviours (e.g. those that they have seen used before by perceived 'experts' or those they have been exposed to as one time performers) and make decisions based on what they have seen, without being critical or questioning the reasons as to why. Novice coaches also adopt those behaviours they have been encouraged to use by the coach development qualifications they have taken part in (Collins, Burke, Martindale & Cruickshank, 2015) and are also known to make decisions based on assumptions and deeply held beliefs of which they may not always be aware (Strean, Senecal, Howlett & Burgess,1997). Novice coaches' decisions are also often guided at the simplest level by micro-policies and procedures (Schempp, McCullick & Mason, 2009), as opposed to the individualised, long-term needs and wants of those involved.

In contrast, more expert decision makers are involved in a 'higher' level of thinking which often involves the selection (and de-selection) of solutions from competing ideas (Abraham et al., 2006). This is from both a top-down (i.e. constant application of long-term planning and objectives or 'Nestedness' - Abraham & Collins, 2011) and bottom-up approach (i.e. working in the moment in relation to the long term goals - Martindale & Collins, 2012). To continue, expert decision makers are able to select the best option available whilst dealing

with uncertainly, taking risks and weighing up options which are specific to the demands of the environment in which they are working (Conley, 1988). That said, it would appear that it is not simply personalised choices that practitioners are making and that decisions are often influenced by a range of factors, including tradition and culture. For example the work of Lave and Wenger (1991) around communities of practice (CoP) outlined that individuals have to 'absorb and be absorbed' in order to be welcomed into their CoP. Indeed, it could be argued then that any profession is influenced by social, historical and ideological constraints.

PJDM – 'Intention for Impact'

The ways in which coaches and participants build their relationships and how they work (together) moving forwards are largely influenced by theoretical and philosophical stances of the coach (Shertzer & Stone, 1968; Weiss, 1991). Accordingly, PJDM is incorporated into each level (micro-, meso- and macro) of the coaching process. For example, programme aims (macro) are designed and then rolled out through block coaching plans (meso) and specific behaviours within sessions, utilised by the coach during interactions with players (micro) (Thorburn & Collins, 2003). Whilst these interactions can be planned, coaches also have to reflect these choices and decisions in reactive and ad-hoc, real world interactions with players and colleagues (i.e. the 'action present', Schón, 1991 - adapted from Griffey & Housner, 1991).

Intentions represent the rationale for selecting a specific behavior, response mode, technique, or intervention to use with a client at a given moment. In a sport psychology context, the "intention for impact" (literally, what are my intended outcomes?) is regarded as the primary step in the design and application of an effective intervention (Hill & O'Grady, 1985). In previous work with therapists, researchers produced a 'Therapist Intentions List' which included 9 clusters; i) set limits ii) assess iii) support iv) educate v) explore vi) re-structure vii) change viii) relationship ix) miscellaneous (Hill & O'Grady, 1985; Hill et al.,

1988). Clearly, these intentions are formed around the 'nature of the goal' and the 'nature of the relationship' required (Collins & Martindale, 2005). A practical example of this comes in the form of work with an elite Judo player (Martindale & Collins, 2002). The study set out to explore a sport psychologist's PJDM, with the nature of the psychologist's goal and relationship with the athlete being performance orientated. Initially, and as an ongoing macro (higher order) goal, the intention for impact was based around encouraging the athlete to become increasingly self-sufficient and independent. However, the athlete in the study suffered a serious knee injury and, due to the change in the nature of the goal (i.e. rehabilitation as opposed to performance), different meso- and micro- intentions for impact were adapted (e.g. accepting the harsh reality) but maintained in line with the macro-level aim of developing self-sufficiency and independence.

Evaluating the effectiveness of PJDM

Reflection has been suggested to be beneficial by assisting practitioners in making sense of their experiences, managing the self, and increasing personal and professional effectiveness (Anderson, Knowles & Gilbourne, 2004). Practitioners might be familiar with why, when, and how they should reflect but there is not a lot of information on "exactly *what* about their practices they should be reflecting on and against *which criteria,* in order for them to find evidence of their effectiveness" (Martindale & Collins, 2007, p. 462). Effectiveness indicators within psychology are reported as being; i) quality of support ii) psychological skill and well-being iii) athletes' responses to the support iv) performance (Anderson, Miles, Mahoney & Robinson, 2002). In the context of this paper, research within coaching practice has suggested that areas to evaluate against could be; player engagement, practice structure, coach behaviours and session objectives (Muir, 2012) against over-arching programme aims (e.g. constructive alignment - Biggs, 2003). More broadly speaking, a definition of coaching effectiveness and expertise has been put forward as; "the consistent application of integrated

professional, interpersonal, and intrapersonal knowledge to improve athletes' competence, confidence, connection and character in specific coaching contexts." (Cote & Gilbert, 2009 p.316). Accordingly, and reflecting the idiosyncratic nature of coaching, those evaluating PJDM (whether it be the coach themselves or others) must focus on the individual and contextual nature of professional decision making (Reagan, Case, Case & Freiberg,1993) as opposed to more generic and standardised features.

What lies behind coaches PJDM? – Epistemology

It is important here to delve deeper beneath the surface and unpack 'how' and 'why' PJDM takes place. Whether classical or naturalistic, decisions are often made as a result of an individuals' philosophy – more specifically, their epistemological beliefs. A coaching philosophy is a set of beliefs and principles that guide your behaviour. It helps you remain true to your values while handling the hundreds of choices you must make as a coach (Burton & Raedeke, 2008) and can also help coaches clarify motives and provide direction to their coaching whilst addressing what uniquely valuable contribution they might make as a coach (Kretchmar, 1994).

The underpinning of a philosophy is an individuals' epistemological stance. Epistemology is the branch of philosophy concerned with the nature and scope of knowledge. It is concerned with answering the questions of what is knowledge, how is it acquired, and how we know what we know (Grecic & Collins, 2013). Epistemology is said to develop as a result of home and educational life (Anderson, 1984) and is important because it is fundamental to how we think, perceive, value and learn about knowledge (Perry, 1981). Research has shown that epistemological beliefs can provide a basis for understanding how individuals use their specialist knowledge areas within practice. A relevant example within the present context is how this impacts teachers' professional practice (Arredondo &

Rucinski, 1996; Berthelsen, Brownlee & Boutton-Lewis, 2002). As a result, these philosophical viewpoints (should) influence and direct the reflective practice that is crucial in the PJDM process (Grecic & Collins, 2013).

Epistemological Views

Early work around epistemological beliefs by Perry (1968) plotted epistemological development on a continuum with two extreme ends – naïve and sophisticated. A person who holds a naïve epistemology generally believes that knowledge is simple, clear, and specific and that knowledge is handed down from authority rather than developed from reason. A naïve epistemology is also based on the premise that knowledge is certain and unchanging. Finally, a naïve epistemological stance is based on the premise that concepts are learned quickly or not at all, and that your ability to learn something is innate and fixed rather than acquired and developed (Grecic & Collins, 2013). In comparison, a person who holds a sophisticated epistemology believes that knowledge is complex, uncertain, and tentative; that knowledge can be learned gradually through reasoning processes and can be self-constructed by the learner (Howard, McGee, Schwartz, & Purcell, 2000). Table 1 outlines an individual's beliefs about knowledge according to Perry's (1968) 'positions'. It is worth noting here the deliberate use of the term 'positions'. Perry's (1968) work suggests that people can change positions at will, moving back and forth from position to position, whilst also being able to hold differing positions in differing contexts.

Perry's research (1968, 1970, 1981) and, more recently, the work of Entwistle and Petersen (2004) was based upon students' conceptions of learning and knowledge within higher education. As the research developed, four key stages were identified as to how students viewed learning and knowledge; i) Dualism – knowledge is either right or wrong. Black or White. ii) Multiplicity – there are a number of ways of looking at the same situation. iii) Relativism – there are a number of possible conclusions to the same situation based on

using objective evidence. iv) Committed Relativism – a personal stance is formed on given situations with an acceptance that all knowledge and ideas are ultimately relative. To summarise, Perry's work suggests that as students enter the world of higher education, they assume knowledge is simple and can be passed down. Consider this student response for example; "when I went to my first lecture, what the man said was just like God's word, you know. I believed everything he said because he was a professor, and he's a Harvard professor, and this was, this was a respected position" (Perry, 1968, p. 18). As educational life continues, however, it is assumed that students' epistemological views are challenged as they are faced with more dynamic and complex material within their classes. For example;

> There was one thing I expected – I expected that when I got to Harvard…I came up here expecting Harvard would teach me one universal truth…took me quite a while to figure out…that if I was going for a universal truth or something to believe in, it had to come within me
>
> (Perry, 1968, p. 38)

A development of this work in the form of the 'Reflective Judgement Model' was proposed by Kitchener & King (1981) (See Table 2). Similarly to Perry's work, this model's main focus is around intellectual development, with a special focus on how people deal with ill-structured problems (Schommer, 1994, p. 296). Similarities clearly exist between the two approaches, with both authors identifying that, towards the latter positions/stages, there are multiple perspectives and a lack of objectivity. The main difference appears to be the appreciation shown by Kitchener and King (1981) for the individual as part of the existence of knowledge and incorporation of the individuals' time and space (i.e. their reality).Practical examples of this work in sports coaching are available from the existing literature. Firstly, to draw the attention to the naïve vs. sophisticated sports coach. Grecic and Collins (2013)

outlined the possible epistemological chain (EC) of both naïve and sophisticated golf coaches in areas such as 'environment created', 'relationship built' and 'goal setting' (Table 3). This work is supported by the research of Becker (2009) who explored athletes' experiences of 'great coaching'. Participants in this study commented on both the environment created, suggesting their coaches were approachable; "You never felt like you were stepping over a boundary if you were to walk into their office and ask them a question" (p.103). Becker (2009) also identified that, for the most part, participants in the study were also able to build 'strong' and 'lasting' professional and personal relationships with their coaches, a theme that also identified in the work of Diffenbach, Gould and Moffett (1999) who outlined that good coach-athlete relationships are "characterized by mutual trust, confidence in each other's ability, good communication (especially good listening skills) and a sense of collaboration or working together" (p.2).

A practical summary of both Perry's (1968, 1970, 1981) and Kitchener and King's (1981) work on individuals' beliefs about knowledge is found in the work of Abraham, Collins & Martindale (2006). The following quote from a coach-participant in their study succinctly demonstrates a coach who has progressed into the stage of (committed) relativism:

> All the other -ologies and -isms and all the rest of it, well my personal view is that you need to have as broad a background as you can and have a broad range of knowledge. It's very rare that you push a button that says psychology or you push a button that says physiology or technical. Everything that you do has an implication psychologically or physiologically or whatever and you need to know how things work, the ''what ifs'', so if you press that button what happens to that, what happens to that? (p558-559)

Epistemology in Practice – The Epistemological Chain

Whilst Epistemology is an individuals' stance on learning and knowledge, the Epistemological Chain (EC) is effectively the link between an individuals' philosophy, beliefs about learning and knowledge, and the resulting behaviour (Grecic & Collins, 2013).For example, the professional decisions made by coaches as a result of their epistemological views. Put more formally, the EC has been described as;

> the inter-related/connected decisions made that are derived from high-level personal beliefs about knowledge and learning, and which become apparent through the planning processes adopted, the learning environment created, the operational actions taken and the review and assessment of performance.
>
> (Grecic & Collins, 2013, p. 153)

In the world of education, numerous studies confirm a strong connection (chain) across teachers' beliefs, their classroom behaviors, and the learning environment they create (Brown & Rose, 1995; Hofer, 2002; Kagan, 1992; Nespor, 1987). There are also similar findings in recent sport specific studies that have taken place within golf (Grecic & Collins, 2013) and adventure sports coaching (Collins, Collins & Grecic, 2014) where coaches have used the EC to aid their planning, decision making and critical reflection. What is starting to be recognised as of increasing interest is how these beliefs affect instructional approaches and curriculum implementation (i.e. PJDM) at macro, meso and micro levels (adapted from Hofer & Pintrich, 1997; Prawat, 1992).

Integrating the EC with PJDM – How Coaches could/should operate

The sports coaching process is idiosyncratic due to its wide range of contextual demands and ever changing nature (Abraham & Collins, 2011a) (e.g. Olympic level team water sports, children's tennis and adult social leagues). As a result, the vast majority of coaches will be

involved in making decisions and as a result, whether consciously or sub-consciously, be drawing on both PJDM and the EC.

It is here that both the distinction and links between the two inter-connected perspectives becomes clearer. PJDM is often used by coaches to impact at a micro-level. An example of this would be where coaches observe that a practice is not going as planned and make a decision to intervene and adapt the practice. In contrast, a coaches Epistemology and the EC are used to guide coaches on a more meso- and macro-level. For example, a coach identifying what is trying to be achieved within their environment. Consider the following cricket specific example.

A representative age group side have played their first competitive fixture of the summer and are all out for 84. The team has only managed to bat for an hour of its three hour allocation. Prior to the team going out to field, the coach has a number of decisions to make;

- (How) does the coach interact with the players during the mid-session break after this disappointing performance?
- If the coach does choose to do so, does he/she interact with the team as one group, specific sub-groups of the batting order, bowling attack or on an individual basis?
- Does the coach look ahead to the second half of the match, review the first half or do both?
- In doing any or all of the above, what type of specific coaching behaviours does the coach engage in? (E.g. praise, open/closed questions, scold, silence etc.)

It is here where PJDM comes to the fore. In making these choices, the coach may internally review the aims and desired outcomes of the fixture (micro-level), identify an ‘intention for impact’ (Hill & O’Grady, 1985) and design a short-term intervention to suit. It’s worth noting here that the coach would have the same decisions to make had the team batted for an hour and a half, two hours or the full three hour allocation. Fundamentally, the coach has to

assess the context in which they find themselves and develop an appropriate course of action (Simon, 1986). At times, coaches PJDM may be disconnected from their epistemological views due to the time-pressured and emotionally-laden nature of situations.

In making these decisions, it is here where the coach could/should be integrating their epistemological stance to create an effective EC. For example, the coach is consciously or sub-consciously drawing on their belief systems in order to identify their 'intention for impact'). To further explore the above example, the coach may want to consider the meso- and macro-level outcomes of the context in which they are working. For example;

- What are the aims of the system in which the coach is working? (E.g. win/loss ratios, psychological development, high level of enjoyment, player progression, increased player retention etc.)
- How long have individual players within the team been involved with the system? (e.g. 6 months, 2 years, 4 years)
- To what extent are individual players progressing towards the aims and objectives they are working towards?

Being able to form answers to these questions would help to guide the coaches PJDM as a result of incorporating their views of how players learn (epistemology). Table 4 considers the possible short, medium and long-term outcomes of coaches in the above situation who hold opposing naïve and sophisticated epistemological views.

It's also worth briefly switching the focus and considering an athletes' EC. If a coach were to spend time understanding their athletes' EC and hence their preferred methods of working and learning, possible future conflict in the relationship may well be avoided. For example, consider the coach with naïve epistemology working with a player who holds a sophisticated stance. The direct instruction and knowledge 'transmission' from coach to player may well be unwelcome and poorly received. Consider too the reverse. A coach with

a sophisticated epistemology attempting to draw out the knowledge from a player – who themselves hold a naïve stance and are wanting/needing the knowledge (and answer) to come from the coach (adapted from Grecic & Collins, 2013).

Applying the Integration – Implications for Research and Practice

The review has outlined what is currently known about PJDM, Epistemology and the EC in isolated and discrete exemplars, however there remains little in the way of 'applied evidence' confirming or not, the existence of inter-connected decisions in relation to sports coaches planning, practice and reflection processes.

The variability of coaching roles in relation to Epistemology and PJDM is also an area which would be of significant interest and is currently underdeveloped. To consider recent work around participation motivation in sport and physical activity – i.e. 'the thee worlds' continuum (Bailey et al., 2010; Collins et al., 2012) and overlay the premise of Epistemology and PJDM of sports coaches, there are a number of interesting questions that are raised. For example, consider a cricket coach who works within both 'elite referenced excellence' (ERE) and 'personal referenced excellence' (PRE) contexts. (Where ERE is "achievement is measured against others with the ultimate goal of winning at the highest level possible" (Collins & Bailey, 2015 p.137/8) and PRE is described as excellence in the form of improving one's own performance, (i.e. task goal orientations (Nicholls, 1984)). To what extent does their epistemological viewpoint remain the same for both contexts? To what extent is it adapted? To what extent is it *allowed* or *expected* to change based on the social-cultural pressures and expectations that are often faced by coaches in the world of sport? (E.g. line managers, colleagues, parents of players etc.) Finally and perhaps most importantly, what impact does this have on the practical decisions that are made within their coaching practice?

On a more sport specific front, a small number of studies have taken place across individual sports such as golf (e.g. Grecic & Collins, 2012; Grecic & Collins, 2013; Grecic, MacNamara & Collins, 2013) with similar investigation taking place within adventure sports coaching (Collins, Collins & Grecic, 2014). However, these sports differ in nature to cricket. Both golf and adventure sports are performed all year round (in the UK), whereas cricket is a seasonal sport and takes place throughout the late spring and summer months (April – September). As a result of the seasonal nature, there are pre-season, competitive and off-season stages to be considered in the annual planning of cricket coaches. To this end, continuing research would help to further and more specifically contextualise cricket coaches planning, practice and reflection processes at various stages of the year. Furthermore, longitudinal research would help to unpack and explore the consistency and potential variability of coaches' epistemology based on the phase of the annual plan (and beyond) they are in, and the specific aims associated with it.

In practice, if further research were to compare the PJDM and EC of coaches within both performance (i.e. outcome orientated) and development cricket coaching contexts, this would continue to contribute towards a greater understanding around the creation of truly individualised (and athlete centred) coaching approaches (e.g. Muir et al., 2011). As a continuation of this theme, the potential education of cricket coaches could become more informed. Coach education could help to develop expertise - i.e. an understanding that a range of possible solutions often exist (Girot, 2000; van der Vleuten & Schwirth, 2005) with coaches developing the ability to make decisions in answer to ambiguous problems with limited information (Epstein & Hundert, 2002) as opposed to the current competency system (i.e. the reproduction of behaviours) that is in use across the majority of coach education programmes (Collins et al., 2015).

Whilst there currently appears to be very few answers to these types of questions, research around this area would aid organisations and coaching contexts to better understand the challenges that are faced by coaches, managers and administrators in attempting to create a truly aligned, cohesive and context-specific coaching environment that best meets the needs of those within it.

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