Investigating academy coaches' epistemological beliefs in red and white ball cricket

Matt Crowther[a*], Dave Collins[b, c], Loel Collins[b, c], David Grecic[a] and Howie Carson[c]

[a]*Institute of Coaching and Performance, University of Central Lancashire, Preston, UK;*
[b]*Grey Matters Performance Ltd, UK;*
[c]*Moray House School of Education and Sport, University of Edinburgh, UK.*

*Please direct all correspondence to the lead author via email; mcrowther1@uclan.ac.uk

Abstract

Cricket and specifically cricket coaches are presented with challenges unlike many other sports. Coaches are tasked with developing players' skills and abilities to play two distinct and increasingly specialist formats of the game, namely red ball and white ball cricket. To examine differences across these two styles, data collection used observations *(n*= 18), semi-structured interviews *(n=23)* and focus groups *(n=2) with a group of coaches who actively coached both styles to the same groups of players.* Two storybook themes were developed and represented a substantial and original contribution to the literature. These were; i) get your head down, listen to me and you'll be right; in RBC as contrasted with ii) players getting stuck in to learning in WBC. Findings suggest coaches held different epistemological beliefs and actioned different epistemological chains. Fundamentally, coaches' approaches were considerably different across RBC and WBC. We conclude by considering the significant implications of the findings in the form of an extension of the epistemology literature and the ongoing opportunity for cricket coach development.

Keywords: Planning, Skill development, Coaching philosophy

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Introduction

Cricket has seen a global growth in popularity (ICC, 2018), in part due to the increase in volume of newer, shorter formats (ICC, 2020). These new forms offer a more exciting shorter version of the traditional Red Ball Cricket (RBC) game; the traditional multiple day format played with a red ball. It is well accepted (although perhaps anecdotally) by players, coaches and administrators that RBC represents the *ultimate challenge*, for the *ultimate player.* Historically, the *greatest* players have been crowned based on their performances and longevity in RBC. This was also the place where players most regularly earned their living. The newer format, white-ball cricket (WBC) has three versions, (1) 50-over cricket (scheduled to last c.8 hours) (2) 20-over cricket (scheduled to last c.3.5 hours) and (3) The Hundred (scheduled to last 2.5 hours). Reflecting the name, all are played with a white ball. As a result of its increasing popularity and the development of worldwide leagues, players are increasingly able to earn their living playing only WBC. It should be noted that these' WBC specialists are so far rare, with most players heavily involved across both formats. Notably, however, in the recent and prestigious RBC test series between England and Australia (the Ashes 2021-22), England's 'demise' was attributed to a lack of balance between the two formats, with a great deal of consequent comment and soul searching (Sky, 2022). In short, developing players towards performance in both is an important (if perhaps difficult) dream goal for the sport and all involved in it.

The different formats lead to a range of demands on both players and coaches, specifically in relation to the development of players' skills at an earlier stage in the pathway. One relevant example here is a player's competitive schedule. Developing players are involved in both RBC and WBC competition (i.e. fixtures) within the same season. Addressing the micro-level, a players' week may consist of WBC at the beginning of the

week (i.e. Monday), followed by RBC in the days that follow (i.e. Tuesday – Friday) prior to a second WBC commitment as the week closes (i.e. Sunday). Consequently, players are required to perform a multitude of skills across RBC and WBC within a very short space of time. Factor in that these players are balancing their training needs alongside their education and the potential strain on players and coaches becomes clearer. Consequently, how is it that coaches are going about developing the RBC *and* WBC skills of young players given the complexity of the cricketing landscape? The ways in which coaches action learning these skills from an epistemological perspective is worthy of exploration especially, as is the case in this study, coaching in both styles is often provided by the same coaches to the same players.

Accordingly, and building on earlier work by Crowther et al. (2018), this study explored the epistemology of coaches working with *the next generation* of players in the talent pathway. We aimed, firstly, to critically examine the epistemological beliefs of coaches involved in coaching RBC and WBC and secondly, to develop a framework that presents an epistemological basis for both forms of the game.

What is epistemology and how is it defined?

Epistemology is a branch of philosophy that aids coaches to clarify motives and provide direction to their practice (Kretchmar, 1994). Early work around epistemology plotted epistemological development on a continuum between naïve and sophisticated (Perry (1968). Naïve epistemological beliefs view knowledge as simple, clear, and specific; handed down from authority rather than developed from reason. This position is premised on an assumption that knowledge is certain and unchanging. Thus, concepts are learned quickly or not at all, whilst learning ability is innate and fixed (Grecic & Collins, 2013). In contrast, a sophisticated epistemological position views knowledge as complex, uncertain, and tentative-learned gradually through reasoning, reflection and construction (Howard et al., 2000).

Schommer (1993; 1994) and Schommer-Aikins and Easter (2009) identified five specific dimensions that make up an individuals' epistemological beliefs; i) Omniscient Authority – beliefs about the validity and source of knowledge ii) Certain Knowledge – beliefs about the reliability of knowledge iii) Simple Knowledge – beliefs about the structure of knowledge iv) Quick Learning – beliefs about the speed of learning v) Innate Ability – beliefs about capacity for learning. We share the view that epistemology includes beliefs about learning and is viewed as a system of more-or-less independent beliefs (Elby, 2001; Schommer-Aikins, 2004; Schommer, 1994). These are hypothesised as distinct dimensions that may or may not develop in synchrony (Schommer, 1994) and are best characterised by "frequency distributions as opposed to continuums with extreme poles" (Schommer-Aikins, 2002, p. 78).

The extent to which epistemological beliefs remain constant or differ across different domains is a point of debate. Schommer and Walker (1995) suggest that the beliefs of students in education were similar across academic domains. In contrast, Beers (1988), Roth and Roychoudhury (1994) and Mori (1999) suggest that epistemological views were context specific.

The impact of epistemological beliefs on cricket coaching through the epistemological chain

Several studies have identified a link between the coaches' epistemology and their coaching practices - this has been termed the Epistemological Chain (EC) (Grecic & Collins, 2013). Similar studies in education confirm a strong connection across teachers' beliefs, their classroom behaviours, and the learning environment they create (e.g., Hofer, 2002; Hofer & Pintrich, 1997; Nespor, 1987; Soleimani, 2020; Tarmo, 2016). Findings from studies that have taken place within golf (Grecic & Collins, 2012), adventure sports coaching (Collins et al., 2015) and football (Olsson et al., 2017).indicated that an EC was manifested in the coaches planning, decision making and critical reflection (Figure 1, Crowther et al. (2018).

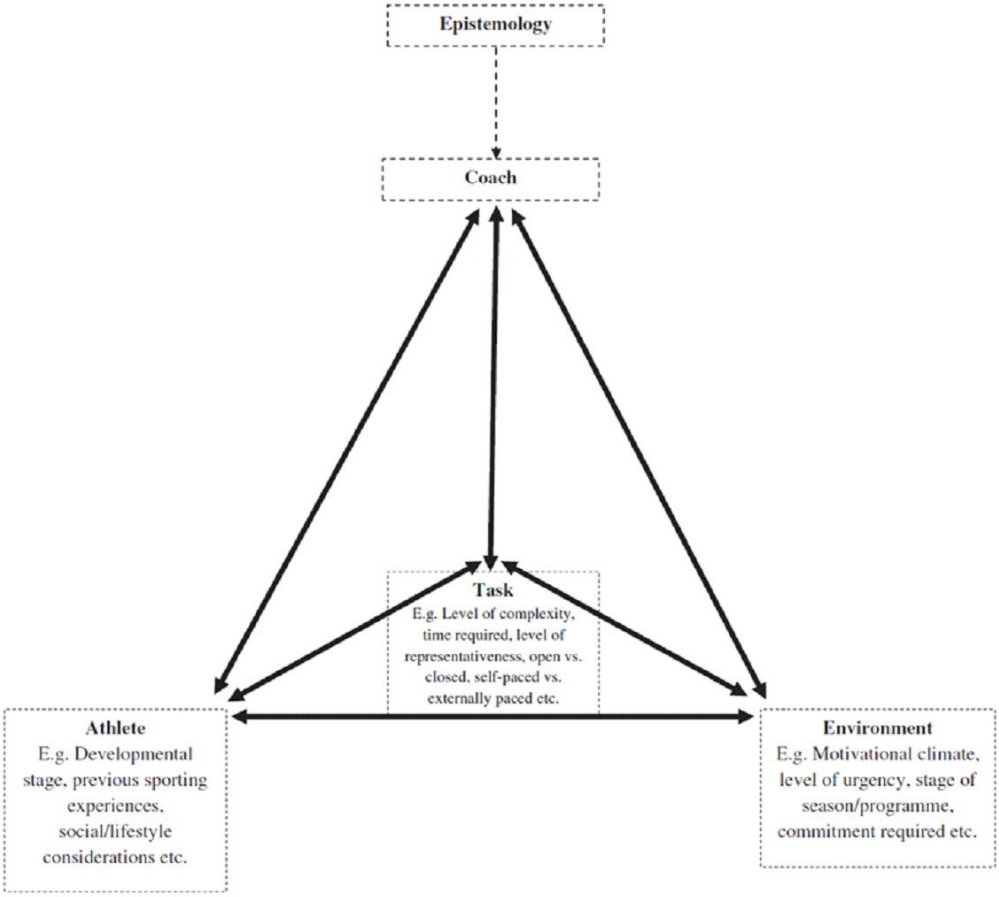

Figure 1. Factors influencing coach Decision making (Crowther et al., 2018, p. 69)

In showcasing the relevance of the EC framework by Grecic and Collins (2013), it importantly acknowledges the macro to micro level application of epistemology via six interconnected stages; i) Environment ii) Relationship Built iii) Goal Setting iv) Methods v) Judgements Made vi) Future Direction. This framework is relevant for our research given it incorporates aspects of the coach decision making model (Muir et al., 2011) such as *who* the coach is working with, *what* the coach is working on and *how* the coach is going to work on. Finally, it reflects an accepted definition of personal epistemology - that epistemological beliefs mature at different rates (Schommer, 1994). In drawing this section to a close, Table 1 offers a summary of the EC framework along with the application of increasingly naïve and sophisticated epistemological beliefs.

Table 1. *The Epistemological Chain (EC) of naïve and sophisticated sports coaches (Grecic & Collins, 2013 p.155)*

Naïve	Epistemology	Sophisticated
Guru and discipline, rules to follow, autocratic, disciplined, power relationship, dominating coach, compliant athlete, failure to perform is highlighted	Environment	Learning environment created, where athlete can experiment safely without fear of ridicule, two-way discussions and flow of ideas
Transactional, Power roles, dictating behaviours	Relationship built	Trusting, caring, nurturing, autonomy-supportive behaviours demonstrated
Coach prescribed, subjective to coach's beliefs, constant reliance on the coach	Goal setting	Athlete led in discussion with coach
Learn - drill – do, follow set practice regime	Methods	Challenges set for the athlete, creating learning episodes
Success or failure determined by tangible markers or results (e.g. changes in technique, improvement in coach's measure/statistics	Judgements made	Dependent on how the player develops as an athlete and person with life skills, whilst working towards the athlete led targets. Decisions based on "is the athlete now an autonomous decision maker confident in their own ability?"
Constant coach's revision of targets, technique, results. Coach led modifications to be practiced, re-learned and embedded	Future direction	Future path determined by how self-reliant the player feels. Possibilities include requests for future guidance/mentoring, or removal from the coaching process if it is no longer needed

Finally, the context for the investigation. Academy level cricket is the final stage(s) of the player pathway to turning professional. Commonly, a *selected* group of adolescent players (c.14-18 years old) receive additional support and increased coaching. Players involved in these programmes turn professional, are released from the academy group and performance pathway) or remain in the academy context for a number of years. Specifically, academy

148 cricket centres on a stable performance group, an increased control in variables, long-term
149 objectives and extensive intervention and interpersonal contact over a long period of time
150 (Lyle & Cushion, 2016). Fundamentally, the ultimate goal of the academy context is to
151 produce professional cricketers. So, with a focus on the academy stage and reflecting the
152 points made above, we were keen to address our objectives through a careful and triangulated
153 consideration of coaches' beliefs, thinking and behaviours across the two styles of RBC and
154 WBC.

155 ## Method

156 ### Research Design

157 Following ethical approval (BAHSS318) we utilised a pragmatic research philosophy with a
158 focus and emphasis on creating practical solutions to applied research questions (Bryant,
159 2009; Giacobbi et al., 2005). The pragmatic approach was positioned within a relativist
160 ontology and hence, constructivist epistemology. Relativism outlines there are multiple
161 realities and experiences the interpretation of these experiences which ultimately leads to a
162 personal truth (Brownlee, 2004; Guba, 1990). We support the premise that knowledge of
163 reality lies with the social actors who experience it (Blaikie, 2007).

164 ### Participants

165 To ensure depth and quality of data, a purposive sample (Battaglia, 2011) of male cricket
166 coaches *(n=17)* aged 26-45 years old *(M_{age} = 34, SD = 7.48)* were recruited. Key criteria for
167 inclusion were, (1) holding a minimum of the national governing body (NGB) 'advanced' or
168 'level 3' coaching award (2) working with high potential cricketers (aged between 12-18
169 years old) or academy level county cricket programmes and (3), having a willingness to
170 examine their own coaching practices. Pseudonyms are used when discussing participants
171 throughout the remainder of the work

172 **Data Collection**

173 Following informed consent, data collection took part in two phases. In phase one, a
174 subsample of participants *(n=5)* were 'naturalistically' observed (Mulhall, 2003) prior to an
175 initial semi-structured interview. Interviews lasted between 55 and 90 minutes *(mean*
176 *duration = 72 minutes)* and digitally recorded for later transcription by the first author. A
177 semi-structured interview approach allowed pertinent aspects of the interview to be unpacked
178 in greater depth as they emerged (Adams, 2015). Example questions included; 'How is it that
179 players become more knowledgeable?'; 'During your session, I observed that you…can you
180 give me more detail on why you did that?; 'How do you know that a player is learning? The
181 researcher followed any developments (i.e. changes) of coaches' approaches over that time.
182 Follow up semi structured interviews were conducted over the following 12 months (*total n*
183 *= 18)*.

184 In phase 2, two semi-structured focus groups (Breen, 2006; Purdy, 2014) (FG, Group
185 1 *n* = 8; Group 2, *n* = 4) were conducted with a different subgroup of participants *(n=12)*.
186 These focus groups where digitally recorded and lasted 24 and 28 minutes respectively. The
187 FG was facilitated using five sequential, pre-prepared cue cards to direct the focus (Nicholas
188 et al., 2010) and avoid response bias (Heary & Hennessy, 2002). An overview of the process
189 is presented in Table 2.

190 Table 2. *Example cue card questions used during FG*

Stage	*Example Questions/Prompts*
STAGE 1	What are your experiences of being coached in red ball/longer format cricket? You may want to consider areas such as the following: • The 'goals' of the coaching – i.e. what were the intended outcomes for you as a player? • The types of practice that you were taking part it. (e.g. technical drill practices, exploration practices, net practice, 'scenario' practice etc.)
STAGE 2	I'd like you to think about your red ball coaching. Consider a player that you have worked with in the past…

	• What were the 'goals' of your coaching with that player? (e.g. what was the point?) • What types of things did you find yourself doing? Saying? How did you go about intervening and/or the feedback process? How did you 'go about' your coaching?
STAGE 3	What are your experiences of being coached in white ball/shorter format cricket? *Repeat process from STAGE 1*
STAGE 4	I'd like you to think about your white ball coaching. Consider a player that you have worked with in the past… *Repeat process from STAGE 2*
STAGE 5	What similarities and differences do you see between the two formats of the game? Why do these happen?

Data Analysis

Reflexive Thematic Analysis (RTA) was utilised with the aim to identify patterns across the data sets (Braun et al., 2019). Importantly, the *reflexive orientation* adds a number of important nuances to the analysis process which ultimately increase the philosophical alignment throughout the research process. RTA (underpinned by a 'Big Q' approach (Kidder & Fine, 1987), accepts multiple realities and acknowledges meaning is situated. This views the researcher(s) as a valued resource during the process (Braun & Clarke, 2013; Braun et al., 2019).

Interview and FG were fully transcribed and the six-stage RTA method was applied, as identified by Braun and Clarke (2013) including semantic and latent aspects of coding (Braun et al., 2017). The final step in the analysis was the creation of 'storybook themes', aimed at tying the researchers analytic observations together (Clarke, 2017). Storybook themes engage readers as they explain large portions of the data and importantly, are analytic outputs, grounded in the data.

We adopted a relative approach to rigor and trustworthiness (e.g., Burke, 2016; Smith & Caddick, 2012; Smith & McGannon, 2018; Smith et al., 2014). We utilised internal

markers of quality such as the experiences and background of both the researcher *and* the reader. Specifically, i) substantive contribution ii) worthy topic iii) rich rigor iv) transparency (Smith & McGannon, 2018). These measures were based on the study's start point, the research environment and the research question (Smith & McGannon, 2018).

Results

Raw data clusters were developed which encapsulated commonalities across the codes assigned through the initial coding process and led to the development of lower order themes *(n=12).* Next, mid order themes *(n=6)* were created, culminating in the storybook themes (*n=2*), *i) get your head down, listen to me and you'll be right; in RBC ii) players getting stuck in to learning in WBC.* Organising concepts identified by the research team that underpinned the reflexive thematic analysis (i.e., Braun et al., 2019) were; i) Macro level organisational alignment ii) Coaching practice and pedagogy iii) Power relationships in the coaching process. (Table 3).

Get your head down, listen to me and you'll be right (in RBC)

This was created based on three mid-order themes; i) participants as passive recipients ii) players seeking coaches iii) discipline needed.

In RBC, coaches viewed players as passive recipients of learning and knowledge. Coaches commonly and proactively *gave* technical solutions to players. Evan discussed how they went about 'equipping' the player with the skill(s) as a result of using a skill de-composition approach:

> he knows he needs to be able to play off the back foot against seam bowling because he's going to get bounced every time and he's learnt how to pull over the winter…we've just reverse chained that from right, tennis balls, end position, pull, pull, pull to bowling machine, know where it's going to be, start outside the line of the body because that's a bit more comfortable, pull, pull, pull then working on the line of the body because that's a little bit more uncomfortable because when he gets it in the ribs we don't like it to then flicking with an incredi-ball so it was a bit more

235 Table 3. *An overview of the full reflexive thematic analysis*

Examples of Raw Data Clusters	Lower Order Themes	Mid Order Themes	Storybook Themes
Younger players 'don't know their game' Working with the coach to drive practice Learning from (other) experts Coach giving the player technical change Coach leading the technical change (and then player buying in) Technical input decreases as you progress Young players who are able to drive their own practice are a rarity	Knowledge passed down from experts to novice in RBC	Players as passive recipients	Get your head down, listen to me and you'll be right; in RBC
Times where coaches prescribe technique to players Use of sports science to identify the 'right way' Coach instructing based on the demands on the next phase of the pathway	Coach giving technical solutions		
Using experts (recently retired players) to deliver/explore skill sets Using professional players as a reference points Using the expert with real world experience to drive the 'model'	Using experts in the coaching process		
Players needing/wanting coach input Players will come to coaches when they are struggling Players want more structure from the management Good players are the ones who listen	Players wanting/needing coaches	Players seeking coaches	
Consistency of skill (more) important in RBC [Red ball game more technical that white ball] Red ball about longevity, patience and concentration RBC is about discipline [Historical approach to batting] 'bat time, bat all day' Batters get judged more in red ball (no hiding place) More pressure in RBC	Mental requirements of RBC	Discipline needed	

In the past WBC was ‘an add on’, modern day players learn white ball first Attitude to T20 has changed over the last 15-20 years Change in expectations of the players Change in repercussions for players getting out in WBC	Change in attitudes and expectations – breaking with tradition	A culture shift	Players getting stuck in to learning in WBC
Coaches letting players figure out scenarios for themselves Putting players in difficult situations to enable them to learn Players need to figure it out in competition so need to in training too The importance of players ‘finding a way’	Players need to ‘figure it out’	Players take the lead	
Creating situations for players to make decisions about their own practice Individual players responsible for getting something out of it After exploring new shots, players are responsible for their continued progress Players to pick out key learning that works for them	Players have the responsibility		
Learning coming from the players rather than the coach Asking questions might take a lot longer to help players learn but this is ‘better’ Trying to reduce coach input to encourage player learning	Reducing coach input		
Players learning through trial and error Freedom/no repercussion practice ‘Have a go’ practice – Invent something Exposing players to new skills and letting them ‘have a go’	Players learning by ‘having a go’	Learning by having a go	
Game related practice - more outcome based Using scenarios in WBC Practice with a game outcome (e.g. hit to the boundary) White ball practice with a game ‘angle’ on it	Open/Game related white ball practice		
Specificity of (batting) practice – blocked practice Repetition of shots (in practice) to justify applying skill in a game Increase in specificity in recent history (e.g., ball striking)	Repetitive white ball Practice		

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> variable but he could (have) confidence that actually if he got it wrong it was an incredi-ball not a cricket ball so those sorts of things so he's gone through a process of real breaking it down to start with to its simplest form…to just ramping that up over the period of a winter.

Evan is certain of the knowledge that the player *needs* in relation to RBC. The technical solution (known as the pull shot) has clearly been identified as *the right* solution, with coaching approaches used to explicitly allow the player to acquire the required knowledge in a step-by-step manner (i.e. reverse chaining). This idea is well-supported by Stuart who suggests;

> I think they need direction. So like you say an u14, knowing what is required for red ball training…so I still believe you need to be led. Led towards what a batsman looks like because I think it will be too late for them. Because I think we need to accelerate their learning.

In many aspects of RBC, there was an accepted use of discipline specific 'experts' to work with players. This reinforces the players' position and role as *passive* receivers in the learning process. Rob outlines, former, international players as examples of this process, working with players who are developing their batting skills against spin bowling:

> we'd just try and expand and expand his boundaries a little bit and what he's capable of, then bring in some experts, so *(former international captain)*, we got him on board and (*former international player)* who both played spin really well…and they spent time *(with him)* and it's just a case of reinforcing that.

The *players seeking coaches* in RBC, reflected coaches' beliefs that it was in fact players who wanted and needed coaches. Rob suggests, "I think they'll come to you because again going back to that example with (player), he's struggling against spin…I'm really struggling can you help me?" Evan indicates that at times it can be those players who are less experienced who will seek out coaches, further supporting the perception that players require technical support from coaches:

> I suppose his feel for batting is a lot less mature than his feel for bowling so he needs, he's looking for someone to give him some confidence, he just wants a bit of

> reinforcement, I mean [he's asking himself] 'I feel alright does it actually look alright?'

Finally; *discipline (is) needed* in RBC. In this instance, Jimmy clearly highlights the importance of players' psychological characteristics and, more specifically, the discipline required by players in RBC given the increased amount of time required and opportunities available to players:

> The main difference between red and white ball is the buzz-word 'discipline'. That's always something we come back to, right we've got to hold our discipline or hold our length, whatever it may be. With the bat, bat time, discipline I think that's the big difference between the two forms of the game…the discipline of being able to hold your nerve, your skill for that longer period – that's the main message that most coaches try and get across.

Coaches support this as being an important characteristic which can make the difference between success and failure in RBC. This finding supports similar views expressed by Gucciardi and Jones (2012) and ongoing work using the Psychological Characteristics of Developing Excellent (PCDE) (MacNamara et al., 2010). The essence here is the premise that players are required to avoid 'straying from the plan' in RBC. Having explored the findings in relation to RBC, we now turn to the findings in relation to WBC.

Players getting stuck in to learning (in WBC)

This theme was created by three mid-order themes; i) a culture shift ii) learning by having a go iii) players take the lead.

A culture shift

Coaches were clear that there had been a change in attitudes and expectations – a breaking with tradition in WBC. As Jason outlined:

> Fifteen years ago if someone said, off-spinner is on, I want you to go to 6th or 5th leg stump, outside and open up that and it's a freebie if it's at you, if it's at the stumps it's through the off-side then I wouldn't do it but now that's common place because when we first started you'd have thought someone was bonkers for saying that

Jimmy considers a players' perspective on the implications of the changes from a wider socio-cultural-political cricket view. Jimmy also considered a macro-level aspect, connected to players' potential career trajectories.

> The idea of the form of the game has probably changed for players as well hasn't it, so *(in the past)* it was all about the longer form and you've got to be successful in that to get anywhere in the game whereas that's changed hasn't it, the whole outlook of cricket has changed and I think that leads into every other facet doesn't it, whether it's practice or match play

What was clear was that these developments were a significant shift in relation to WBC. In working these changes through, this created the opportunity to replicate this, breaking with tradition.

Players take the lead

Coaches discussed how it was important that their players were at the forefront of the learning process, in order for them to 'figure it out'. James outlined a training activity with specified contextual information relating to the state of a hypothetical game providing a purposefully non-pressurised context where players were required, as a stepping-stone towards competition play, to independently complete a batting task.

> The [training] scenario that we did a couple of weeks ago…the team was seventy for two after twenty, twenty-five overs in a 40 over game and you're chasing 150, that's the target. There wasn't really anything else from us in terms of well you need to do this, you need to do that, it was right, there you go…that's your target, you've got to try and chase your target down.

James referred to the cognitive demands associated with players figuring it out, using coaches as a support mechanism. Athletes were encouraged to spend time reflecting, both immediately and sometime after the event, on the skills that were being learnt.

> I suppose trying things and coaches suggesting different things. I suppose coaches spotting things that might work, or might work better and suggesting it, giving the player the opportunity to try it, to think about it, go away and have a think. . . that kind of thing.

Players creating their own knowledge, and learning reflected the notion that they have the responsibility in the process. Evan is discussing the delivery of a white ball coaching session based around different ways to score runs. The coach describes a session which included the explicit identification, by the coach, of a number of approaches; subsequently, however, encouraging players to choose, on an individual basis, the batting skill version to practice that they (i.e., the player) thought was most beneficial to their performance.

> We went through 8 or 9 different options to the same delivery in WBC against a left-arm spinner running the ball into the batter. So this is what you could do now, you've been exposed to it, seen it, if you take it on and maybe look at spending more time with each individual option that works for you.

James articulates the necessity for players to take responsibility regarding the technical and tactical deployment of bowling skills: "rather than say, this is a slower ball, you must be able to do this, this is when you're going to use it [we] let them learn and take ownership of that".

Finally, the idea of reducing coach input emerged as a key construct in players creating their own knowledge and learning in WBC. Building from the perceived strength of the coach-athlete relationship, coaches felt comfortable in taking a more hands-off approach to their involvement in player development at times. As an example, Richard explains an expressed understanding of expectations from players with regards to the general coaching approach within the academy: "I think it's very much how I operate. (*At)* Academy level they understand the process, they understand me, they understand hang on a minute, I'm not going to give you the answers, you have to work".

Learning by having a go

In this theme, coaches were focused on the physical nature of players' attempts at skill learning (i.e. players *literally* having a go!) Reflecting this notion, Rob explained an acceptance, and in fact desire, for errors to be apparent within the development process. Rob

outlines: “I want you to be more skilful, I want you to try things, I want you to get stuff wrong, I want him to experiment otherwise where’s our next WBCers coming from?”

Coaches reflected on the types of practices at a micro level. Coaches suggested that open/game related practices took place in WBC; however, this was supported by the need for repetitive practice for players to be able to execute their skills in gameplay. Importantly for readers to note, the lower-order theme game related practice is not *‘games-based practice’* (e.g., GBA; Teaching Games for Understanding (TGfU); Game sense etc.; Kinnerk et al., 2018). It is clear that a range of considerations *of* the game were being made by coaches and players when practicing and that practice was structured in many ways. Sean incorporates both of these themes (i.e., open/game related practice *and* repetitive practice):

> So I reckon some of mine would be to do with specifically how I might approach the game so a contact drill so I’d often lose focus on contact and try and get balls in specific areas so…there’s no fielders there and just think about…just trying to have good contact, strong contact and then take elements from there and right, now you’ve got those can you now be more specific in your practice in terms of where you’re trying to get those, the gaps or areas you’re trying to hit, whether it’s fours or twos.

Stuart supports the use of ‘layering on’ match outcomes (i.e. *game related practice*) when practicing in WBC.

> we do that thing where you have to get it to the boundary, no fielders but you have to hit it so clean that the ball would go to the boundary, because that’s an outcome isn’t it, that’s hitting it cleanly.

Coaches discussed the need for repetitive practice which is positioned in line with the earlier identified theme of breaking with tradition:

> Sid: Coaching-wise, do you think it’s shot specific practice now? Whole sessions on ramping it, reverse sweeping it.
>
> Jimmy: *(Yeah).* And that comes from that acceptance that they are options to be played, I think that probably wasn’t the acceptance years ago. It was right, make sure you bat your 100 balls and you’ll be 85 and now if you’re batting that long you want to be 160 (runs) don’t you.

These contentions illustrate an interesting contrast. Whilst modern and innovative approaches to skill acquisition are being used by coaches (e.g., Non Linear Pedagogy), there are times where the use of traditional approaches remain, such as de-contextualised, blocked practice (Shea & Morgan, 1979). Aspects of game play *are* being considered within these practices. Whilst this does not lead directly to changes in practice structure, it is suggestive of a move towards a 'match-fit' technique, i.e. technique that is adaptive to the challenges of the performance environment (Chow et al., 2016) in contrast to the fixed technique that is historically sought in RBC.

Discussion

As an important context to the discussion of results, we should stress again that all coaches interviewed were involved in coaching the same group of players, across both forms of the game. In short, any differences between RBC and WBC perceptions are within subject! As such, the data indicate an important and clearly impactful difference in approach across these experienced coaches. The key question is, of course, why this has occurred. The discussion addresses the significant differences in coach epistemology, an exploration of the socio-cultural underpinnings of epistemology and the original contribution our work has made.

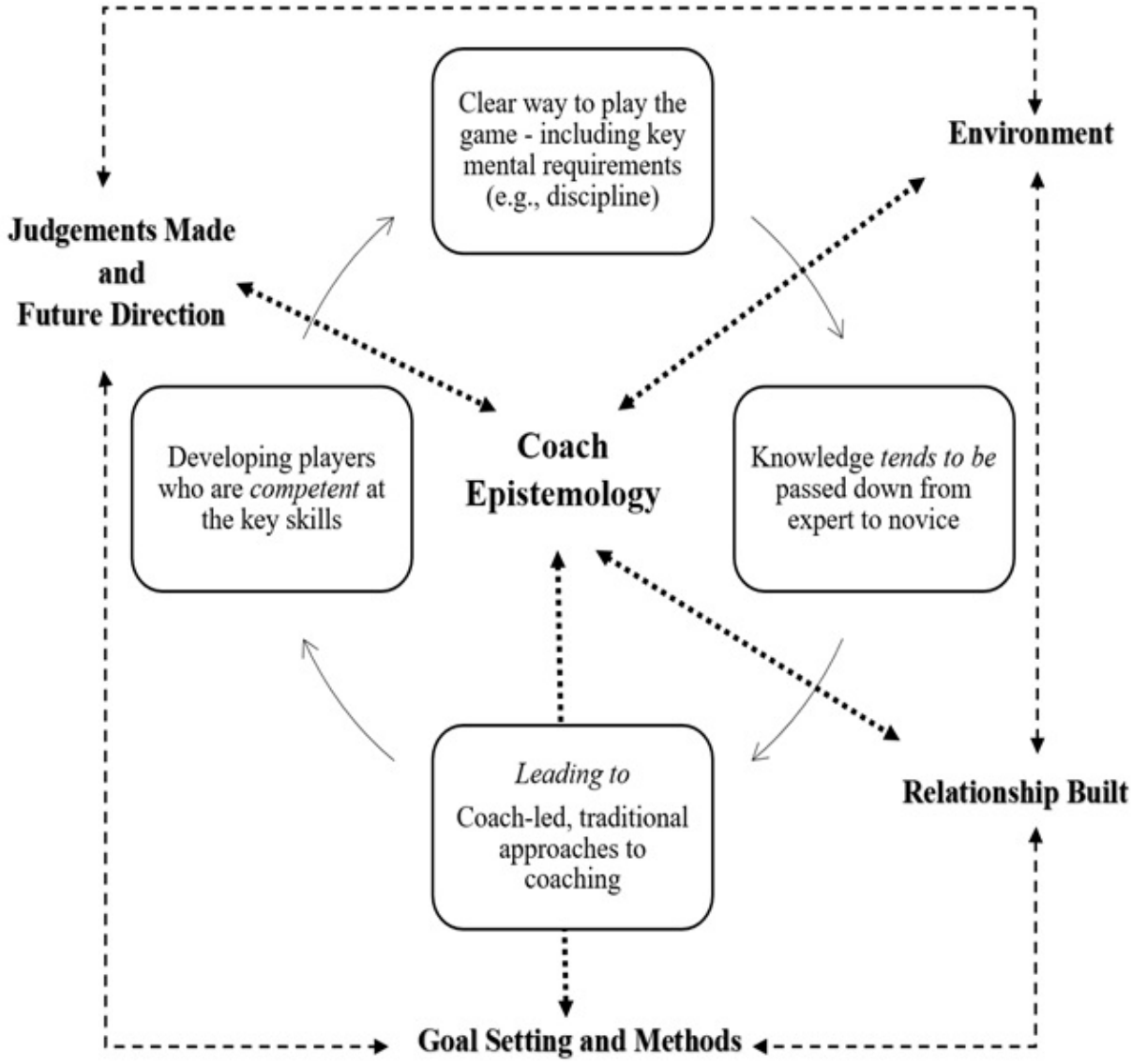
Epistemology as red and white!

When coaching RBC, results firmly indicate the coaches engaged in more traditional, coach led practices. In linking to the epistemological dimension of 'omniscient authority', coaches increasingly held epistemological positions based on the premise that learning and knowledge in this format was passed down from expert to novice (Schommer, 1994). A second epistemological dimension also came to the fore, that of 'certain knowledge'. Coaches seemingly viewed there to be one, increasingly unquestioned, black and white approach to RBC, compared to a critical weighing up of options and a personally relevant solution being

403 sought in WBC. Fundamentally, coaches viewed there to be an increasingly right way *to do*
404 RBC (i.e., certain knowledge), and hence passed this down to their players (i.e., omniscient
405 authority). In continuing the discussion in relation to developing players' expertise, the
406 increasingly naïve positions held by coaches across these two dimensions ultimately led to
407 approaches which developed 'competent' players (Epstein & Hundert, 2002). That is, players
408 who were capable of following routines or instructions, as opposed to creating novel
409 solutions to performance problems. These approaches have been challenged when applied
410 directly to those involved in dynamic and interactive sports. The question then is the
411 appropriateness of focusing on players progression towards one, universal 'correct'
412 technique, when players need to execute their skills in highly changeable contexts (Light et
413 al., 2014).

414 In contrast, when coaching WBC, the findings showed that coaches engaged in less
415 traditional (less linear?) coaching approaches, often driven and/or agreed between player and
416 coach. In linking again to the epistemological dimensions, coaches appeared to be viewing
417 the learning process significantly differently from 'omniscient authority' and 'certain
418 knowledge'. In often stark contrast to RBC, these approaches appeared to be aimed at
419 developing expert players (Epstein & Hundert, 2002). That is, developing players capable of
420 creating individualised solutions without a step-by-step guide on how to do so. Coaches were
421 more regularly utilising increasingly cognitive and social constructivist approaches in their
422 coaching. From a cognitive constructivism perspective, coaches were appreciating what their
423 players 'brought to the table'. From a social constructivism perspective, coaches viewed
424 learning as multidirectional, placed similar importance on the role of the coach and the player
425 (Lave & Wenger, 1991) and made learners active in the process (Newmann, 1994).

426 Figures 2 and 3 summarise the coaching process of RBC (i.e., Figure 2) and WBC
427 (i.e., Figure 3) from an EC perspective.



428 *Figure 2.* The epistemological chain and coaching process in RBC

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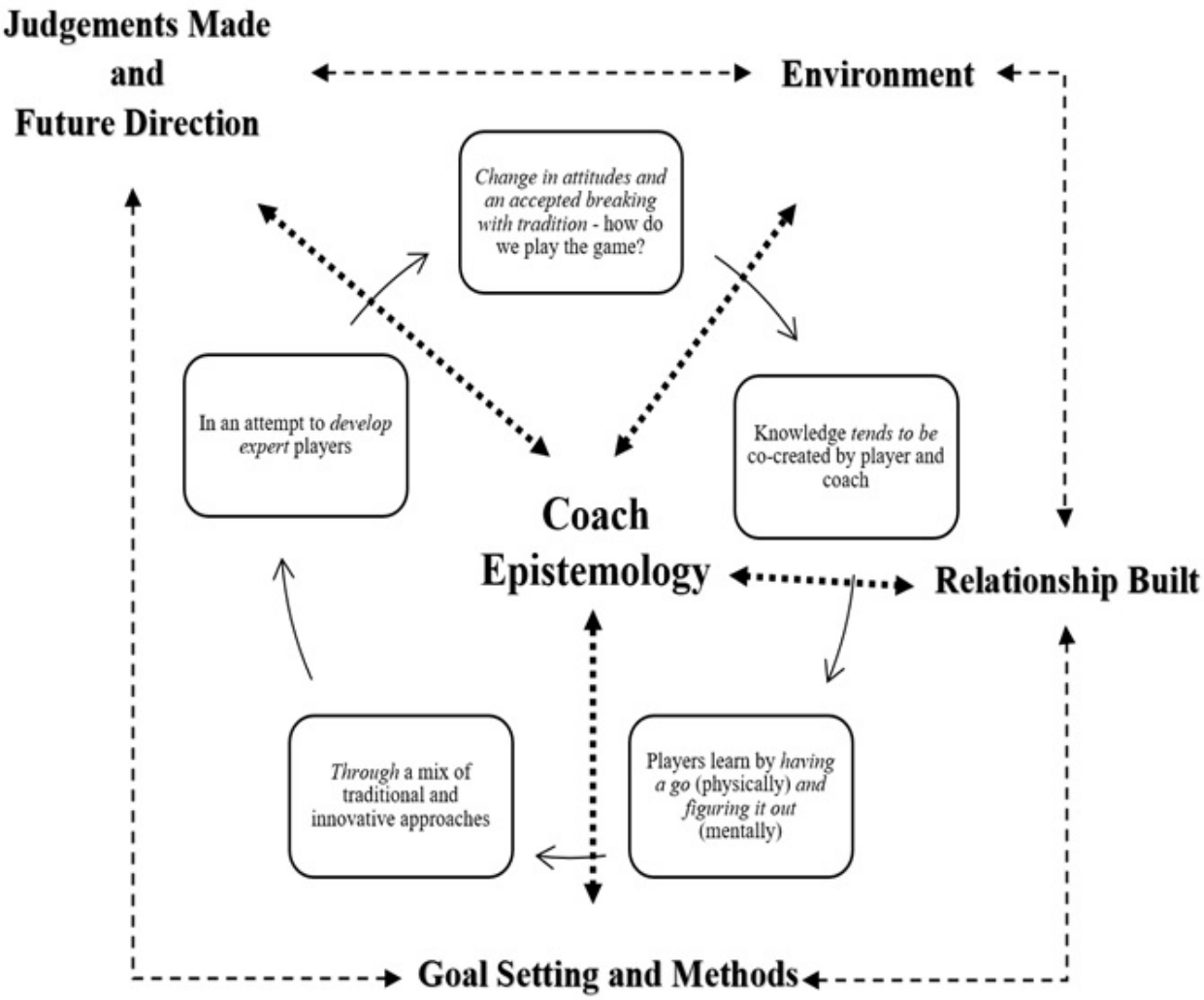

435 *Figure 3.* The epistemological chain and coaching process in WBC

436 In continuing the discussion, we interrogate the socio-cultural aspects influencing coaches'

437 epistemological beliefs.

438 **Epistemology as a representation of the socio-cultural context and coach education**
439

440 In briefly unpacking the development of coaches' epistemological beliefs, there are a number

441 of areas of consideration. Firstly, epistemological views are said to be developed as a result

442 of home and education life (Anderson, 1984). Whilst coaches' upbringing will certainly have

443 exerted an influence, there are also other relevant considerations underpinning coaches'

444 epistemological positions. Firstly, the socio-cultural nuances underpinning the coaching

445 context, and secondly, the role of coach education.

Our previous work has positioned coaching as a process involving both cognitive and socio-cultural processes (Crowther et al., 2018). Importantly, it is acknowledged that coaching is a non-linear process which involves the challenging and negotiating of contextual issues (Jones & Wallace, 2005, 2006) and that coaches' decisions and approaches are socially contested within temporal boundaries (Jones, Edwards, & Viotto Filho, 2016). Similarly, that coaches' pedagogy is underpinned by a range of sociocultural factors present within the environment (Hardman, 2008). Our attention here turns to addressing a number of these socio-cultural aspects. Importantly, these apply at both the micro and the macro level. In clarifying, the micro level is the coaches' own, individual context (i.e. their organisation/employer). The macro level is the broader 'game of cricket' viewed as a whole.

In addressing the micro-level socio-cultural nuances of the coaches' context, one of these nuances is the unique *culture* of their organisation. This is undoubtedly an influencing factor as coaches have been educated in their organisational culture (e.g., Anderson (1984) on the development of coaches' epistemological beliefs). Importantly, each culture is informed by many facets. Examples often include organisational structure, the socio-economic status of the population alongside the cultural position of cricket within each organisation's locality. Perhaps unsurprisingly, these aspects can all influence key aspects of the EC such as the types of environment created and relationships built at the micro level. Continued research utilising an in-depth case study approach would continue to shed light on the specific factors which influence the epistemology of coaches within their individual contexts.

In addressing the macro-level socio-cultural nuance, attention turns specifically to the education of cricket coaches. Much has been made of the role of coach education. The question remains regarding the quality of these experiences as *educational* and the extent to which coaches are indeed *educated* or in fact *trained* (Lyle & Cushion, 2016). Issues have also been raised in relation to coach education indoctrinating coaches in set ways of thinking

and doing (Nelson et al., 2006). The question then, from an epistemological perspective is; to what extent are cricket coaches simply reproducing the epistemology of their coach education? This can be considered from both the micro delivery of the coach educators delivering course content but also reflecting the epistemological position of the wider cricketing landscape. In being clear and referring to the history books, the first recorded game of RBC was in 1877. The first recorded game of WBC was in 1971. As a result, the perceived knowledge base in relation to RBC is seemingly significantly larger than that in WBC. Consequently, it is perhaps unsurprising that the development of coaches, which although not explicitly labelled, has traditionally and unconsciously focused on RBC principles. Accordingly, the development of coaches has been focused on the reproduction of knowledge. As an important caveat to this historical aspect and referring back to coach educator delivery, this can also occur as a result of coach educators perceiving that to behave in any other manner as a threat to their authority and expertise (Cushion, 2013; Light & Evans, 2013).

All these considerations notwithstanding, however, there remains the reality of our data, showing that the same individuals, working in the same contexts, can hold and operate two completely contrasting, even contradictory epistemologies with the same group of players. We would suggest that the driving forces behind these differences (of which the coaches seemed unaware) are more psychological than social. That is more within than between coach. Undoubtedly, the thinking underpinning this key difference is worthy of further investigation. In drawing the discussion to a close, the final section considers the unique contribution our work has made to the existing evidence base.

An original contribution to the literature

The findings of the study, and the identification of the inter-connected nature of the two epistemological dimensions; omniscient authority and certain knowledge, extends the previous literature. It has been presented (including at the beginning of this work), that epistemology is made up on five, *more or-less independent beliefs* (Schommer, 1994). After the exploration of cricket coaches' epistemological beliefs in RBC and WBC it seems clear that these two dimensions are in fact connected.

The existing literature also presented competing ideas about the extent to which epistemology is similar across domains (e.g., Beers, 1988; Mori, 1999; Roth & Roychoudhury, 1994; Schommer & Walker, 1995). Our findings continue to contribute to this ongoing debate and offer insight into a new context. They strongly suggest cricket coaches hold different epistemological beliefs across different contexts. In exploring more deeply the unique contribution to the literature, there are two distinct differences when considering the findings in relation to the previous research around the similarity of epistemological beliefs across domains. Firstly, our work developed a *richer and thicker* understanding (Schultze & Avital, 2011) of epistemology given the increasingly interpretive approach used. This is in contrast to the predominantly positivist approach much of the research that was actioned by Schommer in the 1990's. Secondly, much of the previous research focused on *the learner*. Our research focused on the epistemological views of those who were tasked with *helping the learner* (i.e. the coach). Whilst this has been starting to take place within other contexts, once again predominantly within education (e.g., Soleimani, 2020) there is little evidence of this within sport, and specifically cricket.

Next Steps for Practice and Research

There are a number of next steps for both coaches and researchers. The study has had an explicit focus on the epistemology and the EC of individual coaches working with developing

athletes. As a result, work would be welcomed which investigates the epistemological beliefs of players within this context. Doing so would continue to add a unique contribution to the existing literature and open up the opportunity to increase the alignment, and hence effectiveness of the coach-athlete relationship, specifically in relation to the learning of new skills.

In focusing on RBC, continued work which attempted to unpack the premise of coaches developing *competent* (Epstein & Hundert, 2002) red ball cricketers would be welcomed. There are close links here with other, similar ideas such as developing *docile* players incorporating the perspective of power-knowledge relations (Avner et al., 2021; Denison et al., 2017)**.** As such, exploring this premise, specifically in RBC, through the lens of power-knowledge relations is an area worthy of exploration and has been addressed at the academy-level in other sports (Avner et al., 2021).

In offering a final recommendation for practice, our research has worked with individual cricket coaches. It is important however to acknowledge that there are often many coaches who are involved in helping cricket players learn and develop (e.g. a 'head' coach, an assistant coach, specialist technical coaches, strength and conditioning coaches etc.) Consequently, there is a clear rationale for the coaching group within each organisation to address the issue of epistemological alignment and misalignment. As opposed to engaging in direct comparison, coaches can become more informed as a result of reflecting on their own beliefs as a result of hearing others around them express their own. We view the unique models of cricket coaching developed within this study (i.e. Figure 2 and 3) to be of real value in this process as a reflective aid. The ambition for coaching teams should(!) be to identify the limits of variation amongst the coaching group and create a clear picture of what is and isn't going to occur (Webb et al., 2016).

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Declaration of interest statement

The authors report there are no competing interests to declare

Data availability statement

The data that support the findings of this study are available on request from the corresponding author [MC]. The data are not publicly available due to restrictions (e.g. their containing information that could compromise the privacy of research participants and current positions of employment).

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