An exploratory investigation of junior-elite football coaches' behaviours during video-based feedback sessions

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Despite the growing qualitative research examining the complexities underlying the delivery of video-feedback, no study has yet explored coaches' actual behaviours within this environment. Thus, this study aimed to explore junior coaches´ behaviours and their underlying rationales during team-based video-feedback. Twenty-two in-season sessions delivered by four junior-elite coaches were filmed and analysed. Following previous studies and advised by a panel of experts, the tool employed was adapted from the Coach Analysis and Intervention System and the Arizona State University Observation Instrument, to represent the study context. Subsequently, semi-structured stimulated recall interviews were conducted to elucidate coaches´ thinking, understanding and rationalising of their behaviours. Data indicated a prescriptive approach to coaching within the video-feedback environment. Feedback was the most employed behaviour of all coaches, followed by silence, player participation, convergent and divergent questioning. One coach had player participation as their second most utilised behaviour. Findings demonstrated varied levels of understanding for each coach and evidenced three different types of cognitive dissonance or epistemological gap between coaches´ behaviours and understanding. Therefore, future coach development programmes, specific to video-based feedback, would need to consider each individual coach baseline behaviour and cognitions before intervening.

Keywords: coaching; learning; analysis, tactical knowledge; performance; soccer;

Introduction

The incorporation of performance analysis into the coaching process has facilitated coaches' delivering video-feedback sessions to enhance players' game-knowledge and decision-making (Wright *et al*., 2013; Groom & Cushion, 2005). Whilst the motor learning literature discourages wholly prescriptive approaches to coaching, it is not fully understood how feedback can be integrated into video-based sessions to enhance player learning (Williams & Hodges 2005; Nelson *et al*., 2014). For example, previous studies have highlighted the shortcomings of sessions focused on negative performances and feedback targeted at individuals (Groom *et al*., 2011; Nelson *et al*., 2014). In addition, sessions where players actively participated (*e.g.* engaged in meaningful discussion) have been suggested to offer greater learning opportunities (Wright *et al*., 2016). However, there have been no attempts to consider coaches' behaviour and their underpinning pedagogic principles within this learning environment.

Constructivist learning theory asserts that knowledge is more effectively developed when learners are active participants in the process (Davis & Sumara 2003; Prince, 2004). It is suggested that social interaction provides a basis for a richer understanding of reality and more meaningful learning is achieved when learners engage in an appropriate cognitive activity (Light, 2008). Cognitions can range from lower to higher order thinking skills (*i.e.* remembering, understanding, applying, analysing, evaluating and creating) and these higher levels can serve to provide richer meaning to situations (Lorin *et al*., 2001; Mayer, 2004). Moreover, metacognition or knowledge about a cognitive phenomenon, composed of knowledge (*i.e.* declarative, procedural and conditional) and regulation (*i.e.* planning, monitoring and evaluations), might play a role in superior expertise (Mahdavi, 2014). It is suggested that experts continually plan, monitor, and evaluate when performing skills *(i.e.*

action) or tactically (*i.e.* cognitions) preparing for performance (Coughlan *et al*., 2014; Roca *et al*., 2013; Horrocks *et al*., 2016).

Coach behaviours can influence players' affective responses, cognitions, and learning (Partington *et al*., 2014). For example, while augmented feedback allows learners to compare actual and desired performance, high volumes of explicit information can create learner reliance on this type of feedback and elude engagement with the problem-solving process (Krenn *et al*., 2013; Williams & Hodges, 2005). Therefore, questioning has been proposed as an alternative to encourage implicit learning as it can stimulate player thinking, promote self-analysis, and facilitate knowledge verbalisation (Chambers & Vickers 2006; Vickers, 2007; Cazden, 2001). There are two broad types of questions that can be asked: (1) convergent; which constrains response options and typically encourages lower-order thinking skills such as information recall and (2) divergent; which provides unlimited options and demand the use of higher-order thinking skills (Harvey & Light 2015).

Individual questioning that encourages focused attention on specific aspects of a video has been effective for developing players´ tactical-knowledge and decision-making. For example, García-González *et al.* (2013) filmed eighteen tennis games, with the first and last four recordings used as pre- and post-test and the middle ten games used for the intervention. At pre- and post-test, tactical-knowledge and decision-making levels were captured by interviewing players on court and through an observational instrument that analysed their performance. The intervention (24 hours post-competition and preceding the first training session of the week) involved the experimental group self-reflecting on three successful and unsuccessful video clips, followed by questioning from the researcher. Pre- and post-test comparison of the recall planning interview and video analysis demonstrated a more sophisticated problem representation and planning strategy (*i.e.* increased goal, action, and regulatory concepts), and improved decision-making when compared to the control

group. Therefore, video-feedback supported by questioning seemed to enhance athletes' ability to evaluate game scenarios and make improved decisions.

Studies of junior-elite football coaches have identified instruction as one of the most employed behaviours, during training and games (Ford *et al*., 2010; Smith & Cushion, 2006). It has been argued that the Arizona State University Observation Instrument (ASUOI) has been employed without critical consideration of the context, sport or situation in which coach behaviour occurred and therefore it is not sufficiently sensitive (Brewer & Jones, 2002; Cushion *et al*., 2012). These criticisms have led to the development of new observation tools, such as the Coach Analysis and Intervention System (CAIS) (Cushion *et al*., 2012), intended to better isolate specific behaviours and/or practice types training and competition states. However, this tool only considered narrow elements of a coaches role – competition and 'on-field' training; it failed to take into consideration performance analysis/feedback sessions, strength and conditioning training; and other situations where coaches 'intervene' with their athletes.

Furthermore, coaches present limited awareness of their behaviours and a 'cognitive dissonance' or 'epistemological gap' between behaviour and knowledge due to the acquisition of teaching-related vocabularies underpinned by flawed understanding (Partington & Cushion, 2013; Davis & Sumara, 2003). During video-feedback, coaches' cognitions and behaviours are not underpinned by learning implications as suggested by Light (2008). For example, Booroff *et al.* (2016) interviewed a youth lead coach and reported that sessions were used strategically to prove completion of their academy management obligations rather than focusing on the players' needs. Moreover, Groom *et al.* (2012) systematically analysed coach and player interactions during six team-based video-feedback sessions and reported that the coach reinforced their authority by controlling the topic and opportunities for player participation. Therefore, the aims of this study, were to observe,

classify, and quantify the behaviours of junior-elite football coaches during team-based video-feedback sessions and to explore their underpinning pedagogic principles.

Materials and methods

Research context

This investigation was conducted in an English Premier League category-one football academy. The academy followed the Elite Player Performance Plan (EPPP) and, as per its recommendations, was structured into a foundation phase (FP) (U6-U11); youth development phase (YDP) (U12-U16); and professional development phase (PDP) (U17-U23) (Premier League, 2011). As part of the academy's curriculum, team-based video-feedback sessions were scheduled on a weekly basis for all age-groups. The age-groups' lead coach and a performance analyst collated footage for the feedback sessions, which were facilitated by the lead coach with sporadic input from the assistant whilst the analyst operated the presentation of video footage.

Participants

Four full-time male coaches, aged 46.25 years ± 7.09 years and working with players in four different age-groups (*i.e.* under 13, 14, 15 and 16), consented to participate. It was deemed most appropriate to recruit YDP coaches for several reasons: 1) this is the largest (*i.e.* number of teams) phase and, thus, offered the largest number of coaches to recruit; 2) there is a curriculum coherence and consistency, in this academy at least, across the YDP meaning the expectations at age-group are broadly similar; and 3) players are involved in 11-a-side fixtures, whereas the FP compete in small-sided games and the PDP participate in a league competition with a greater focus on winning. Thus, the YDP offered a wholly development-focussed sample of coaches. Brief pen-pictures of each of the coaches can be seen in table 1.

[INSERT TABLE 1 HERE]

Procedure

Full ethical approval from the university ethics committee was provided. The academy manager provided gate-keeper consent for the study to take place; players' parents provided signed consent for player involvement; and both coaches and players provided signed consent prior to data collection starting.

Systematic Observations

A total of 22 sessions lasting 459.18 minutes were analysed. The shortest lasted 8 minutes 18 seconds and the longest 33 minutes 39 seconds and two sessions were excluded (*i.e.* not video-based or not intending to develop players' game-knowledge or decision-making). Coaches´ communication, player participation and the screen were video recorded using a tripod mounted digital video camera (Sony HVR-Z5E, Japan) positioned at the back of a sound-proofed classroom.

We followed a similar approach to Cushion *et al*. (2012), adapting a pre-existing observation instruments (*i.e.* CAIS, Cushion *et al*., 2012; and ASUOI, Lacy & Darst, 1984) into a representative instrument that measured coach behaviour within video-feedback sessions. The first author became familiar with systematic observation, reviewed existing coach behaviour tools and explored the categories included in the CAIS and ASUOI. The initial two sessions for coach habituation (Darst *et al.*, 1989) were also pilot coded to understand behavioural profiles. Subsequently, to develop a bespoke coding framework with enhanced face validity, continuous consultation occurred between PR and a team with 48 years of combined experience coding behaviour, sport psychology and coaching pedagogy. The final instrument was used once new categories and/or altered definitions were agreed unanimously by the panel and no new behaviours emerged during additional pilot coding (Table 2).

This process resulted in an instrument composed of fourteen primary categories with 'Questioning & Player Participation' split into convergent and divergent questioning and player participation (Table 3). As footage included past games, coaches provided feedback on players´ actions, remained silent, asked questions or allowed players to intervene, and cued attention to certain video events. Additional amendments involved the integration of one sole management category, introduction of 'assistant intervention' and 'question to assistant', and removal of 'instruction' (See table 2 for definitions). All coding involved event frequency and duration recording.

Inter- and intra-observer reliability were calculated using the formula (agreements) / (agreements + disagreements) x100 for both event frequency and duration (seconds) data. Objectivity between both observers´ understanding of behaviour definitions was calculated using inter-observer reliability testing. This was performed by PR and AM who coded the same session separately and scores demonstrated 88% and 86% agreement levels for frequency and duration data, respectively. To calculate intra-observer reliability and reduce observer drift, PR initially coded the same session on two separate occasions a week apart, followed by re-coding of the same session on four separate occasions after coding eight different sessions (Darst *et al.*, 1989). Comparisons between the four sessions ranged from 94-97% and 93-98% for frequency and duration data, respectively. Both types of agreements exceeded the threshold for acceptance of 85 % (van der Mars, 1989).

[INSERT TABLE 2 HERE]

Interviews

One-to-one semi-structured interviews were conducted with each coach after all video data had been collected. Interviews lasted between 36 minutes 52 seconds and 52 minutes 40 seconds (average 44 minutes 46 seconds) and explored coaches' understanding of their

pedagogical behaviours during the sessions. The lead researcher conducted two pilot interviews with qualified coaches who were aware of the project but not directly involved. These pilot interviews were supervised by experienced qualitative researchers (MR and ML) and provided feedback on question delivery, timing and probing, explored the order and organisation of questions, and considered additional follow-up questions.

Each interview was digitally recorded (Olympus, VN-741PC). The interview schedule was developed deductively based on the behavioural categories utilised. A flexible approach to interviews was necessary to explore issues in greater detail (Bryman, 2015). The schedule was divided into three phases: (1) biographical and profile questions; (2) considerations of video-feedback within the coaching process; (3) video-stimulated recall of cognitions underlying behaviours. The adoption of stimulated recall was deemed necessary due to time-lapses between the first and last video-feedback sessions and associated memory degradation. Specific stimulated recall questions were posed as open questions once a passage video had finished playing to allow coaches reliving their retrospective cognitions. Coaches were free to stop the recording at any point during the video to verbalise their emerging thoughts (Lyle, 2003; Meier & Vogt, 2015). Interviews concluded with the lead researcher offering an opportunity for clarification on, or any questions about, the project to be asked by the coach.

Field Notes

Whilst undertaking data collection, PR also maintained field notes following systematic observation data collection sessions. A total of 22 A4 pages of handwritten notes were generated. In addition, a professional development notebook was also kept that recorded interactions with all staff at the academy, including the coaches involved in this study, and interactions with these coaches were extracted from the notebook; a total of 12 A5 pages of handwritten notes. These notes included interactions and discussions at various, non-formal situations, such as over lunch, or coffee; and discussions varied in focus from technical

aspects of coaching, to components directly related to this study (*i.e.* coach behaviour during video feedback sessions). Furthermore, PR also engaged in a reflective and reflexive dialogue (Attia & Edge, 2017) with the other authors, collectively, at frequent intervals, but also individually on an ad-hoc basis. These data were not analysed, but used as *aide-mémoirs* to help contextualise, explore and understand in more depth the data collected and ensure high levels of analytical rigour and trustworthiness were attained.

Data Analysis

Systematic observation data

Twenty-two team-based video-feedback sessions were included for analysis. Two sessions were excluded as they were not video-based and/or did not intend to develop game-knowledge. Data were exported from Sportscode© Gamebreaker (version 10) into Microsoft Excel (2010). Before any calculations, all behaviour durations were converted into seconds and behaviour duration for successive sessions were levelled in consecutive columns. Average duration for each behaviour was determined by dividing the sum duration of each independent behaviour category within every session by the total number of sessions delivered. Average duration of each independent behaviour was divided by the total behaviours' duration and then multiplied by 100 to obtain the mean percentage time for every behaviour.

Interview Data

Interviews were transcribed verbatim to ensure an accurate record of data which yielded 51 pages of single line spaced text. Transcripts of each participants' interview was given to them to check for accuracy of the transcription and comment on any areas they felt were unclear, to preserve ethics and empower the participants to feel in control of what was written (Mero-Jaffe, 2011). After one week all participants were asked for any points of

clarification they wished to make; none of the participants offered any corrections, extensions, or clarifications of their transcripts.

To ensure familiarity, transcripts were read and re-read by PR several times during the course of the analysis. Analysis followed Braun, Clarke and Weate's (2016) six-stage procedure with transcripts read in detail to understand data in relation to the primary question. During the first full read through, no notes were made nor was there any attempt to analyse the data; rather PR absorbed the text and considered it in its entirety. From the second full reading, notes and meaning were applied to the transcripts. Subsequent readings included the development of themes by clustering raw data into possible 'higher level' themes; an initial codebook was developed, drawing on the interview protocol, and was continually refined as the coding process occurred. Once the higher and first order themes were decided, the 'fit' between coded data, their higher order theme and the meaning within the whole data set were reviewed.

Rigour and standards of 'trustworthiness' during data analysis were maintained following the 'transparency and coherence' core principles of Yardley (2000, 2008) by clearly "articulating and presenting findings while being mindful of the grounding within the participants' lived experiences" (Tawse *et al*., 2012, p. 211). The research team had several debrief meetings to develop the interview schedule content and organisation and the second pilot interview was pilot tested to check for appropriateness, question order and probing. Further, the incorporation of coded data into certain higher order themes was discussed between team members until agreement on its suitability and the final structure was achieved.

[INSERT TABLE 3 HERE]

[INSERT FIGURE 1 HERE]

Results / findings and discussion

During video-feedback, the most employed behaviour was ‘feedback’. John, Mark and Peter presented a similar behaviour pattern with ‘feedback’, ensued by ‘silence’, ‘player participation’, convergent and divergent questioning. When subtracting ‘feedback’ from ‘questioning & player participation’, the difference exceeded 20%. Kieran´s most utilised behaviour was ‘feedback’, however it was followed by ‘player participation’, ‘silence’, convergent and divergent questioning. When subtracting his ‘feedback’ from ‘questioning & player participation’, it equalled to 8.31 % due to his higher values of questioning and player participation (Table 3).

The unstructured qualitative data from the interviews was organised utilising thematic analysis. This included the identification of quotes clustered into first and higher order themes. The final structure of higher and first order themes is presented in figure 1 and its raw data examples have been inserted into the discussion to support its arguments.

This study examined junior-elite coaches’ behaviour and their underlying cognitions during video-feedback sessions. Therefore, coaches´ values of feedback and questioning & player participation, the three identified forms of cognitive dissonance or epistemological gap and their implications for player learning will be discussed.

Feedback

A prescriptive coaching approach was observed with feedback the most employed behaviour for all coaches. Previous research within training and games reported instruction as the most employed behaviour (Ford *et al*., 2010; Partington & Cushion 2012). However, within video-feedback, as footage was of past games and coaches could not provide instruction to direct a previous performance action, coaches spent most time providing feedback.

Technological developments have facilitated introducing performance analysis systems within the coaching process (Stratton *et a*l., 2004). Video is acknowledged as a useful tool that provides a visual representation of the performance environment to the athlete (Crook *et al*., 2012). Indeed, Mark explained video´s power in transmitting messages by itself:

> *"You can tell a player something as much as you like but until some players actually see it, it doesn´t hit on the penny, it doesn´t drop. Whereas if you can show them it. It might be them doing it, it might be a teammate, it might be a best player, eh … but it´s a real strong message when they see it into the screen…"*

This concurs with Groom and Cushion (2004, 2005) who state that aside from developing players´ understanding and decision-making, video is beneficial to provide feedback. Careful consideration is needed when selecting video clip sequences and provide augmented information as this can influence player motivation and confidence (Hoigard *et al*., 2006). Moreover, positive outcomes are more likely when players receive encouragement after mistakes (Smoll & Smith 2010). Peter highlighted the selection of clips reinforcing players´ behaviours as a strategy to encourage certain actions:

> *"…I try to pull out the things that the boys do positive so… For instance, if a centre forward, … he´s making good runs but he´s not getting the ball, I´ll show him making them runs for them to keep making them runs and encouraging that what he´s doing is good…"*

Although player self-esteem can be enhanced through positive verbalisations (Smith *et al*., 1978), not all the information must support player performance. Kieran suggested a positive balance with some negative clips communicated constructively to facilitate player

improvement:

> *"So the balance would be lots of good clips but a few at the end not so good. Because if we don´t show them clips that aren´t so good, are we gonna get any better? And it´s not about being negative, it´s about showing them what you could have done better. That wasn´t so good. How could we´ve done better in that situation?"*

Research proposes a ratio (1:1) with negative sequences followed by positive examples and negative clips reduced when a team or individuals lack confidence due to recent poor performances (Groom & Cushion 2004; Reeves & Roberts 2013). Krueger (2002) and Goudas *et al.* (2000) asserted that positive feedback reinforces positive behaviours and increases perceptions of task competency, whereas, negative feedback can challenge improvement and students´ knowledge to a greater extent. Therefore, combinations of positive and negative video clips could be effective to encourage players´ desirable behaviours while challenging them to generate better solutions to particular game-situations.

Questioning & Player Participation

Data highlighted low values of questioning & player participation. Excluding Kieran, players actively participated for less than a fifth of the total session. All coaches´ convergent questioning values were higher than divergent questioning. There is consensus among coaches, players and performance analysts that video-feedback increases player game-understanding and tactical knowledge (Groom *et al.,* 2011; Francis & Jones, 2014). Furthermore, when combined with questioning, is shown to develop more sophisticated problem representation and improved player decision-making during competition (García-

González *et al*., 2013).

Learning theories advocate more 'hands-off' approaches to teaching and a major involvement of learners in the process (Davis & Sumara, 2003). The Social and Cognitive Constructivist models declare that learning can be facilitated through engagement in social interactions or intra-personal cognitive activity (Light, 2008). This position was supported by coaches´ understanding:

> *"I think the player should be involved isn´t it. I think it´s about the coach showing them up in the video the clips and then looking for a player-coaching relationship on what we could´ve done better, what did we do well, … So just player to coach and player to player feedback really…" (Kieran)*
>
> *"… by asking them questions as well, making them relax, so that they…in the environment…feel comfortable if I ask them to step up and show how they read the situation". (John)*

Mark encouraged intra-personal knowledge construction through an initiative requiring players to select clips of themselves or best players, which directly linked to their individual learning objectives (ILOs). Players shared these clips and received questions from teammates and coaches. Similar approaches in formal education (Aiken *et al*., 1975; Lin & Bigenho, 2011) highlight the potential benefits for memory recall when collecting and presenting information. Mark explained the benefits of this strategy as:

> *"…some might wanna be lazy and just sit and watch and switch off…But then, you´re almost forcing them to go away and watch best practice themselves whereas in the past it´d be … oh well the coach will do that … Whereas when they have to go and search for their best practice and present it, it´s stimulating the learning process…"*

Cognitive Constructivism theory reinforces the role of thinking in facilitating understanding (Light, 2008). Lorin *et al.* (2001) refined a taxonomy encapsulating ascending levels of cognition (*i.e.* remembering, understanding, applying, analysing, evaluating, and creating). The higher-order thinking skills allow learners to construct meaning and knowledge that can be effectively used in new situations (Resnick, 1987; Brandsford *et al*., 2000). Thus, instructional behaviours promoting various levels of cognitive engagement have been tested to understand how they mediate skill development. For instance, guided discovery that directs learners to key aspects of skill (using fewer instructional cues) was more effective for skill acquisition than discovery learning or explicit instruction (Smeeton *et al*., 2005). However, coaches´ interpretations of 'what' guided discovery is and 'how' to implement it during video-feedback was explained as a succession of questions leading players toward responses:

> *"Well I think you try to get the answers from the players. Don´t tell them the answers. Trying guide them towards the answers and then try to get the answers out of them". (Mark)*
>
> *"So, I give them a question but leave it opened, they give me the answer and then we look for a bit further on them. Come on then, give us a bit more, what you mean. Well we could have … It´s trying to get them to really open their minds to give feedback…" (Kieran)*

Questioning is an alternative instructional strategy that promotes players´ self-analysis (Vickers, 2007). It encourages learners to find answers or develop problem-solving skills that allow them to explain their thinking or elaborate new reasoning (Cazden, 2001; Sahin, 2007;

Chin, 2007). Schön (1983) outlined that questions and discussion allow players to bring knowledge to the level of consciousness and internalise it. Coaches´ beliefs appeared consistent with this interpretation:

> *"I want it to come from the players because I think that´s powerful. so that player who came with the answer, that will stick with him and possibly with the other player because a player is come up with it … I think research show isn´t it. When a player comes up with an answer himself then sticks …" (Mark)*

Furthermore, question types pose varying cognitive demands (Johnson, 1997). Convergent questions have limited response options and typically require lower order thinking skills such as information recall; whereas divergent have unlimited response options and, when well-articulated, can stimulate higher levels of thinking and require the generation of responses (Harvey & Light, 2015). As in this study, previous analysis of teachers´ questioning in classroom settings have reported higher use of convergent questions (Daines, 1986; Sellappah *et al*., 1998). Surprisingly, Kieran expressed his preference for open questions:

> *"I think it should be an open dialogue. You know what did we do well on Sunday? That´s not a question. Well it´s a question but it´s an open one… Someone might come up with well we controlled the game … On feedback sessions, it should be more than opened questions, more than direct questions. I think that´s how it should be. That´s the way I like it to be anyway"*

Cognitive dissonance or epistemological gap

Three forms of cognitive dissonance or epistemological gap were detected: (1) lack of knowledge about meaning of terms related to teaching approaches, (2) ability to recognise good coaching practices but inability to explain the underpinning rationale and (3) incongruence among coaches´ statements and behaviours. According to Davis and Sumara (2003), the lack of understanding of teaching-related terms occurs due to the acquisition of vocabulary without understanding its critical meaning. This is observed in John´s interview when viewing a clip where he provided prescriptive information, followed by his justifications:

> *"That´s guided discovery. It´s showing Martin (pseudonym) where he was as we were attacking and where should be when we were attacking … So one of Martin´s ILOs would be getting into the final post because Martin has a tendency to switch off. So, when the ball gets crossed Martin still too far away outside the box…"*

Although John´s recall seems accurate, it became evident that his understanding of 'guided discovery' was incorrectly framed. The incorrect use of this term demonstrated lack of understanding and, perhaps, awareness of guided discovery a potentially desirable coaching approach in a development environment. Interestingly, John had completed the FA Advanced Youth Award, where module three focuses on alternative instructional methods (The FA, 2014). However, he seemed to be using 'guided discovery' without appropriate understanding of meaning and how to implement this effectively within a video-feedback environment.

Further cognitive dissonance was observed between coaches´ ability to utilise teaching approaches more beneficial for learning without understanding why. For example, Peter highlighted his support for players selecting and presenting video sequences linked to

their individual learning objective´s during video-feedback, though was unable to rationalise why he selected this approach. Similarly, Kieran stated his preference for a video-feedback environment where players discussed positive aspects and areas of improvement. Nevertheless, when asked about the effects of player involvement and interaction on learning, Kieran was unable to respond:

> *"I think the benefits from it are that the boys will learn it quicker, the boys will understand what they need to do, and also they´ll be making better decisions, better decision making´s". (Peter)*
>
> *"Just to give them a greater knowledge, greater understanding, greater learning of what we are trying to do or what we are trying to develop them as footballers whether that´s a positive clip or not…" (Kieran)*

Festinger´s (1959) work connoted cognitive dissonance as discomfort when an individual is aware of the tension between two dissonant cognitions. The 'New Look' theory emphasised that cognitive dissonance was more likely to occur when actions contradict the self-concept (Cooper and Fazio 1984). Data suggest a disconnect between coach awareness of desirable behaviours and the underpinning reasons for its use. This disconnect did not appear to provoke discomfort or willingness to change. Perhaps this is due to these approaches not causing observable adverse consequences (Festinger & Carlsmith, 1959), albeit players´ thoughts could have experienced detrimental effects.

The third form of cognitive dissonance, similar to Harvey *et al*. (2013) and Partington and Cushion (2013) within practice environments, was coaches´ lack of self-awareness. Both Mark and Kieran exhibited strong philosophies and understanding of certain issues (Mark – guided discovery and player participation; and Kieran – divergent questioning). However,

their actual behaviours were not aligned with such positionings and comparison between actual and desired behaviour could lead to behaviour and/or belief adjustment. With this purpose, coaches´ reflections on their video-feedback sessions´ delivery could be facilitated through video and/or a critical friend (Partington *et al*., 2015).

Limitations

Firstly, systematic observation measured quantity of behaviour without ascertaining its quality. For example, percentages of convergent questions could reflect a deliberate strategy to reduce the challenge posed by an initial divergent question and this would not necessarily indicate a poor use of questioning. Second, the generalisability of the systematic observation results is constrained due to including data of four lead coaches working at the YDP at a single category one academy in England. Finally, the presence of a camera within the sessions could have promoted coaches´ self or shared reflexivity leading to representations of certain modes of coaching considered more appropriate than others (Cushion, 2016).

Conclusion

Coach feedback was the most frequent behaviour for all coaches and only one coach (*i.e.* Kieran) enabled player participating for a fifth of the session. While augmented feedback, does not necessarily involve players´ in the problem-solving process (Williams & Hodges, 2005), players´ answering a question or intervening on own initiative seem to require engagement in lower or higher cognitive activity and therefore, should be increased when possible. In this study, coaches with higher questioning *(i.e.* Peter and Kieran) increased player participation. Further, it is argued that divergent questions requiring more

complex reasonings and responses could enrich the quantity and quality of cognitive activity compared to convergent questions.

Although teaching methods need to be underpinned by learning implications (Light, 2008), the coaches presented three forms of cognitive dissonance or epistemological gap. Firstly, the use of teaching-related terms underpinned by flawed understanding. Second, ability to identify beneficial coaching practices but inability to rationalise why. Third, coaches presented strong rationales to use certain behaviours, however, exhibited contradictive behaviour scores.

This study constitutes an exploratory first attempt to capture coaches´ behaviours and underpinning knowledge for approaching team-based video-feedback sessions. It reports junior-elite coaches´ behavioural profiles and their underlying pedagogic knowledge that rationalises their use of certain behaviours within a classroom-based environment. Additionally, it identified three different forms of the cognitive dissonance phenomenon during video-feedback sessions.

To conclude, coaches demonstrated similarity and difference between their behaviours and underpinning thinking and knowledge. This indicates a need to consider baseline behaviours and knowledge to coach within a classroom environment before attempting to change behaviour and/or increase understanding. Therefore, systematic observation, interviews and stimulated recall can help identify coaches´ group and individual learning needs.

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Disclosure of interest

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