AN INITIAL EXPLORATION OF YOUTH ELITE COACHES´ PEDAGOGICAL BEHAVIOURS DURING VIDEO-BASED FEEDBACK SESSIONS: EXAMINING THE CONNECTION BETWEEN COACHES´ BEHAVIOURS AND THEIR UNDERPINNING COGNITIONS.

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Abstract

A call for 'athlete-centred' approaches in coaching has been encouraged due to some evidence suggesting the enhancement of learning through questioning and when feedback is implicit, delayed, positive or reduced in frequency (García-González et al., 2013; Masters, 1992; Wulf et al., 2002; Wulf et al., 2010; Swinnen et al., 1990; Sherwood, 1988). However, the combination of systematic observations and qualitative interviews has evidenced that coaching is still guided by coaches´ traditional 'hands-on approaches' (Ford et al., 2010), coaches´ are not aware of their behaviours and exhibit a cognitive dissonance or epistemological gap between their behaviours and underpinning cognitions (Partington et al., 2015).

Coach behaviour in football is a well-established area of research with numerous studies mostly within training sessions (Partington & Cushion, 2013; Partington et al., 2014; Ford et al., 2010; Potrac et al, 2002, 2007) and during games to a lesser extent (Partington & Cushion, 2012; Smith & Cushion, 2006). Coaching occurs within many other contexts apart from training and games and all these need to be explored in detail in order to record a complete pattern of what coaching involves (Ford et al., 2009). Nonetheless, to date there is a dearth of research on coaching behaviours within the other contexts. Therefore, this study aimed to examine the coach´s behaviours and their underlying cognitions during the delivery of video-based feedback sessions.

Twenty-two video-based feedback sessions delivered by four youth elite coaches were filmed, coded and analysed during the season 2014/2015. The Coach Analysis and Intervention System and the Arizona State University Observation Instrument were adapted in order to build an instrument that contained 16 behaviour categories that were representative of the study context. Once the tool had been created, each coach was systematically observed and mean time percentages were calculated for each of their behaviours. Subsequently, a semi-structured interview was conducted with each coach to examine the reasons for using feedback, player participation, convergent and divergent questioning, and any additional themes of interest that emerged. Qualitative data provided were organised into meaningful raw themes, first order themes and higher order themes through thematic analysis procedures.

Within video-based feedback sessions, a prescriptive approach to coaching was found with 'feedback' as the most employed behaviour for the four coaches. This was normally ensued by 'silence', 'player participation', 'convergent questioning' and 'divergent questioning' except for one of the coaches who had 'player participation' as the second most utilised behaviour. Also, the four coaches had higher values of 'convergent questioning' compared to

‘divergent questioning’. Qualitative results demonstrated varied levels of understanding that underpinned each coach´s ‘main coaching behaviours’ and evidence three different types of cognitive dissonance or epistemological gap between the coaches´ behaviours and cognitions. A CPD programme could be implemented to (1) reduce ‘feedback’ and increase ‘player participation’ and questioning, (2) enhance coaches´ understanding of behaviours that facilitate learning to a greater extent and (3) increase coaches´ awareness of their use of these behaviours. Finally, being in possession of the FA Youth Award is now a requirement for working as a coach in a professional English football academy (The Premier League, 2017). Such course is composed by the three Youth Modules with Youth Module 3 focusing on coaching styles or coaching behaviours different to command that are beneficial for learning (TheFA, 2014). However, it seems that this only focus on coaching behaviours within training and competition. Therefore, the content of this research could be used as a framework to train coaches within this particular context.

Key words: youth development, coaching, pedagogical behaviours, video-based feedback, mixed-method research, football.

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It´s nice to be important, but is more important to be nice

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CHAPTER 1

INTRODUCTION

1.1 Background

UEFA´s *Home-Grown Player* rule requires clubs taking part in UEFA competitions to include four players grown in their own academy and four players developed in academies affiliated to the same national Football Association (UEFA, 2005a, b; Relvas, Littlewood, Nesti, Gilbourne, & Richardson, 2010). Consequently, practitioners and researchers have increased their interest in the improvement of services that football academies provide.

Football development programmes across Europe can operate differently, but all intend to create an 'optimal' environment to develop youth talent and guide it towards professional status in adulthood (Elferink-Gemser, Huijgen, Coelho-E-Silva, Lemmink, & Visscher, 2012; Relvas et al., 2010). For instance, The English Elite Player Performance Plan (EPPP), an initiative launched by the Premier League in 2011 and subsequently supported by the Football Association (FA), was designed and implemented to increase the quality and quantity of home-grown players gaining first team professional contracts (The Premier League, 2011). The pathway towards a professional career has three distinct phases: Foundation Phase (U5 – U11), Youth Development Phase (U12 – U16) and Professional Development Phase (U17 – U23) (The Premier League, 2011). This requires the implementation of a multidisciplinary approach to develop young players in technical (and tactical), physical, psychological, and social aspects (Raya-Castellano & Fradua, 2015).

To ensure the creation of youth development centres for talent development, the Premier League audits football academies and ranks them according to four categories (The Premier League, 2011). Indeed, the EPPP states that 'an academy can only become a genuinely elite environment if it is able to articulate its own Football Philosophy and demonstrate how it is embedded into the day-to-day running of the Academy' (The Premier League, 2011, p. 8). Thus, it appears that such audits, more than intending to measure the quality of services, internal procedures or protocols employed by academies, have been designed to measure and intervene on the quantity of facilities or services provided.

One of the key principles of the EPPP that underpins the development of more and better home-grown players is the improvement of coaching provision (The Premier League, 2011). It is proposed that coaching quality is monitored and evaluated through licence maintenance, a strong continuous professional development (CPD) programme, appropriate coach to player ratio, and time for deliberate practice (The Premier League, 2011). However, it makes no recommendations on how to capture and evaluate coaching performance.

In this sense, the expert-performance approach establishes three stages for the study of expertise in domains such as sport, music, education and medicine (Williams & Ward, 2003;

Ericsson, Krampe, & Tesch-Römer, 1993; Plant, Ericsson, Hill, & Asberg, 2004; Ericsson, 2004). These are: (1) Systematic observation 'in situ' of expert performance that allow repetition of the discriminating skills, (2) Identification of underlying mechanisms that lead to a superior performance such as experts´ cognitive processes, and (3) Examination of the how and when the acquisition and development of the differentiating skills took place. Within the coaching domain, Ford, Coughlan, and Williams (2009) outlines that to understand the process of coaching, everything a coach does as such needs to be exhaustively captured, observed and measured. Thus, these researchers propose systematic observation of coaching 'in situ' and semi-structured interviews. Systematic observation through the recording and coding of coach behaviours or using diary reports is not a new phenomenon and it allows the identification of episodes, tasks or behaviours that are relevant to coaching performance (Ford et al., 2009; Brewer & Jones, 2002).

Indeed, systematic observation studies have reported an existing gap between science and its application (Ford, Yates, & Williams, 2010). Motor control research has advocated for more 'hands-off' approaches to coaching such as augmented information that is positive, reduced, delayed or focused on the effect of the action (Masters, 1992; Wulf, McConnel, Gärtner, & Schwarz, 2002; Wulf, Chiviacowsky, & Lewthwaite, 2010; Swinnen, Schmidt, Nicholson, & Shapiro, 1990; Sherwood, 1988). Similarly, in team sports such as football, practices that are random, variable and distributed, or football-specific such as 'playing form' activities, have been encouraged because the acquisition of superior perceptual-cognitive adaptations (Roca, Williams, & Ford, 2012). Nonetheless, instruction has been reported as the most frequently used behaviour when compared to questioning, silence, management, praise, hustle and players engage in 'training form' practices for longer than 'playing form' practices (Ford et al, 2010; Partington & Cushion, 2013).

This descriptive area of research is useful for monitoring coaches' behaviour; however, it has been criticised because it ignores the cognitions that underpin coach behaviour (Partington & Cushion, 2013; Partington & Cushion 2012). Coaching is the combination of behaviours and their underpinning thoughts (Partington, Cushion, Cope, & Harvey, 2015). While behaviours are overt, cognitions are not directly observable (Clark & Peterson, 1986; Cushion, Ford, & Williams, 2012b; Partington et al., 2015), therefore, semi-structured interviews combined with systematic observations have been proposed as an effective method to capture coach behaviours and their underpinning cognitions (Partington & Cushion, 2013, 2012). This mixed method approach has identified (1) a cognitive dissonance or epistemological gap between coaches´ behaviours and their underlying knowledge and (2) a lack of awareness of the use of certain behaviours (Harvey, Cushion, Cope, & Muir, 2013; Partington & Cushion, 2013; Partington, Cushion, & Harvey, 2014).

Further, Brewer and Jones (2002), and subsequently Cushion, Harvey, Muir, and Nelson (2012a) argue that coach behaviours have been judged utilising unspecific instruments. For instance, observational instruments such as the Arizona State University Observation Instrument (ASUOI) have been employed to examine coach behaviours within various sports, setting and situations without consideration of the context they were designed for (Cushion et al., 2012a). Furthermore, some of the behaviours of the ASUOI such as 'silence' or 'questioning' do not provide enough insight into the context of the behaviour execution (Cushion et al., 2012a; Brewer & Jones, 2002). Therefore, Cushion et al. (2012a) used a five-stage approach to validate the Coach Analysis and Intervention System (CAIS) and develop a reliable tool for analysing coach behaviour within training sessions and competition in various sports, whilst providing richer descriptions and further context around the behaviour execution.

Effective coaching within training or games is believed to be composed of various behaviours (Douge & Hastie, 1993), such as the provision of feedback, prompts, hustles, corrections, instructions, re-instructions, questions, management and clarification. However, these can vary between training and games, for example, fourteen youth ice-hockey coaches spent considerably more time observing players than providing information and feedback to players within games compared to training sessions (Trudel, Côte, & Bernard, 1996). The authors concluded that the game might not provide as many 'teachable moments' as training.

In contrast, it could be argued that video-based feedback sessions, offer a better opportunity for teaching. Video-based feedback sessions include the presentation of various sequences of play interspersed with coach and players interventions that intend to facilitate team preparation (Groom, Cushion, & Nelson, 2012, 2011; Groom & Cushion, 2005; Reeves & Roberts, 2013; Francis & Jones, 2014). Within this context the players´ actual task only consists of watching the footage and reflecting on performance through coach facilitation, whereas within training or games, reflection might interfere with the occurring physical situation.

Performance analysis is now widely considered critical part of the coaching process and several studies have examined the perceptions of both players and the staff involved within video-feedback (Hughes & Franks, 2008; Reeves & Roberts, 2013; Groom et al., 2011; Groom & Cushion, 2005, etc.). Further, Groom et al. (2012) assessed the interactions between a coach and his 22 under 18 players. He concluded that the dialogues within the six sessions studied were asymmetrical and delivered in an authoritarian manner. This was plausible as the coach tried to exert control of the theme by using questioning to select and invite certain 'selected' players to participate.

However, perhaps because video-based feedback has been incorporated into the coaching process relatively recently, mainly professional clubs have access to it, does not occur

as frequent as training or match and also coaches are maybe not as well trained for the delivery of these sessions. No study has attempted to explore ‘in situ’ behaviours of youth coaches within video-feedback sessions. This type of study could therefore provide practitioners and coaches with an understanding of this context and the effective way of behaving non-/verbally to favour player learning.

1.2 Aims

This thesis aims to provide an initial insight into youth coaches´ behaviours or approach to delivery during video-based feedback sessions and ascertain to which extent coaches´ behaviours are connected to their cognitions. In other terms, within this coaching situation, are ‘what coaches do’ and ‘why coaches do’ aligned?

1.3 Objectives

The aims of this thesis will be achieved by attaining the following objectives:

Objective 1: To systematically observe, quantify and classify the behaviours of professional youth football coaches during video-based feedback sessions (‘what coaches do’).

Objective 2: To interview and explore the coaches´ cognitive processes that underlie professional youth coaches´ behaviours during video-feedback sessions (‘why coaches do’).

CHAPTER 2

LITERATURE REVIEW

2.1 The use of video-feedback to develop players´ knowledge, reflection and decision-making

Performance analysis (PA) has been outlined as a useful tool for developing players´ knowledge, game-understanding and decision-making (Groom & Cushion, 2005; Groom et al., 2011; Reeves & Roberts, 2013). This when combined with PA systems´ ability to facilitate the provision of augmented feedback to players or staff, has encouraged the incorporation of PA into high performance sports (Reeves & Roberts, 2013; Groom & Cushion, 2005; O´Donoghue, 2010). All the above have resulted in more frequent delivery of video-based sessions that aim to assist team preparation (Reeves & Roberts, 2013; Groom et al., 2011; Francis & Jones, 2014).

For example, Wright, Atkins, and Jones (2012) surveyed 46 elite professional and semi-professional coaches from invasion sports (i.e., rugby league, hockey and soccer) to investigate the integration of performance analysis within the coaching process. Most coaches (86%) stated that performance analysis was essential in order to promote changes to the teams´ style of play and tactics. They also highlighted that they had access to the full game or edited clips on the same day of the game (56%) or the next day (16%). Coaches used these edited clips to feed back to the whole team (86%), players individually (82%) and in small groups (73%). Subsequently, Wright, Atkins, Jones, and Todd (2013), surveyed 48 (32 first team, 16 academy) elite performance analysts working in football. Most participants indicated that the analysts delivered post-match analysis (81%), post-match feedback (71%), pre-match analysis (79%), live analysis (79%) and scouting analysis (54%). Moreover, in a multiple-answer question, almost seventy-three per cent of respondents outlined that they did not deliver the feedback sessions to players as this was normally done by the manager (62.5%), assistant manager (31.5%), first team coach (18.9%), youth team manager (20.8%), youth team assistant manager (12.5%) and youth team coach (16.7 %).

Qualitative research, utilising semi-structured interview procedures, has identified some of the complexities surrounding the delivery of video-feedback sessions. Reeves and Roberts (2013) incorporated the perceptions of players, coaches and performance analysts who recognised the benefits of video-feedback to foster player reflection. Players generally perceived video-feedback sessions as positive unless they had recently performed poorly. Nelson, Potrac, and Groom (2014) highlighted the possible drawbacks of employing the same pedagogical strategy with different individuals. For example, an elite ice-hockey player stated that although he valued the coach reviewing his own bad performance even if this was done in front of other members of the squad, he was aware of other team-mates that disliked it.

This area of research has also collected the perceptions of stakeholders in relation to the type, frequency and amount of feedback provided within video-feedback sessions that enhance

learning to a greater extent. In line with research surrounding motor learning and feedback (Wulf et al, 2002; Swinnen et al, 1990; Sherwood, 1988), coaches stated a balance between positive and negative clips was preferred to avoid the possible shortcomings of showing too many negative sequences (Groom et al, 2011). Groom and Cushion (2005) propose a 1:1 ratio of positive and negative clips unless the team or player are lacking confidence, which will require an increase in positive feedback. Similarly, surveyed players reported their preference for receiving delayed feedback one day after (35 %) or two days after (58 %) so they had time to self-reflect on performance (Wright, Carling, Lawlor, & Collins, 2016). Furthermore, players declared that sessions with higher amounts of coach questioning and player engagement resulted in greater learning, understanding and individual development. One particular player appeared disappointed with fewer opportunities to participate in the pre-match compared to the post-match. Players also outlined that coaches need to be skilled in allocating clear opportunities to participate in order to avoid the discussion becoming chaotic.

Video-feedback is part of the coaching process; however these sessions are not always designed and delivered with consideration of pedagogical frameworks or motor learning research. For example, Booroff, Nelson, and Potrac (2016) interviewed the lead coach of a youth team, who was also the club's academy manager. The authors argue that the participant´s video-based feedback sessions were strategically moulded to prove the completion of his obligations, rather than to meet the needs of players. Moreover, Groom et al. (2012) systematically analysed the content of the interactions between a coach and 22 under 18 players during six video-feedback sessions. Results demonstrated that it was asymmetrical with the coach exerting control over the topic and allowing little opportunity for players to participate.

Although evidences suggest that reducing the amount of augmented feedback and a more player-centred approaches is beneficial for learning (Groom & Cushion, 2005; Williams & Hodges, 2005; Wright et al., 2016), it seems that coaches still use 'hands on' and directive approaches to coaching. This has been outlined within training sessions (Ford et al., 2010; Partington & Cushion, 2013) and games (Partington et al., 2012) with instruction being the most frequently employed behaviour compared to other instructional strategies promoting implicit learning such as questioning (Ford et al., 2010). Within video-based feedback sessions, Groom et al. (2012) were the first to systematically observe and analyse 'in situ' interactions between a coach and their players and report the asymmetrical nature of video-feedback through a 'hands on' delivery approach.

2.1.1 The role of tactical knowledge on sport-expertise

Prolonged engagement in deliberate practice (i.e., physical, perceptual training or video-feedback) leads to a superior performance of perceptual-cognitive skills (Williams & Ford, 2013; Ward & Williams, 2003; Savelsbergh et al., 2002; Roca et al., 2011). These are due to memory structure adaptations that allow expert athletes to quickly encode, store and retrieve sport-specific information. However, traditional views of memory structures such as short-term (STM) and long-term memory (LTM) are limited in explaining these cognitive processes due to storage and processing limitations (Baddeley, 1986).

In contrast, Ericsson and Kintsch (1995) proposed that adaptations in the Long-Term Working Memory (LTWM) such as action plan profiles and current event profiles allow experts to efficiently retrieve domain-specific knowledge that can be used in the given situation. Action plan profiles are rule-governed prototypes such as visual or motor actions that are matched with the current situation. Current event profiles are situation prototypes that provide information of current, past and future factors. Both profiles encode information in LTWM with associated retrieval cues that allow the performer access to domain-specific knowledge in a given situation (McPherson & Kernoodle, 2003). Thus, skilled players´ problem representation can be updated with context-specific information that becomes available as the task progresses (Kintsch, 1998).

The results of several investigations have been explained by the LTWM theory. For example, McRobert, Ward, Eccles, and Williams (2011) reported that skilled cricket batters exhibited better prediction accuracy; a more effective visual search; and enhanced think-aloud verbal reports such as evaluations, predictions and planning statements when compared to their less skilled counterparts. Similarly, McPherson and colleagues employed an observational instruments and verbal reports methodologies to investigate the problem representation of tennis players during performance (McPherson, 1999a; 1999b; 2000; McPherson & Kernodle, 2007). While decision-making and motor skill execution were examined by observational video analysis, the problem representation of skilled and less skilled players were assessed through the immediate recall interview and planning interview. Verbal reports were coded as ‘goal’, ‘condition’, ‘action’, ‘regulatory*’* and ‘do’ concepts. The data of this work suggest that experts or high skilled players contain a more elaborated problem representation with planning actions based on previous events and the contextual conditions (i.e., opponents´ position and shot selection). Moreover, high skilled players´ plans were modifiable as the competition progressed with solutions to improve performance. Authors argue that this more elaborated problem representation is due the use of LTWM and LTM adaptations.

More recently, Gil-Arias, Del Villar, García-González, Moreno, and Moreno (2015) and Moreno et al. (2016) have investigated the effectiveness of video-feedback and questioning to

develop youth female volleyball players´ tactical knowledge by analysing their verbal reports after performing an attack. Within a 6 v 6 training game, participants in the experimental group of Gil-Arias et al. (2015) were required to leave the pitch to undertake the tactical training after performing the attack action (a substitute replaced the participant immediately to ensure continuity in the game). During the 11 weeks that the study lasted, players in the experimental group analysed 44 attack actions. The intervention consisted of the following steps: (1) player watching their own previous attack action; (2) player was asked to self-analyse and reflect on their attack assigning it a self-assessment ranging from 1 to 10; and (3) the investigator guided the player through questioning so that they could identify reasons for a given decision or, in case of wrong decisions a more appropriate response to the situation. The tactical knowledge of players was assessed pre- and post-intervention using recall and planning interviews. Players in the experimental group significantly increased their scores in conceptual content and sophistication although no changes occurred within the strategy planning category when compared to participants of the control group.

Likewise, in a 3-months follow-up study, Moreno et al. (2016) obtained similar results combining video-feedback and questioning with a senior team. Pre- and post-test measures of tactical knowledge were taken from attackers of the Spanish National Volleyball Team within the control and experimental groups during games and training sessions. The intervention was composed of eight individual intervention sessions were players analysed four of their attack actions performed during training games. The coach was responsible for delivering and directing players´ attention to specific aspects of their attacks. He had to undertake training used in previous studies (Moreno et al., 2008) to ensure his familiarisation with the protocols, phases and the documentation required. After the post-test, a significant increase of the conceptual content, sophistication and structure for participants in the experimental group was reported.

Further, García-González, Moreno, Moreno, Gil, and Del Villar (2013) designed an intervention that combined video-feedback and questioning to develop under 14 tennis players´ tactical knowledge and decision-making during games. The programme was applied within the following 24 hours after the game but before the first training session of the week. Eighteen real games were filmed with the first and last four being used for the pre- and post- test, respectively. The ten games in between were used to deliver the intervention sessions. Within every training session, players in the training group watched 6 sequences of their actions (3 positive and 3 negative) and conducted self-analysis and reflections about their decision. This was followed by a coach/supervisor guiding the players´ analysis through opened questioning. Comparison of pre- and post-test measures of the recall planning interview approach and the observational video analysis demonstrated that the training group developed higher number of regulator concepts (i.e., self-evaluation of actions), a more sophisticated concept structure and

more importantly, improved decision-making during games to a higher extent than the control group.

Therefore, the above studies suggest that both more immediate and delayed video-feedback assisted by questioning from coach improves players´ capacity to evaluate the game situation and develop greater tactical reasoning during competition.

2.1.2 The role of metacognition on sport-expertise

Adaptations to an athletes´ LTWM develops better knowledge structures and facilitate the selection of more adequate decision making (García-González et al., 2013; Gil-Arias et al., 2015; Moreno et al., 2016). These occur due to appropriate engagement in deliberate practice (i.e., physical, video-feedback, etc) but also the quality of this practice (planning and reflection) (Coughlan, Williams, McRobert, & Ford, 2014). MacIntyre, Igou, Campbell, Moran, and Matthews (2014) suggest that although knowledge structures play an important role on the development of expertise; planning, reflection and ultimately metacognition processes before, during and after performance have been overlooked. Indeed, elite athletes not only are experts in movement execution but also in planning, metacognition and reflection (MacIntyre et al., 2014).

The term metacognition was originally introduced by John Flavell and is defined as knowledge about a cognitive phenomenon (Flavell, 1979). Two key elements are generally accepted and referred to as: (1) knowledge of cognition and (2) regulation of cognition (Mahdavi, 2014; Harris, Santangelo, & Graham, 2010). Knowledge of cognition is the awareness of one´s own cognition and is composed of knowledge that is declarative (i.e., knowing about things or what to do), procedural (i.e., knowing the procedures to do a task) and conditional (i.e., knowing when, where and why to apply knowledge). Regulation of cognition refers to thought processes to control their own thinking and is comprised of planning (i.e., selection of proper strategies, provision of resources, making predictions and goal setting), monitoring (i.e., critical analysis of plans being implemented and their effectiveness) and evaluation (i.e., examination of task progress that can trigger further planning, monitoring and evaluation) (Mahdavi, 2014).

Some evidence suggests that apart from knowledge structures, experts´ superior ability is due to frequent engagement in metacognitive activity (Ritchie, 2016; Coughlan et al., 2014; Horrocks et al., 2016; MacIntyre et al., 2014). Within an education setting, student self-assessment is considered beneficial for promoting self-reflection, metacognition and ultimately learning (Falchikov & Boud, 1989; Yoo, Son, Kim, & Park, 2009). Ritchie (2016) delivered an intervention that combined the students own assessment with peer and teacher assessments to improve the students' presentation skills. These three forms of assessments contained a rubric of 15 items with criteria about presentation quality. After the first presentation, while participants in the control group (n=19) were only encouraged to watch themselves on the video recording, students in the experimental group (n=20) completed the rubric and were given their peers´ and teachers´ assessment in preparation for a second presentation. Statistically significant differences were found in the experimental group on content explanation, timing and speech skills, compared to the control group in the second presentation. Because the intervention

combined personal, peer and teacher assessments, improvement in performance cannot be exclusively attributed to self-reflection or metacognitive skills. However, this study highlights that student self-reflection alongside peer and teacher feedback can result in enhanced presentation skills.

Within a sporting context, expert athletes have been shown to use more metacognitive processes compared to their less skilled counterparts. For example, Horrocks et al. (2016) used a retrospective qualitative interview with Gary Neville (former England and Manchester United FC player) in order to understand how an expert athlete approached game preparation. Quotes from Gary Neville´s reports reflect his engagement on personal research and evaluations of their opponents through video as a starting point. This was then followed by reflection of his tactical, technical, physical and psychological requirements for the game and planning appropriate responses to counteract his opponent's actions (i.e., anticipation and decision-making). The participant also engaged on predictions about possible options of play (i.e., situational probabilities) and reflected about the involvement of other players (i.e., strategical decision-making) to produce the desired tactical outcomes.

With a quasi-experimental design, Coughlan et al. (2014) examined the cognitive skills of Gaelic football players in order to learn two types of kicks. Forty-five male players were distributed into experts (n=15), intermediate (n=15) and control (n=15) and were asked to kick the ball from their hands and the ground with either their stronger or weaker foot. Pre- and post-measures indicate that experts improved to a greater extent their weaker kick compared to intermediate players. More importantly, they exhibited more frequent statements involving monitoring, evaluations and planning. Similarly, Coughlan et al. (under review) recruited thirty-four (17 intervention and 17 control) Gaelic football players of intermediate level to test the effect of a cognitive processing on the learning of a kicking skill in Gaelic football. The study lasted three weeks and consisted of a pre-test (1 week earlier than the training sessions), four practice sessions with a total of 15 kick trials (4 consecutive days), a post-test (5^{th} day) and a re-test (1 week after the post-test). During the practice sessions, players in the intervention group were asked three questions after various attempts in order to promote planning, monitoring and reflective cognitive processing before and during the kick. Post-test measures demonstrate an enhanced kicking accuracy for both the intervention and control groups. However, re-test scores reveal a higher performance of the intervention group.

These findings suggest that cognitive activity such as planning, monitoring and evaluating during physical practice can play a role in learning. These have been framed within metacognition (thinking about a cognitive phenomenon) (Mahdavi, 2014). In particular, within

the regulation of cognition dimension that is responsible for executing control over someone´s thoughts and actions (MacIntyre et al., 2014; Mahdavi, 2014).

2.1.3 Learning theories and implications for teaching

During most of the 20th century, learning and education have been based on 'Behaviourism Learning Theory' (Zohar & Dori, 2003). This theory views learning as linear and accumulative. This means that learning begins from low order cognitive skills such as memorising or recalling to then progressing to more complex cognitive activities such as analysing, synthesising and evaluating (Moffett MFA, 2012; Zohar & Dori, 2003). On the contrary, 'Constructivism Learning Theory' suggests that learning involves, even from initial stages, the construction of cognitions that can be used effectively (Zohar & Dori, 2003).

The research interest in learning theories has led to a broad range of ideas and discourses that have been clustered under the banner of Constructivism Learning Theory (Davis & Sumara, 2003). Therefore, authors clustered all constructivist theories under three interrelated ideas. Firstly, learning rather than the internalisation of an external reality is considered a process of adaptation based on our past experiences. Secondly, although cognition is intra-personal, it is also a social process and learning arises from interaction. Thirdly, learning involves the interpretation of a no pre-given reality or a reality that is perceived differently by individuals depending on their experiences (Davis & Sumara, 2003; Light, 2008).

Constructivism or Complex Learning Theory emphasise that the acquirement and development of knowledge is more effectively achieved when learners engage in 'active learning' (Light & Wallian, 2008; O´Grady, Simmie, & Kennedy, 2014). Active learning is 'an instructional method that engages students and involves them as active participants in the learning process' (Prince, 2004, p. 1). While the 'cognitive constructivism' of Piaget (1970) outlines that the development of knowledge is acquired intra-personally through exploration and discovery, the 'social constructivism' of Vygotsky (1978) advocates for richer cognitions and understandings to emerge from social interactions. According to Vygotsky (1978) learning and skills are due to occur within the 'Zone of Proximal Development', a space between the learners´ problem-solving abilities and his problem-solving abilities when assisted by a more capable peer.

Meaningful learning occurs when learners engage in appropriate cognitive processing (Mayer, 2004). Thoughts can vary from lower value and simpler to more complex and reflective such as metacognitive thinking (Resnick, 1987). For example, Bloom (1956) and Lorin, Anderson, and Krathwohl (2001) developed a taxonomy that encapsulates ascending levels of cognitions (e.g., remembering, understanding, applying, analysing, evaluating and creating).

Learners must then use the highest levels or 'higher-order thinking skills' to construct meaning and knowledge to unstructured situations (Mayer, 2004). Therefore, the concept of 'knowing' has evolved to 'usable knowledge' that can be effectively applied to solve a new unspecified situation (Brandsford, Brown, & Cocking, 2000).

Teaching that intends to develop learners under this new conception of learning contradicts the traditional delivery of classrooms over the years within education settings (O´Grady et al., 2014; González, 2014; Fang, 1996; Allen & Tanner, 2015). Within this teacher-centred approach, teachers are responsible for the delivery of information while students passively listen (González, 2014; Ebert-May, Brewer, & Allred, 1997).

In contrast, 'Problem-based learning' (PBL) is an inquiry-based approach that involves students´ engaging in small group work to solve a problem with an unspecified solution path (Caskey, 2009). This learning method aims to construct an extensive and flexible knowledge base, develop effective problem-solving, self-directed and lifelong learning skills, facilitate collaboration among students and their intrinsic motivation to learn (Hmelo & Ferrari, 1997). Key features of this educational method include: (1) a realistic, complex and ambiguous problem; (2) student´s lack of knowledge to solve the problem at the time; (3) the teacher/leader acting as a facilitator to guide the problem-solving process; and (4) small group promoting team work between students to solve the problem (Altshuler & Bosh, 2003).

Knight and Wood (2005) argue that meaningful understanding is gained through active engagement rather than passive listening. For example, it has been demonstrated that active learning strategies (see table 2.1) impact student success by improving performance and changing misconceptions across different academic disciplines (i.e., biology, chemistry, psychology, English, physics, etc) (González, 2014; Burrowes, 2003; Lumpe & Staver, 1995; Niaz, Aguilera, Maza, & Liendo, 2002; VanderStoep, Fagerlin, and Feenstra, 2000; Ergin & Atasoy, 2013; Lasry, Mazur, and Watkins, 2008). These, among others, include the development of higher-level learning and problem-solving skills (Kurfiss, 1988); enhancing the effectiveness of computer-based instruction (Light, 1990); eliminating the basis for stereotypes based on race, gender and physical handicaps (Johnson, Johnson, & Holubec, 1993). Nonetheless, careful consideration is needed when extrapolating these findings into the childhood and adolescence populations. With exception of Ergin and Atasoy (2013) whose participants were aged between 14 and 16, the rest of studies were delivered with young adults undertaking scientific subjects within the settings of College, High School or University.

Finally, the use of different pedagogical approaches may be limited by the age or experience level of individuals. For instance, Piaget classifies the cognitive development of children in sensory-motor (0-2 years), pre-operative (2-7 years), concrete operations (7-11 years), and formal operational (12 and older) stages and within each phase the child is characterised by higher degrees of perceptual and cognitive skills´ development (Perrotta, 2011; Cherry, 2019). Likewise, work from McPherson (1999a) concluded that more expert players reported verbal statements containing more complex tactical knowledge compared to beginners regardless of age. Moreover, when comparing adult and youth experts´ responses selection and executions, adults accessed more sophisticated sources of knowledge such as action plan and current event profiles whereas youth mainly resorted to action plan profiles. These findings suggest that age and level of experience might be moderating factors of the pedagogical approaches to be used with learners.

Table 2.1 Classroom settings and/or strategies meeting active learning principles.

Classroom Setting	Explanation
Lecture with questioning	This is the simplest type of active-learning activity that combines formal lectures interspersed with 3-4 minutes long structured-opened questioning (Felder, 1996). Student interactivity has been highlighted for being important to the student´s personal and academic development (Astin, 1993; Springer, Stanne, & Donovan, 1999). However, teacher questioning needs to be opened to promote student reflection and can be organized in small groups in order to diminish the anxiety of answering in front of a large class (Allen & Tanner, 2005)
Technology immediate feedback	This type of active-learning consists of multiple-choice test that students have to complete in groups (Michaelsen, 1992). Each group may be given a wireless handheld to answer and the teacher can store and scan the responses within a machine system. As in the previous classroom setting, multiple-choice questions should promote student reflection with regards to the reasons underpinning the different choices (Allen & Tanner, 2005)
Presentations and projects	Within this environment, students are given a topic, must understand the literature around the area of study and write a report (Allen & Tanner, 2005). The teacher can deliver brief lectures or meetings outside the classroom to orientate student´s work (Eisen, 1998). Finally, students must present their peers with a summary of the material revised and be prepared for discussions at the end of the class (Eisen, 1996, 1998).
The "5E" learning-cycle instructional model	In this model, the student leads their own learning (Allard & Barman, 1994). Ebert-May et al. (1997) established five phases: (1) Engagement, where student reading, self-questioning and knowledge organization is promoted; (2) Exploration, in which students carry out other discovery tasks for developing concepts and skills; (3) Explanation, which aims to provide opportunities to enhance the two previous phases; (4) Elaboration, where the student is asked to apply their understandings; and (5) Evaluation, where the assessment is performed.
Peer-led team learning	It consists of solving problems posed by the teacher with the aid of students that have already taken the course (Allen & White, 2001; Sarquis et al., 2001; Smith et al, 2005). These more experienced students act as facilitators of their peers´ learning (Allen & Tanner, 2005). Therefore, they need to be familiar with the content of the course and trained with the goals of inquiry-oriented instructional methods in order to provide and receive constructive feedback (Allen & White, 2001; Sarquis et al., 2001).

2.2 Instructional strategies: Feedback and questioning

Feedback is any subjective estimation of performance that arises internally when an individual completes a task (Kren, Würth, & Hergovich, 2013; Butler & Winne, 1995). It can also be provided externally by a more capable peer, allowing the learner to compare discrepancies between actual and desired task performance (Krenn et al., 2013). This external feedback source is conceptualised as augmented information provided by the coach/teacher about a player´s action outcome or their movement pattern (Williams & Hodges, 2005; Backaberg et al., 2015; Partington et al., 2014).

Motor control research has demonstrated that this type of augmented information influences motor learning (Williams & Ford, 2013). For example, feedback that encourages implicit learning or external focus, delayed, positive or reduced in frequency have been shown to be advantageous for learning when compared to internal focus, immediate, negative and very frequent feedback (Masters, 1992; Wulf et al., 2002; Wulf et al., 2010; Swinnen et al., 1990; Sherwood, 1988). Nevertheless, cautious consideration of these conclusions is needed as subjects taking part in the above studies were adults (University students) with exception of Wulf et al. (2002) whose novice and experts participants were aged between 16 to 23 and 15 to 30, respectively.

The rationale for reducing augmented information is that although high amounts of augmented feedback might be initially beneficial for performance, they might create reliance on it and prevent learners from being involved in the problem-solving process (Salmoni, Schmidt, & Walter, 1984). Moreover, external-focus or feedback that is directed to the learner´s action effects, allow skills to develop implicitly. This reduces the effects of stress on performance because of a diminution of conscious effort to process the rules of the action, compared to when feedback is internal-focus or directed to the performer´s movements (Masters, 1993; Smeeton, Williams, Hodges, & Ward, 2005).

Furthermore, Smeeton et al. (2005) demonstrated longer decision times and decreased performance of youth tennis player's anticipation that received explicit instruction compared to those under the conditions of guided discovery or discovery learning. The explicit instruction group received prescriptive information about key postural cues and their relation to performance; the guided discovery group were given information about the location of advance cues and were asked to think about the link between body shape and shot outcome; and the discovery group were encouraged to explore this relationship by themselves. This 4-weeks laboratory training improved the post-test measures of anticipation (decision time and accuracy of responses) for players that received guided discovery to a greater extent when compared to discovery learning and explicit instruction. The authors concluded that guided discovery was

better than discovery learning because of quicker improvements during initial stages of learning due to clear direction about specific relevant aspects of performance that are required for the task.

Given the above, it seems advisable for coaches to reduce their provision of explicit feedback and instead use instructional strategies that promote learners´ implicit learning or methods that encourage the use of intrinsic feedback such as summary and bandwidth feedback or questioning. In this sense, questioning behaviours have been proposed as an alternative to instruction and feedback because it encourages active and implicit learning (Williams & Hodges, 2005; Chambers & Vikers, 2006). Asking questions to players allows them to self-analyse their decisions and actions, and stimulate thinking in pursuit of the responses (Práxedes, Moreno, Sevil, García-González, & Del Villar, 2016; Vickers, 2007; Cazden, 2001). Furthermore, questioning strategies are considered useful for allowing players to verbalise knowledge, make it conscious and facilitate its internalisation (Partington et al., 2014; Daniels, 2001).

Questioning can be formulated to encourage different types of thinking (Johnson, 1997; Harvey & Light, 2015). Convergent, fact-seeking, low-order thinking and skinny questions, constrains the response options and encourage lower-order thinking skills such as the recall of information (Johnson, 1997; Ford et al., 2010; Partington et al., 2014; Harvey & Light, 2015). In contrast, divergent, generative or interpretative, high-order thinking and fat questions require unlimited response options and therefore, stimulate players´ higher levels of thinking required to find a solution for a problem and a situation (Johnson, 1997; Ford et al., 2010; Partington et al., 2014; Harvey & Light, 2015). The important issue to highlight is that while convergent questions require low-order thinking skills such as understanding or recalling; divergent questions, when well-articulated, engage players cognitively and allow them to use higher-order thinking skills such as analysis, synthesis and evaluation in order to build new knowledge and ultimately learn (Cope, Partington, & Harvey, 2016; Harvey & Light, 2015).

Within training, it could be argued that divergent questioning might interfere with the occurring physical practice and therefore, convergent questions, that require simpler levels of thought processes, could reduce the demands imposed on the player. Within a video-based feedback session, however, players´ actual task consists of watching the clips and reflecting on them. Thus, it could be more beneficial in this context the use of divergent questions due to the lack of multi-task constrains.

2.3 Cognitive dissonance theory

Cognitive dissonance is defined as an aversive arousal produced due to the awareness of the mismatch of two cognitions or the contradiction between someone´s attitude and their behaviour (Proulx, Inzlicht, & Harmon-Jones, 2012; Murray, Wood, & Lilienfeld, 2012; Myers, 2010). Cognitions are part of knowledge that people have about their behaviours, attitudes, beliefs, perceptions or feelings (Festinger, 1957; Telci, Maden, & Kantur, 2011). Two cognitions are dissonant or consonant when they are inconsistent or consistent with each other, respectively (Festinger, 1957). When two cognitions are inconsistent, this discrepancy generates psychological discomfort (Festinger, 1957; Rydell, McConnell, & Mackie, 2008) which leads to the detection of an error/arousal that is attempted to be reduced by (1) removing dissonant cognitions, (2) adding new consonant cognitions or (3) reducing the importance of the cognitive dissonance (Telci et al., 2011; Proulx et al., 2012).

Cognitive dissonance frequently occurs when an individual exhibits behaviours that are discrepant to his attitudes (Myers, 2010). For instance, if an individual advises someone to take surgery to modify the aesthetic of a body part and the operation results in irremediable consequences, it is very likely that the person that advised the operation suffers cognitive dissonance. In order to return to a consonant state, that person has the three options mentioned in the paragraph above. In this case scenario, dissonance could be reduced, for example by adding new consonant cognitions such as sharing responsibilities with the person that decided to undergo surgery.

Festinger and Carlsmith (1959) demonstrated this phenomenon in their original research protocol. Undergraduate students were asked to perform a tedious task such as repeatedly turning pegs on a board. Subsequently, participants were required to deceive a fellow student with the idea that the task was enjoyable. Undergraduates misleading a fellow student were split into two groups and compensated with $1 and $20, respectively. Finally, all students completed a questionnaire and, interestingly, students who received $1 reported higher enjoyment during the peg-turning task compared to the $20 group.

Festinger and Carlsmith (1959) used cognitive dissonance to explain the findings. Although the students who were paid $1 indicated that the peg-turning task was enjoyable, they internally experienced it as dull. Due to the tension between the dissonant cognitions, participants modified their attitude and the task was contemplated as enjoyable. The statements and inner attitudes of participants who were paid $20 were also inconsistent. However, in this case, the inconsistency was balanced or weakened due to the external motivation of $20 and the consequent lack of willing to change their attitudes that the $1 group had.

Subsequent revisions of this theory such as 'the New Look theory of cognitive dissonance' outlines that cognitive dissonance only occurs as a trigger to an aversive arousal or emotions such as guilt, shame, regret and sadness that threatens our own self-concept (Cooper & Fazio, 1984; Cooper, 1999, 2007). If someone´s self-opinion is positive and moral, however their actions contradict this, cognitive dissonance would occur. This conflict between the self-concept and the actions of the subjects was present within the Festinger and Carlsmith (1959) study. Therefore, participants were supposed to feel guilt for having deceived a fellow student, however they did not, possibly due to receiving the extra motivation of $20 and/or not provoking a negative effect on the student. In this sense, Cooper and Fazio (1984) state that cognitive dissonance is also triggered when an unwanted consequence is produced. If an individual´s action does not promote an aversive consequence, they will not feel any responsibility for their actions. In contrast, if their action provokes an unwanted effect, the inconsistency between two cognitions will promote cognitive dissonance.

An alternative theory named 'Self-Perception theory' was developed by Bem (1972). It states that an individual observes and analyses their own overt behaviours and infer their attitudes as if they were outsiders of the situation in which the behaviour occurs. This removes the tension between the inconsistent cognitions. Therefore, within the continuum of an attitude, the attitude is positioned at a point that is congruent with the behaviours. Therefore, for attitude to change, the individual needs to behave in a more extreme way than the positioning of their actual attitude (Fazio, Zanna, & Cooper, 1977).

To summarise, cognitive dissonance is an individual´s discomfort produced by two inconsistent co-existing cognitions. Such tension is likely to happen as a response to emotions like guilt, shame, regret and sadness that compromise our self-concept or when our actions lead to negative consequences. In addition, attitudes and behaviours are more likely to change if an individual´s actual behaviour is more extreme than his perceived attitude.

2.3.1 Cognitive dissonance or epistemological gap in coaching

Coach behaviour research needs to assess the behaviours exhibited by coaches in conjunction to their underpinning cognitions within the different contexts in which coaches act (Cushion et al., 2012a; Brewer & Jones, 2002; Ford et al., 2009). While behaviours are overt to direct observation, cognitions are not observable (Partington et al., 2015; Clark & Peterson, 1986; Cushion, Ford, & Williams, 2012b). Thus, in order to capture both behaviour and underpinning cognitions accurately, a mixed-method approach composed of systematic observation and semi-structured interviews has been employed (Partington et al., 2014; Partington & Cushion, 2013; Harvey et al., 2013).

For instance, Partington and Cushion (2013) recorded a total of sixty-one training sessions and interviewed eleven professional youth football coaches. The coaches stated that they wanted to develop better decision-makers, however, they were unable to describe how to design practices that developed this type of player. They suggested that coaches were using terms or describing learning concepts in the interviews but did not necessarily understand them, so as consequence they continued to use a more traditional 'coach-centred' approach to coaching rather than 'athlete-centred'. In addition, Partington et al. (2014) systematically observed and interviewed twelve professional coaches who predominantly used convergent questions over divergent. When asked about their rationale for using different types of questions they showed their preference for quicker questions that allowed longer time for practice but could not state the benefits associated to divergent questioning. Based on the above, there is an existing 'epistemological gap' or 'cognitive dissonance' between coaches´ behaviours and their underpinning cognitions or knowledge (Partington et al., 2014; Partington & Cushion, 2013; Harvey et al., 2013).

Cognitive dissonance or epistemological gap is defined as coaching/teaching in a traditional way due to a lack of understanding of terms related to teaching approaches (Light, 2008; Davis & Sumara, 2003). Similarly, within a physical education context, Davis and Sumara (2003) argue that teachers use terms referring to constructivism, but do not teach following principles that underpin this learning theory. Light (2008) outlines that the use of any teaching method needs to be underpinned by awareness and reflections about assumptions of learning. However, this disconnect between coaches´ behaviours ('the what') and their thoughts ('the why') leaves practice guided by a traditional approach rather than teaching methods that meet the requirements of learners or learning theory frameworks (Light, 2008; Davis & Sumara, 2003; Harvey et al., 2013; Partington & Cushion, 2013).

CHAPTER 3

ANALYSIS OF YOUTH ELITE ENGLISH COACHES´ PEDAGOGICAL BEHAVIOURS AND UNDERPINNING COGNITIONS WHEN DELIVERING VIDEO-BASED FEEDBACK SESSIONS

3.1 Introduction

Coaching is considered a pedagogical process composed by the interplay between teaching and learning (Jones, 2006, 2007; Ford et al., 2010). It is acknowledged that the way coaches act or teach considerably influence players´ actions, cognitions and affective responses (Mageau & Vallerand, 2003; Partington et al., 2014). Moreover, research on motor control advocates for a less prescriptive approach to instruction and feedback for skill learning (Hodges & Franks, 2004; Wulf & Shea, 2004; Smeeton et al., 2005; Williams & Hodges, 2005; Schmidt & Lee, 2005). Likewise, learning theories support the active role of the learner in the interpretation of reality through discovery and exploration (Light, 2008; Allen & Tanner, 2005). However, systematic observation studies of youth top-level coaches´ have demonstrated a gap between science and its application, with 'instruction' often representing the most commonly employed coach behaviour during training and competition (Ford et al., 2010; Partington et al., 2014; Partington & Cushion, 2013; Harvey et al., 2013; Potrac et al., 2007; Potrac et al., 2002).

The relatively recent incorporation of performance analysis into high performance environments has led to the delivery of video-based meetings that intend to assist team preparation before, during and/or after a game (Reeves & Roberts, 2013; Groom et al., 2011; Francis & Jones, 2014). For example, Wright et al. (2012) surveyed 46 elite professional and semi-professional coaches from invasion sports (i.e., rugby league, hockey and soccer) who had access to the full game or edited clips the same day or the day after the game. They reported that they used edited clips to feedback to the whole team (86%), in small groups (73%) or to individual players (82%). Similarly, Wright et al. (2013) surveyed 48 (32 first team, 16 academy) elite performance analysts working in football. Participants indicated that they provided the team with post-match analysis (81%), post-match feedback (71%), pre-match analysis (79%) and live analysis (79%). Over the 48 respondents, 73% outlined that they did not lead the feedback to players as this was normally done by the manager, assistant manager, first team coach, youth team manager, youth team assistant manager or youth team coach.

Qualitative research has identified some of the particularities and intricacies of video-based feedback sessions. For example, these sessions have been perceived by coaches, players and analysts as useful for developing players´ reflection, knowledge, game-understanding and decision-making (Groom & Cushion, 2005; Groom et al., 2011; Reeves & Roberts, 2013; Wright et al., 2016). They also seem to have a positive impact on team performance, even though careful consideration needs to be taken when coaches´ provide feedback to an individual within a group session (Nelson et al., 2014). Groom et al. (2011) reported that coaches balanced positive and negative plays to avoid the possible shortcomings of showing too many negative sequences.

Likewise, players taking part in the second phase of Wright et al. (2016) perceived sessions with greater coach questioning and player involvement in discussions as a greater opportunity for learning, understanding and development. Nonetheless, it seems that the way video-based feedback is approached remains guided by frameworks that are not sensitive to teaching and learning. For example, Booroff et al. (2016) argue that their participant, who simultaneously undertook the roles of academy manager and under 18´s manager, used video-based feedback to his benefit in order to complete various objectives and outcomes that were expected from him at the club. This is similar to interactions between a lead coach and his 22 under 18 players within video-based sessions. Adopting an ethnographic study design that systematically analysed 'speech-exchange systems', Groom et al. (2012) highlighted that communication between coaches and players was asymmetrical with the coach exerting control over the topic with few opportunities for the players to participate.

Research in this area has helped to improve our understanding of some of the initial complexities of performance analysis and the practitioners´ perceptions on the use of video-based feedback. Although conclusions of the previous investigations can serve as general guidelines for implementing video-based feedback (Wright et al., 2014; Butterworth, Turner, & Johnstone, 2014; Groom et al., 2011), it remains unclear how to best integrate this technology into coaching practice (Stratton et al., 2004). In particular, the pedagogical application of video-based feedback to enhance player learning and development appear to be under researched (Nelson et al., 2014; Groom et al., 2011; Bartlett, 2001; Wright, Carling, & Collins, 2014; Wright et al., 2016).

Franks, Goodman, and Miller (1983) define coaching as a cyclical process with various episodes were, after the athlete performs, the coach analyses performance, compares it to the athlete´s past performances, and then plans and conducts practice. Ford et al. (2009) recognise that coaching can often occur away from training (i.e., pre-, post-match and half-time talks, video-based feedback sessions, etc.) and therefore it needs to be observed and measured systematically within all settings where coaches act as such. Cushion et al. (2012b) recognised that research on coaching has obviated the study of other contexts such as video-based feedback sessions. Furthermore, they argue that because coaching is a holistic process, the study of their elements (practice, games and off-pitch activities) needs to be assessed in conjunction. However, to date research on coach behaviour has only been undertaken within training sessions (Ford et al., 2009; Partington et al., 2014; Partington & Cushion, 2013; Harvey et al., 2013, etc.) and during games (Smith & Cushion, 2006; Partington & Cushion, 2012; Trudel et al., 1991), separately.

Furthermore, behavioural research has been criticised because it fails to fully capture the entirety of a coach´s activity (Cushion et al., 2012a; Brewer & Jones, 2002). While behaviours are overt to direct observation, cognitions are not observable (Partington et al., 2015; Clark & Peterson, 1986; Cushion et al., 2012b). Therefore, investigations within this area need to assess not only the behaviours of coaches but their relationships with their cognitions (Partington & Cushion, 2013; Partington & Cushion, 2012).

With this objective, more recent coach behaviour studies have employed mixed-method approaches composed of systematic observations and semi-structured interviews (Partington et al., 2014; Partington & Cushion, 2013; Harvey et al., 2013). A key finding of this research is the existing 'epistemological gap' or 'cognitive dissonance' between coaches´ behaviours and their underpinning knowledge, suggesting that coaches lack understanding and awareness of their behaviours during practice. As a result of this disconnect between the 'what' (behaviours) and the 'why' (underlying thoughts or knowledge), practice is guided by a traditional 'hands on' approach rather than teaching methods sensitive to scientific frameworks (Light, 2008; Davis & Sumara, 2003; Harvey et al., 2013; Partington & Cushion, 2013).

This study constitutes the first attempt to analyse and evaluate coaching behaviours within video-based feedback sessions. It was specifically aimed to describe the general tendency or pattern of coach behaviour within this environment. Secondly, it was intended to improve our understanding of the connection between coaches´ cognitions and their use of certain behaviours. Based on previous investigations within training and games, a prescriptive approach to coaching within video-feedback sessions was predicted.

3.2 Method

3.2.1 Background context

The study was carried out within a category-one academy of an English Barclays Premier League Football Club that is affiliated to the Elite Player Performance Plan (EPPP). This initiative, designed by the Premier League and supported by the English Football Association, aims to produce more and better home-grown players (The Premier League, 2011). The EPPP distributes the performance pathway across three development phases: Foundation Phase (U6-U11), Youth Development Phase (U12-U16) and Professional Development Phase (U17-U23). The club is divided into: (1) the academy, that contains twelve teams ranging from U6 to U18 years and (2) the first team, composed of a first team and reserve team (U23 years).

At the academy, each age-group is comprised of players born in the same year of birth (1st September to 31st August), with exception of the U18s who were divided into first- and second-year scholars. During the 2014/2015 season, coaches in charge of age groups U14 - U16 rotated to the above age group and the U18 coach moved to the U14 every ten weeks.

The video-feedback sessions intended to develop players´ game-knowledge as stated by the club academy´s curricular plan. They were conducted under the supervision of the lead coach who delivered the session. This consisted of a team session where the performance analyst was responsible for operating the presentation footage sequences, while coaches and players observed and discussed players' in-game decisions, awareness, actions, and movements in the video. Assistant coaches inputted sporadically during the session or gave their general opinion at the end.

3.2.2 Participants

Four full-time, male elite coaches consented to participate in this investigation. They were aged 46.25 ± 7.09 and had been coaching for 16.25 ± 6.24 years. All of them had obtained the Union of European Football Associations (UEFA) A coaching licence and had more than five years of experience delivering video-based feedback sessions (Table 3.2). The four coaches were working with male youth players aged between 12 and 16 years. Data were collected in accordance with the ethical guidelines of the University. All the participants were required to provide consent and were free to withdraw at any time.

3.2.3 Procedure

Systematic observation

Prior to data collection, coaches were told the overall purpose of the study and were informed that this entailed filming their video-based feedback sessions multiple times during the year. Sessions included footage from the clubs´ academy players and top senior players and according to the academy´s curricular plan, these sessions aimed to develop the players´ knowledge and decision making.

A total number of 36 video-based feedback sessions were filmed. To habituate both coaches and players, eight initial sessions (two for each coach) were recorded but not included in the final data analysis (Darst, Zakrajsek, & Mancini, 1987). Four sessions were used to build the code window for analysis of this particular environment. Finally, two scheduled video-feedback sessions were excluded as they did not meet the inclusion criteria (i.e., not video-based and/or did not intend to develop players´ game knowledge or decision-making). Therefore, the remaining 22 sessions with a total duration of 459.18 minutes were selected for this study.

Each video-based feedback session took place in a sound proofed classroom within the academy facility. The coach and a performance analyst were responsible for preparing the session video material that was projected onto a large screen at the front of the classroom. The coaches' verbal and non-verbal communication and the players' participation during all sessions were filmed using a tripod mounted digital video camera (Sony HVR-Z5E, Japan). The camera was positioned at the back of the classroom, pan, tilted and zoomed so that it captured the coach, projector screen and most of the players. In addition, a laptop (MacBook Pro 13-inch, China) was connected via firewire to live capture using Sportscode© Gamebreaker (Hudl, US). This software allowed the researcher to design a code window to record the event and duration of the coach's behaviours during the video-feedback sessions.

Brewer and Jones (2002) and Cushion et al. (2012a) argue that coach behaviour instruments need to be representative and specific to the context of study. In contrast, systematic observation tools such as the Arizona State University Observation Instrument (ASUOI) have been used to explore coach behaviour across various sports and situations without careful consideration of the study setting.

In order to build a representative instrument of coach behaviour within various contexts (the CAIS), Cushion et al. (2012a) carried out some amendments to the behavioural categories of the ASUOI. For example, silence was split into 'on task' (i.e., coach monitors practice without reacting verbally or non-verbally) or 'off task' (i.e., coach is not visibly engaged in the practice), whereas questioning was sub-divided into 'convergent' (i.e., with limited number of correct answers/options- closed responses) and 'divergent' (i.e., multiple responses/options- open to various responses).

As no previous research has established a valid and reliable systematic observation instrument to analyse video-feedback sessions, prior to code sessions and in order to adapt the existing instruments into a representative tool to the context of study, the following stages were followed:

Stage 1: Observer training

This consisted of training the lead researcher to become familiar with the concept and methodology of systematic observation and the different behaviour categories of both the CAIS and the ASUOI (Brewer & Jones, 2002; Cushion et al., 2012a). These were chosen to develop a specific code window because these have been used within different situations and settings in sport and specifically football.

Stage 2: Amending an existing systematic observation instrument

At this stage the CAIS and ASUOI were adapted to develop a new instrument that captured the context-specific behaviours exhibited during video-feedback sessions (Table 3.1). This process involved consultation between the lead researcher and three members of the research team who had 47 years of combined experience in coding behaviour (21 years), psychology (15 years) and coaching pedagogy (11 years). Four full sessions, one for each coach, were initially coded using the CAIS and ASUOI, respectively. This allowed us to understand the coaching behaviour pattern within this environment before making slight alteration to operational definitions and adding new behaviour categories (Table 3.1).

For instance, during training, the behaviour coded as 'instruction' (statements such as 'Talk', 'Follow your runner', 'Keep them there', 'Pass' and 'Take a shot') did not seem to be used within video-based feedback sessions. Instructions in the CAIS are 'verbal cues or reminders that instruct/direct skill or play related to player(s) performance' (Cushion et al., 2012a, p. 211). However, within video-based meetings, because players watch footage of their past actions, coaches cannot instruct them in the same manner as physical practice. Instead, two new categories 'cueing convergent' and 'cueing divergent' were added to capture cues or prompts that focus the players´ attention on a particular sequence of the footage. These verbal statements can be formulated restrictively and focus players´ attention to a specific part of the game without contemplating many options (i.e., 'Look he is driving the ball into the free space') or a more general statement that focus players´ attention on a specific part of the game but with unlimited options (i.e., 'Look what he is doing'). Additional amendments included the unification of 'management direct' (i.e., statements to organise the session content/structure) and 'management indirect' (i.e., verbal statements directed to organise the content/structure of the session or to direct the use of technical equipment) into 'management'.

Although Cushion et al. (2012a) argue that coach behaviour instruments need to be sensitive to context and more specific at describing behaviour, this paper reports an initial attempt to measure coach behaviour within video-based feedback sessions. More specifically, it was intended to obtain initial data describing the distribution of the 'specific coaching behaviours' ('feedback', 'silence', 'player participation', 'convergent questioning', and 'divergent questioning') within this particular environment. 'Specific coaching behaviours' were defined as behaviours that are pedagogical or have been highlighted by research as influential for learning (Table 3.5).

In other terms, it was mainly aimed to account for the proportion of 'feedback', interactive/reflective behaviour ('convergent questioning', 'divergent questioning' and 'player participation') and 'silence' (Table 3.5). Therefore, primary categories from the CAIS such as

‘silence’ and ‘feedback’ were not branched out into other secondary categories. Only questioning, similarly to the CAIS, was split into ‘convergent questioning’ and ‘divergent questioning’ (Table 3.1), as one of our goals was to record how much of the questioning demanded players to engage in higher-order thinking processes (Johnson, 1997; Harvey & Light, 2015).

Stage 3: Inter-observer and intra-observer reliability

Intra-observer and inter-observer reliability for frequency data were calculated using the formula: (agreements) / (agreements + disagreements) x 100. Inter observer reliability makes reference to the ‘consistency’ between two observers´ records when watching the same event. Intra observer reliability alludes to the ‘stability’ of an observers´ record when watching the same event at different points in time. Duration data was converted into seconds before utilising the formula. Both types of reliability exceeded the 85 % considered as acceptable (van der Mars, 1989).

‘Inter-observer reliability’. One session was coded separately by the two main researchers. This allowed comparisons between the scores of the two observers. The level of agreement for frequency and duration data was 88 and 86 %, respectively.

‘Intra-observer reliability’. One session was re-coded after coding bouts of 8 sessions. This allowed comparing four sessions coded across the full process. The level of agreement for frequency and time data was 97 and 98 %, respectively.

Table 3.1. Definitions of coach behaviours within video-based feedback sessions (Adapted from ASUOI and CAIS).

Behaviour	Description
Feedback	The coach gives information on the outcome of an action or the movement pattern that caused the result (Partington et al., 2014), i.e., 'Great turn, Scott', 'we need to break their lines', 'I liked the way you shaped your body to receive the ball'.
Silence	Coach is visibly engaged observing the game in the video in silent or performing other different action such as waiting for a player's response, standing, walking.
Player participation	A player actively demonstrates, draws, verbalises and/or highlights the right or wrong decision or execution of a skill/technique/movement at any given point of the session.
Convergent questioning	Limited number of correct answers/options – closed responses (Cushion et al., 2012a), i.e., 'What is the right thing to do in this situation dribbling or passing?', 'How many players are pressing the ball?'
Divergent questioning	Multiple responses/options – open to various responses (Cushion et al., 2012a), i.e., 'What would you do in this situation?', 'Tell me what you think you need to get better at'.
Cueing convergent	Verbal cues, reminders or prompts with a limited number of options that direct players´ attention to a sequence of the footage within the classroom (Adapted from Cushion et al., 2012a), i.e., 'Look, he's driving the ball to commit the defender', 'Look he is standing still between the two centre backs'.
Cueing divergent	Verbal cues, reminders or prompts with an unlimited number of options that direct the attention of players to a sequence of the footage within the classroom (Adapted from Cushion et al., 2012a), i.e., 'Look what he's doing', 'Look what his movement is'.
Praise	General positive or supportive statements not relating to a specific skill demonstrating the coach's general satisfaction with a player(s) (Cushion et al., 2012a; Partington et al., 2014), i.e., 'Well done', 'Good effort', 'Terrrific play'.
Scold	General negative or unsupportive statements not relating to a specific skill demonstrating the coach's general displeasure with a player(s) (Cushion et al., 2012a; Partington et al., 2014), i.e., 'If you don't behave, I'll have to send you out'.

Hustle	Verbal statements or gestures linked to effort to activate or intensify previously directed behaviour (Cushion et al, 2012a), i.e., 'Listen', 'Pay attention'.
Humour	Jokes or content designed to make players laugh or smile (Cushion et al., 2012a), i.e., 'Have you got steel toe caps in those trainers?', 'Have you eaten a steak for lunch today?'
Punishment	Specific punishment following a mistake or for disruptive behaviour (Adapted from Cushion et al., 2012a), i.e., "Get out".
Management	Management that is directly contributing to organising the content or the structure of the video-based feedback session, the information presented or to direct the technical equipment (Adapted from Cushion et al., 2012a), i.e., 'I want you to get in threes', 'Today's aim is transitioning', 'The next clip is about defending the counter outnumbered', 'Hold the video there', 'Let it go'.
Assistant intervention	Intervention of the assistant coach, performance analyst or other member of staff assisting the session by responding to the coaches question, asking the player(s) or lead coach questions, or giving any type of information to the player(s)/coach, i.e., 'That was something we (lead coach and me) saw all the way through the game and that we need to get better at'.
Question to assistant	Question from the lead coach to the assistant coach, performance analyst or other member of staff that are related to any performance issues, i.e., 'Would that be a fair comment, Tom' (pseudonym)?
Uncodable	Any other behaviour not fitting any of the previous categories (Partington et al., 2014).

Table 3.2. Coach demographics, education and experience.

Name (Pseudonym)	John	Mark	Peter	Kieran
Age	56	41	41	47
Higher coaching qualification	UEFA Pro License	UEFA A Licence	UEFA A License	UEFA A License
Others coaching qualification	Advanced Youth Award Youth modules 1-2-3 Academy Managers	Advanced Youth Award Youth modules 1-2-3 Psychology level 5	Advanced Youth Award Youth modules 1-2-3	Academy Managers Psychology Level 5
Others (College, University)	N/A	N/A	N/A	N/A
Experience coaching (years)	20	15	8	22
Experience coaching at youth level	12	15	8	22 years
Experience delivering video sessions	10	8	8	18 years
Experience playing professionally (youth)	21 Years	20 Years	20 Years	3 Years
Experience playing professionally (first team)	19 Years	18 Years	18 Years	N/A

Table 3.3. Number of video feedback sessions, actual mean duration of coaches´ video-feedback sessions and their preferred duration for sessions.

Name (Pseudonym)	John	Mark	Peter	Kieran
Number of sessions	6	8	3	5
Mean duration of sessions (s)	794 ± 308.59	1377.63 ± 320	1332.67 ± 444.23	1553.6 ± 362.08
Mean duration of sessions (mins)	13.23 ± 5.14	22.96 ± 5.33	22.21 ± 7.40	25.89 ± 6.034
Preferred duration (mins)	‘Probably 20 minutes’	‘Anything more than half an hour it´s too long’	‘30 minutes at the most’	‘About 20 minutes’

Interviews

The purpose of the interview process was to explore the coach's rationale for the session aim(s), its structure, and the coaches' cognitive processes underlying their behaviours (coaches´ thoughts that guide their actions) during video-based feedback sessions.

The interviewer conducted various pilot interviews under the supervision of two experienced qualitative researchers and was formally trained during the 2014/2015 academic year. The training consisted of theory and application of qualitative research methods and more specifically on qualitative interviewing techniques. This allowed the interviewer to listen actively but maintain a neutral attitude towards the coaches´ responses by looking after their body language and verbal communication to avoid clueing the coaches on what was the desirable response or the interviewers´ opinion (Smith & Sparkes, 2005; Booroff et al., 2016). However, verbal and non-verbal hints were used in order to make coaches feel comfortable and that the information they were sharing was valuable (Smith & Cushion, 2006; Booroff et al., 2016).

Interviews took place at the end of the season and were digitally recorded (Olympus, VN-741PC, Germany) and video-taped (Sony HVR-Z5E, Japan). They lasted between 30 and 60 minutes, included closed and open-ended questions and were semi-structured in nature. This flexible approach facilitated the exploration of the key concepts/themes of this study and other emerging topics that were considered relevant (Faulkner & Sparkes, 1999). Too much rigidity in interviews can hinder an accurate record of the interviewee perceptions (Biddle, Markland, Gilbourne, Chatzisarantis, & Sparkes, 2001).

Each coach was interviewed once. The same format was followed for all the interviews. Firstly, the interviews started with general information about the purpose of the study and questions allowing coaches to talk about their background, biographies and demographic profiles. At the end of this part, they were also asked about their preferred duration of these sessions and the type of player they wanted to develop as this would facilitate the progression to the second part of the interview (See table 3.4).

Once they were encouraged to talk, in the second part, coaches were interviewed using a simulated recall technique about the reasons underpinning the use of their behaviours. This consisted of showing coaches clips from their own video-based feedback sessions and intended to stimulate coaches´ 'relive' of an episode and recall their cognitive activity in retrospect (Lyle, 2003). As soon as the videotape had finished or was finishing, the interviewer posed open-ended questions about the reasons underlying the type of behaviour employed, so coaches had a starting point to develop their thoughts. To ensure that the video clips promoted the subject´s

recall of cognitions during the given situation, the clips were edited with contextual information on the bottom corner of the screen (age-group, date, type of session, the session-theme, the week-theme, opposition and game score).

Table 3.4. Interview Schedule.

Introduction
General explanations about this interview process (aims, structure, expected timing and confidentiality).
Coach background, demographics and general thoughts
-Process prior to become a coach. -Qualifications that completed before appointment for actual role. -Explanation of how these courses prepared to deliver video sessions. -Type of player/person intended to develop. -Preferred or adequate length of video sessions and underlying rationales.
Learning outcomes of video-feedback sessions
-General aim of delivering video sessions. -Objectives of different types of sessions: Post-Match and Best Practice -Process by which coach links video sessions to the tactical and technical curriculum.
Coach delivery of video-feedback sessions
-Intended coaching style during video sessions. -Reason underpinning their coaching style (player participation vs coach-led). -Willing for balancing positive and negative feedback and underpinning rationale. -Rationale underpinning players clipping their clips and presenting back to the rest of squad. -Reasons underlying different coaching styles (interaction vs coach feedback) at different times
Coach behaviours´ concepts and rationales
-Concept of the term 'feedback'. -Concept of the term 'questioning'. -Level of importance of coach and player within the feedback process. -General rationale of feedback and questioning (Simulated-recall interview: 2 clips). -Rationale of 'feedback' to promote player learning. -Rationale of 'questioning' to facilitate player learning.
End of Interview
Clarification of any queries they might have and appreciation for their time and their responses.

3.2.4 Data analysis

Systematic observations data

Every session´s quantitative data were exported from Sportscode© Gamebreaker to Microsoft Excel 2010. Mean duration for all 22 sessions and for each coach's sessions were calculated.

In order to analyse and facilitate the interpretation of the data, the scores for all coach behaviours were inputted into a different excel sheet to calculate mean frequency count, percentage time and rate per minute. In order to calculate the proportion of each independent behaviour mean percentage time was used (Table 3.5).

For each coach, total and independent behaviours times were converted into seconds. Percentage time was calculated by dividing the duration of each independent behaviour category (seconds) by the total behaviour duration (seconds), then multiplied by 100. Mean percentage time was calculated by dividing the sum of percentage time of each independent behaviour category within each session by the total number of sessions that this particular coach delivered. The behaviours 'uncodable' and 'player participation' were included in this calculation.

Interpretative interviews data

Once each interview had been completed, the videotape was transcribed verbatim immediately after the end of the session, in order to ensure an accurate record of the data. The audio was only used if something that the coach said was not fully clear by in the video recording. Furthermore, immediately after the interviews, they were reviewed by the interviewer to become familiar with participants´ interview. This yielded 31 pages of single-spaced text.

Afterwards, transcripts were reviewed using thematic analysis procedures. This analysis aimed to organise the unstructured qualitative data provided by the coaches into meaningful themes and categories (Hanton & Jones, 1999). A combination of deductive and inductive procedures was employed (Patton, 2002). It started deductively as the researcher firstly inspected the quotes related to coach behaviours linked to the facilitation of learning. These pre-determined themes were the rationale and utilisation of 'feedback', 'questioning' and 'player participation', as these have been encouraged by some research and learning theories suggest the enhancement of learning through active involvement rather than passive listening (Williams & Ford, 2013; Williams & Hodges, 2005; Light & Wallian, 2008). It continued inductively using a line-by-line examination of the transcripts in order to detect emerging relevant themes within the transcripts´ quotes (Scanlan, Ravizza, & Stein, 1989a).

This analysis started with the identification of raw data themes that are quotes narrating a subjective experience (Biddle et al., 2001). Quotes were then clustered and those with similar meaning were grouped into first order themes (Scanlan, Ravizza, & Stein, 1989b). This allowed a comparison, interpretation and interrelation between first order themes with similar meaning or content (Smith & Cushion, 2006). Finally, first order themes were compared and contrasted and when quotes with similar meaning were found, they were clustered into higher order themes when possible. Scanlan et al. (1989b) explains that this process might be obstructed by the interviewee´s descriptive ability and consequently some quotes might not perfectly fit in all order themes. In this case scenario, they can be classified directly using the higher order theme.

Rigour during the interview process was established through various procedures. Firstly, during the investigation, the whole research team had several debriefs to discuss in a

collaborative manner the methods, decision-making processes or the data analysis as suggested by Mills, Butt, Maynard and Harwood (2012). For example, the interview schedule was created with the other members of research team who also had an input in its content, organisation and structure. Furthermore, the last pilot interview was pilot tested to check for appropriateness and question order, probing, etc.

Finally, data analysis was conducted in a collaborative manner to reduce bias during interpretation. Indeed, standards of 'trustworthiness' were also maintained following the 'transparency and coherence' core principles of Yardley (2000, 2008) by clearly 'articulating and presenting the findings while being mindful of the grounding within the participants´ lived experiences' (Tawse, Bloom, Sabiston, & Reid, 2012, p. 211). Therefore, if any discrepancies between members of the research team emerged, conversations were had to come to an agreement and locate that singular quotation within a particular first or higher order theme.

3.3 Results

Within the environment of a video-based feedback session, 'feedback' was the most employed behaviour by all coaches (Table 3.5). When subtracting the values of 'feedback' from 'interactive/reflective behaviours', the difference for all the coaches was higher than a 20 %, with the exception of Kieran.

Three out of the four coaches (John, Mark and Peter) presented a similar behaviour pattern. For these coaches, 'feedback' was ensued by 'silence', 'player participation', 'convergent questioning' and 'divergent questioning' (Table 3.5). Moreover, the differences between 'feedback' and 'interactive/reflective behaviours' for these three coaches exceeded 20%. This difference is considerably higher for Peter due to his increased amount of 'feedback' (52.91 %).

Kieran also spent more time in 'feedback' compared to the other behaviours. However, his pattern was slightly different with 'player participation' being his second most employed behaviour followed by 'silence', 'convergent questioning' and 'divergent questioning'. When subtracting his amount of 'feedback' from 'interactive/reflective behaviours' it equals 8.31 %. This smaller difference is essentially due to higher values of convergent and divergent questioning, and more importantly his greater increase of 'player participation' when compared to the other coaches (Table 3.5).

3.4 Findings

The unstructured qualitative data provided by the coaches in the interviews was organised utilising thematic analysis procedures. This consisted of the identification of themes or quotes. When themes with similar meaning were found, they were grouped into first order themes and subsequently, to higher order themes. Table 3.6 includes a breakdown of the highest to lowest order themes that were identified within the coaches´ transcripts.

Table 3.5. Percentage time of coaching behaviours within video-based feedback sessions.

Behaviour	John	Mark	Peter	Kieran
Feedback*	**38.34 %**	**37.81 %**	**52.91 %**	**41.60 %**
Silence*	**36.80 %**	**34.07 %**	**18.46 %**	**10.85 %**
Interactive/Reflective behaviours*	**12.22 %**	**14.38 %**	**23.59 %**	**33.29 %**
Player participation	7.93 %	10.01 %	12.53 %	20.17 %
Convergent questioning	2.17 %	2.47 %	6.75 %	7.10 %
Divergent questioning	2.12 %	1.90 %	4.31 %	6.02 %
Cueing convergent	**0.76 %**	**1.08 %**	**1.29 %**	**1.43 %**
Cueing divergent	**0.26 %**	**0.41 %**	**0.62 %**	**0.84 %**
Praise	**0.15 %**	**0.06 %**	**0.00 %**	**0.03 %**
Scold	**0.00 %**	**0.01 %**	**0.00 %**	**0.25 %**
Hustle	**0.11 %**	**0.02 %**	**0.00 %**	**0.13 %**
Humour	**1.23 %**	**1.39 %**	**1.48 %**	**0.69 %**
Punishment	**0.00 %**	**0.00 %**	**0.00 %**	**0.00 %**
Management	**3.08 %**	**4.89 %**	**1.43 %**	**7.05 %**
Assistant intervention	**2.97 %**	**0.84 %**	**0.00 %**	**0.87 %**
Question to assistant	**0.03 %**	**0.04 %**	**0.00 %**	**0.07 %**
Uncodable	**4.05 %**	**5.00 %**	**0.22 %**	**2.90 %**
Total behaviour	**100 %**	**100 %**	**100 %**	**100 %**

*Specific coaching behaviours are Feedback, Silence and Interactive/Reflective behaviours and its subcategories.

Table 3.6. Feedback, interactive/reflective behaviours and cognitive dissonance´s thematic analysis.

Higher order themes	First order themes	Themes
Feedback	Defining feedback	*The term for me, feedback, is something that happens after an event so you get feedback afterwards...What my understanding of feedback is we watch a game, did you do good or bad and then you´re giving them feedback, you´re giving them information eh then just feeding back to them what they´ve done good, bad, indifferent. That´s my interpretation of it* (Peter). *Well I´d say feedback is from what´s happened previously. So going back, so what´s happened in the past, speak about it. So feedback is if we played a game on a Sunday, how did we do on that Sunday. So we´re feeding back. I tend to do on a Tuesday evening which it´s my first session after the weekend game before we do the video, get the boys together, as they come into the astro turf and that´s almost come on guys anything from Sunday´s game, anything you want to mention…* (Kieran)
	Power of video	*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 team mate, it might be a best player, eh... but it´s a real strong message when they see into the screen isn´t it* (Mark). *It might be a defensive transition, it might be…now again he might look at me and think well I am doing enough. But if you show him the pictures and you say look, you´re not, look, look the example, you´re not working hard enough to get back, and then again you look the penny, and the penny drops* (Mark)
	Balance among positive and negative	*Eh... when I do a video session it´s not to pull the negatives out of the video session. It´s actually... I try to pull out the things that the boys do positive so... For instance, if someone...a centre forward for instance, he´s making the wrong... 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...* (Peter). *So the balance would be lots of positives ones. 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? We can´t just turn around and say ... I haven´t got clips where we didn´t do well.... And it´s not about being negative, it´s about showing them what you could have done better. How can we learn from the mistakes that we have made in the game ... That wasn´t so good, what can we do better? How can we´ve done better in that situation*? (Kieran)
	Importance of coach vs player	*The player is more important than the coach...So they are the important ones on the feedback. We are just dedicated to facilitate it more or less the feedback session. Again, historically at this club and probably most clubs, it hasn´t been the case. Feedback has been all about the coach, he talks and the player gives one word answer. Whereas I think we stand to get away with that now in*

		clubs...You know is more about the players taking ownership (Mark). *I think it´s a two way. I don´t think one the coach or the player it´s more important than the other. I think it´s a joint venture. It´s a joint and the outcome needs to be the player understands his role better. He understands his ILOs. He understands his role at the team which he needs to get better at. And is the coach role to help him to get to the final outcome. So it´s not just the coach it´s not just the player. It´s the combination of coming together and moving forward* (John) *It´s got to be the player. I mean the whole programme is designed around the player. Eh… now the coach will wanna know some feedback because he will wanna know if everybody understands, because if they doesn´t understand … I think then it´s for the players. It´s all about the player getting better. So it´s not about the coaches feedback, it´s about the player* (Kieran)
	Feedback might be needed	*I think sometimes there is messages that only you can get across by showing them. Eh... how can I put that? There might be something I´ve seen when I´ve watched the game afterwards and it´s something that I need to nail. So it´s happening repeatedly and I need to show them and I need to let them know as a group eh... what we think the right way is or I can still ordering up and ask them what do they think is the right and what´s wrong* (Mark).
Player participation	Rationales for player participation	*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. So the players feeding back to each other and the coach and the player feeding back to each other as a group of individuals* (Kieran). *The players interacting...so they...by asking them questions as well, making them relax, so that they...in the environment they feel comfortable to ask questions, they feel comfortable if I ask them to step up and show...show how they read the situation* (John). *The players don´t probably wanna hear what I know. I … we need to hear what they know. Because we need to see if it´s stimulating. So they are the important ones on the feedback. We are just dedicated to facilitate it more or less the feedback session…* (Mark)
	Willing to promote player participation	*I think that´s taking responsibility for their own learning. So if I get a load of clips and put them up there and I talk all away through the clips, then it´s not interactive. Again, my aim for next season is to almost be totally interactive. So I don´t wanna do a video session where I sit at the front and I go through it all. I think I wanna get away from them, from that* (Mark) *Interaction. Interaction with the players, so the players get involved. Some will get more involved than others. So it´s hard… You really got to have the skill to make sure that the person doesn´t know the answer in one sec contributes but might bet a little bit quiet and stay around outside of the session is involved as well… So it´s not the coach standing up and speaking. Eh… the more*

		interaction you get with them, the better (Kieran)
	Rationale for players presenting their own clips	*If first, they might not get part because it takes amount of confidence. Some you know...some of them might wanna be lazy and just sit and watch and switch off and you´re always gonna get that within a group. 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. I´ll just turn up and listen to the coach. Whereas when they have to go and search for their own best practice and present it, it´s stimulating the learning process (Mark).* *I think to give themselves confidence. To stand up in front of their peers and give the right information like Martin (player´s pseudonym) did there. He understood what play he shouldn´t be doing. He understood that one of the plays was one of his ILOs. So he was able to demonstrate the switch off.... So I think it´s an important tool to use so that´s ... it´s not led by me all the time. It´s ownership to the players* (John)
	Player Participation can be trained	*The more they are used to sit and talking and being used to these types of situations and scenarios then, the more opened they´ll be and the more opened they´ll interact. So I think it just get better with experience of doing it. And as long this is enjoyable and they´re happy to participate isn´t it and they´re engaged isn´t it then I think they´ll open up and they´ll talk a lot more* (Kieran)
Questioning	Rationale underpinning questioning and guided discovery	*Obviously I know the answer but I didn´t wanna say it. I want it to come from the players because I think that´s powerful...So that player who came up with the answer that will stick with him, that´ll stay with him and possibly will stay with the other players because a player is come up with it. I think research show isn´t it. That when a player comes up with an answer himself then sticks. I mean the technical term I am not sure but... if you can find a way for them to come up with the answers then it´s more powerful rather than telling him the answer* (Mark). *I´m trying to get the boys to see how the game develops. You know there´s no point me telling them. They´ve got to be able to see it. So I´m asking questions to see if they can see it* (Peter)
	How to implement questioning and guided discovery	*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... Yeah I get that come on a bit more. It´s trying to get them to really open their minds to give feedback...* (Kieran).
	Rationale	*I think it should be an opened dialogue. You know...what do we do well on Sunday. That´s not a question. Well it´s a question but it´s an opened one. So you´re not directing saying how could we score that goal. What you´re saying is eh... what did we do well on*

	underpinning divergent questioning	*Sunday? Someone might come up with well we controlled the game...So I think on feedback sessions it should be more than an opened question, more than a direct question…I think that´s how it should be. That´s the way I like it to be anyway* (Kieran).
	Scenario in which questioning occurs	*That´s question and answer. So that´s question from the coach and it´s an opened forum. So it´s not just one player, any of the players are free to comment on the passage of play which was on there. So it´s coach led but that´s a Q/A for the whole group of their understanding… So it could be anybody getting in those situations. I supposed it could be one individual. It´s a group question. It might be a centre half in that position.. It might be a full back…That´s a group Q and A* (John)
Cognitive dissonance	Lack of knowledge of the meaning of term that defines a teaching approach	After watching a clip where John was providing prescriptive information when asked about the reasons underpinning this approach - *That´s guided discovery. It´s showing Martin* (pseudonym) *where he was as we were attacking. And it was showing him where should be when we were attacking, what position to get in when we were attacking. So one of Martin´s ILO´s* (individual learning objectives) *would be getting into the final post because Martin has a tendency to switch off. So when the ball get crossed Martin still too far away outside the box. So his ILO is when crosses are coming from the opposite side to get himself into the far post...* (John)
	Ability to recognise good coaching practices but inability to explain their underpinning rationales	Peter was questioned about his thoughts on a video-feedback environment, where the players would clip game sequences, link them to their individual objectives and present them to the coach and team mates. He noted: *I think that´s gonna be a massive benefit if you give the boys access to the times to clipping their own clips, putting them on and then getting them and present them. I think that´s a great idea*. However, when the interviewer prompted him inquiring for reasons in favour of this approach, Peter was unable to state any reasons explaining why this was beneficial: *I think the benefits form 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 makings.* Kieran was asked about his coaching philosophy within video-feedback sessions and highlighted: *I think the player should be involved isn´t it. I think it´s about the coach showing them up in the video clips and then looking for a player-coaching relationship on what we could´ve done better and what do we do well...*. Nevertheless, when asked: 'How do you think that´s gonna impact on the players´ learning?', Kieran was unable to respond to the actual question stating:

		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...
	Incongruence among a coach´s statements and his quantitative results	Mark exhibited a strong philosophy and knowledge base**d** on Guided Discovery, 'Player Participation' and questioning (see above). Nevertheless, his coaching behaviours (see table 3.5) are far from aligning with his beliefs stated during the interview.

3.5 Discussion

3.5.1 Feedback

This study aimed to examine the behaviours of elite football coaches and their underpinning cognitions within video-based feedback sessions. As anticipated, based on previous systematic observation studies and in contrast to motor control research, a prescriptive approach to coaching was identified with 'feedback' being the most employed coaching behaviour for the four coaches. Mark, John and Peter's behaviour patterns were similar with 'feedback' being followed by 'silence', 'player participation', 'convergent questioning' and 'divergent questioning' in descending order. Only Kieran presented a slightly different profile with 'feedback' followed by 'player participation', 'silence', 'convergent questioning' and 'divergent questioning' (Table 3.5).

These findings demonstrate that, within video-based feedback sessions, a prescriptive approach was also employed. Comparisons between this study and those delivered within training and games are difficult to make because coaching was measured with different systematic instruments. However, previous investigations within training and games have reported instruction as the most employed behaviour by coaches (Ford et al., 2010; Partington & Cushion, 2013; Partington et al., 2012). Therefore, it seems that coaching is mostly prescriptive within games, training and video-based feedback sessions.

The development of technology in sport has facilitated the introduction of performance analysis systems within the coaching process (Reeves & Roberts, 2013; Hughes & Franks, 2008; Stratton, Reilly, Williams, & Richardson, 2004). Video has been acknowledged as a useful tool for providing a visual representation of the performance environment to the athlete (Crook et al., 2012). Moreover, within youth professional football, apart from developing players´ understanding and decision making, video is believed to be beneficial for providing feedback (Groom & Cushion, 2004, 2005). In this study, this is recognised by Mark who explains it´s power in providing information without the need of the coach having to emit the message:

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 team mate, it might be a best player, eh... but it´s a real strong message when they see into the screen isn´t it (Mark).

However, it seems that careful consideration needs to be paid to the sequence of video clips shown and the type of information provided by the coach as it can influence players´ motivation and confidence (Crook et al., 2012; Hoigaard, Säfvenbom, & Tønnessen, 2006;

Viciana & Cervelló, 2007). Previous research has advocated for a balance between positive and negative feedback (1:1 ratio) or (2:1 ratio), if a player is struggling with confidence (Groom & Cushion, 2005; Groom et al., 2011). In this study, coaches were sensitive to the balance between these two types of feedback within video sessions:

So the balance would be lots of positives ones. 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? We can´t just turn around and say ... I haven´t got clips where we didn´t do well.... And it´s not about being negative, it´s about showing them what you could have done better. How can we learn from the mistakes that we have made in the game ...That wasn´t so good, what can we do better? How can we´ve done better in that situation? (Kieran)

The previous quotation and others within the first order theme 'Balance among positive and negative' in table 3.6 highlights that positive feedback plays a role in reinforcing and encouraging something that players already do well. This supports Krueger (2002) who asserted that within a PE context, positive feedback can reinforce positive behaviour of PE students. On the other hand, negative feedback seems to be useful to challenge players to increase their knowledge. In this sense, Goudas, Minardou, and Kotis (2000) argues that while positive feedback did not improve the level of ability of athletes, negative feedback appeared to challenge their improvement. Nonetheless, it could be argued that the video-based feedback and the PE classroom environments expose different demands on learners and therefore, a coach´s positive and negative feedback might have a different effect on learners within each environment.

Overall, video-feedback sessions assisted by a coach can increase player knowledge (Groom et al., 2011). This is demonstrated in volleyball and tennis players (youth and senior) who developed more sophisticated problem representation after receiving a combination of video-feedback and questioning from a supervisor (García-González et al., 2013; Gil-Arias et al., 2015; Moreno et al., 2016) with some evidence of improved decision making during real competition (García-González et al., 2013).

3.5.2 Interactive/reflective behaviours

A second major finding of this study was the low percentage of interactive/reflective behaviours during the sessions (12.22 %, 14.38 %, 23.59 %), with the exception of Kieran (33.29 %). Moreover, for John, Mark and Peter´s, player participation was 7.93%, 10.01% and 12.53%, respectively. Only Kieran scored higher on player participation (20.17%). This means that players were actively involved and taking part in the sessions delivered by John, Mark and Peter for less than a fifth of the total session time. Finally, it is also worth noting that all four

coaches´ convergent questioning was more frequently employed compared to divergent questioning (see table 3.5).

Various decades of work in the area of learning have produced theories and paradigms such as 'Constructivism Learning Theory', 'Active Learning', 'Explicit and Implicit Learning' and 'Higher-Order Thinking Skills'. All these advocate more 'hands-off' approaches to teaching and a major involvement of learners that is presumed to contribute to their superior development (Light, 2008; Davis & Sumara, 2003; Prince, 2004; Knight & Wood, 2005; Smeeton et al., 2005; Zohar & Dori, 2003; Smith-Goodwin & Wimer, 2010).

Constructivism or Complex Learning Theory is strongly influenced by (1) Vygotsky, who believes that knowledge and understanding are acquired from social interaction and dialogue; and (2) Piaget, who understands that knowledge is constructed by the learners´ active interpretation through exploration and discovery (Light, 2008). These views were stated by coaches when questioned about their delivery of video-feedback sessions (see table 3.6 – 'Rationales for player participation').

In this sense, Mark was the precursor of an initiative that consisted of players, in their own time, clipping sequences of their own play or top players. These sequences had to be linked to their specific Individual Learning Objectives (ILO). During the week, players had to present their clips to the rest of their age-group and the coach. In addition, anyone could ask questions about their thoughts and rationale for the included sequences of play. Mark´s beliefs on the benefit of this strategy can be seen in table 3.6.

Similar approaches have been used to promote undergraduate students´ recall of the information delivered within lectures. For example, Aiken, Thomas, and Shennum (1975) and Lin and Bigenho (2011) discovered that during sessions, undergraduates recalled more information when taking notes on paper or computer when compared to just listening. This is also recognised by Bampouras, Cronin, and Miller (2012) in their interview-based exploratory study who explains the potential benefits for memory recall of the athletes collecting and presenting information to the rest of their team.

This view of active participation is supported by Active Learning Theory which also reinforces that learners´ reflection, thinking and ultimately cognitive involvement will facilitate understandings (Prince, 2004; Knigh & Wood; 2005; Allen &Tanner, 2005; O'Grady et al., 2014). Bloom (1956) and subsequently Low, Anderson and Krathwohl (2001) developed a taxonomy encapsulating ascending levels of cognition (remembering, understanding, applying, analyzing, evaluating and creating). These higher levels of cognitions or higher order thinking

skills allow learners to construct meaning to unstructured situations and therefore, knowledge that can be effectively used to solve new situations (Resnick, 1987; Brandsford et al., 2000).

Therefore, instructional approaches to teaching that promote the learners´ involvement cognitively have been tested to understand their effect on both perceptual-cognitive and motor skills. For example, guided discovery compared to discovery learning or explicit instruction has been shown to be more effective on skills acquisition due to constraints or instructions that direct learner towards the key aspects of the skills (Smeeton et al., 2005; Mayer, 2004). Indeed, Mark and Kieran were able to articulate the 'what' and 'how' to implement guided discovery within a video-feedback session:

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... Yeah I get that come on a bit more. It´s trying to get them to really open their minds to give feedback... (Kieran).

Kieran´s quotation suggests that guided discovery strategies are composed of various questions that lead the player toward responses. Questioning is an instructional strategy that consists of asking players questions to promote their own self-analysis of decisions and behaviours (Práxedes et al., 2016; Vickers, 2007). In addition, it is used to provoke a learner´s curiosity, which can foster a desire to find answers and develop problem-solving skills; and encourage learners to explain their thinking and/or elaborate on new reasoning (Cazden, 2001; Sahin, 2007; Watts & Pedrosa-de-Jesus, 2006; Chin, 2007; Harvey & Light, 2015).

Schön (1983) outlines that questions, dialogues and discussions allow players to verbalise their knowledge, bring it to a level of consciousness and constitute the first stage to internalise it. This matches with the beliefs of some of the coaches who apart from their willing to promote player participation through questioning, believed that this teaching strategy was more effective for internalising knowledge compared to the coach providing feedback:

Obviously, I know the answer but I didn´t wanna say it. I want it to come from the players because I think that´s powerful...So that player who came up with the answer that will stick with him, that´ll stay with him and possibly will stay with the other players because a player is come up with it. I think research shows isn´t it. That when a player comes up with an answer himself then sticks. I mean the technical term I am not sure but... if you can find a way for them to come up with the answers then it´s more powerful rather than telling him the answer (Mark)

Although the implementation of questioning can be useful within learning environments because it stimulates thinking and social interaction (Harvey & Light, 2015; Cazden, 2001), it

seems that it is only used on restricted, simplistic and/or superficial questions. For example, High School teachers questioning behaviours checking understanding accounted for 93 %, whereas interpretive were less than 7 % (Daines, 1986). Similarly, Secondary School Physical Education (PE) teachers in Singapore used 76 % of questions that required low-order thinking or demanded recall of information, and 6.7 % divergent questions requiring critical thinking skills (McNeill, Fry, Wright, Tan, & Rossi, 2008).

Previous research has explained the various cognitive demands placed on learners by different types of questions (Johnson, 1997; Harvey & Light, 2015). Two main questioning categories have been outlined: (1) 'Convergent', fact-seeking, low-order thinking and skinny questions, that have limited response options and typically require short responses, check understanding and/or recall of information previously shown to the learner. In contrast, (2) 'Divergent', generative or interpretative, high-order thinking or fat questions with unlimited response options that stimulate higher levels of thinking and where learning is presumed to occur (Johnson, 1997; Ford et al., 2010; Partington et al., 2014; Harvey & Light, 2015).

Within the area of coaching, systematic observation studies have also reported a lower use of divergent questions compared to convergent within training sessions (Partington et al., 2014; Partington & Cushion, 2013). In this study, even though some coaches stated their preference for divergent questions, four coaches spent more time using convergent compared to divergent questions (Table 3.5). For example, although Mark did not explain the rationale for the use of different questions, he showed his preference for open or divergent questions (see table 3.6).

Coaches in this study have been very clear on their intention to promote an environment with player participation, while appreciating that the use of feedback might be necessary in some situations. For example, the quotation below extracted from Mark´s transcript could be linked to the concept of 'bandwidth feedback' or feedback provided when performance is outside the agreed criteria (Williams & Hodges, 2005):

I think sometimes there is messages that only you can get across by showing them. Eh... how can I put that? There might be something I´ve seen when I´ve watched the game afterwards and it´s something that I need to nail. So it´s happening repeatedly and I need to show them and I need to let them know as a group eh... what we think the right way is or I can still ordering up and ask them what do they think is the right and what´s wrong (Mark)

Nonetheless, at the end of the quote Mark recognises that instead of providing feedback to the player, asking questions might be an alternative to augmented feedback.

3.5.3 Cognitive dissonance or epistemological gap

This research also intended to explore the coaches´ cognitions underpinning their behaviours. As predicted, a disconnection between coaches´ behaviours and the underlying cognitions or 'cognitive dissonance' or 'epistemological gap' were identified. Three forms of 'cognitive dissonance' or 'epistemological gap' were detected: (1) lack of knowledge of the meaning of a term related to a teaching approach, (2) ability to recognise good coaching practices but inability to explain the underpinning rationale and (3) incongruence among a coach´s statements and their quantitative results.

Light (2008) and Davis and Sumara (2003) define 'cognitive dissonance' or 'epistemological gap' as a lack of understanding of a term related to teaching that leads to a traditional approach to teaching/coaching. Davis and Sumara (2003) conclude that the language employed to define terms of learning theory has hindered the meaningful communication between theorists and practitioners. These authors argue that constructivist theories and discourses have been developed by educational researchers to criticise schooling structures and teaching approaches to learning. However, this focus on isolated topics has not taken into consideration structures and dynamics of schools. Consequently, teachers have acquired uncritical vocabularies used without understanding of their original intended critical meaning.

This phenomenon is visible within John´s transcript. For example, the interviewer showed him a clip to stimulate his recall of one of the video-based feedback sessions he delivered as part of this study. In this specific moment, John was providing augmented and prescriptive information to the player. Immediately after the clip finished, the interviewer asked John about the reasons underpinning the use of this approach. He noted the following:

That´s guided discovery. It´s showing Martin (pseudonym) *where he was as we were attacking. And it was showing him where should be when we were attacking, what position to get in when we were attacking. So one of Martin´s ILO´s* (individual learning objectives) *would be getting into the final post. Because Martin has a tendency to switch off. So when the ball get crossed Martin still too far away outside the box. So his ILO is when crosses are coming from the opposite side to get himself into the far post...*

Although John appears to have a very clear recall of the learning objective of that clip, it seems clear that the use of the term 'guided discovery*'* is out of context. This incorrect use of the term 'guided discovery' notes John´s lack of understanding of it meaning but also a hypothetical awareness of guided discovery being a teaching approach which is desirable. This awareness is more clearly perceived during Peter´s interview when he was asked about the concept of questioning, he stated the following:

Yeah I think that´s good. I think it´s good that the coach do it. My understanding of it is... we ask questions because the boys don´t always know what the coaches are looking for...

The previous quotations raise several issues related to John's and Peter's knowledge on the use of various teaching methods. Have John and Peter heard the terms of 'guided discovery' and 'questioning' in the context of teaching approaches that are beneficial for learning but they do not understand their critical meaning and more importantly how to implement it effectively? Also, have they participated in any CPD opportunities that have addressed this topic and if so why they are being ineffective? Interestingly, they both had completed the Advanced Youth Award and Youth Modules 1, 2 and 3 (Table 3.2).

The initial works of Festinger (1957) and Festinger and Carlsmith (1959) connoted the term 'cognitive dissonance' as a discomfort produced by awareness of the tension between two cognitions (Proulx et al, 2012; Murray et al, 2012). Festinger and Carlsmith's theory was extended in 'the New Look theory of cognitive dissonance' by Cooper and Fazio (1984). This subsequent theory outlines that cognitive dissonance is due to happen when someone´s actions contradict their self-concept. Moreover, this tension is more likely to happen when the actions of an individual provoke an unwanted and aversive consequence (Cooper & Fazio, 1984). However, the lack of knowledge of these terms did not appear to cause the two coaches any tension, maybe due to the difficulty for establishing cause-effect relationships between teaching approaches and learning.

In the present study, a second form of cognitive dissonance or epistemological gap was also identified. This has to do with the coach´s ability to define concepts of learning or teaching, identify beneficial teaching approaches for learning, and recognise good coaching practices; but an inability to explain the rationales underpinning the use of the mentioned teaching approaches. In other terms, a disconnection between the underlying knowledge that guide the use of a given behaviour. For example, Peter was questioned about his thoughts on video-based feedback sessions, were the players had to clip their own game sequences, link them to their individual objectives and present them to the coach and team mates. He noted: 'I think that´s gonna be a massive benefit if you give the boys access to the times to clipping their own clips, putting them on and then getting them and present them. I think that´s a great idea'. However, when he was prompted in the interview to explain reasons for this favoured approach, Peter was unable to state any reasons explaining why this was beneficial:

I think the benefits form 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 makings.

Similarly, Kieran was asked about his coaching philosophy during video-based feedback sessions and highlighted: ‘I think the player should be involved isn´t it. I think it´s about the coach showing them up in the video clips and then looking for a player-coaching relationship on what we could´ve done better and what do we do well...’. Nevertheless, when asked: ‘How do you think that is going impact on the players´ learning?’ Kieran was unable to respond to the actual question stating:

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...

The above quotations suggest a disconnection between (1) the coach awareness of a coach behaviour being desirable and (2) the underpinning reasons to employ the mentioned behaviour. However, such disconnect did not appear to provoke any discomfort and a subsequent willing to change their coaching behaviour. Based on Festinger and Carlsmith’s theory, this might be explained because these teaching approaches did not result in observable aversive consequences. Furthermore, the interplay between coaching (teaching) and learning is problematic because both present overt behaviours but unobservable thoughts (Partington et al., 2015). Thereby, these unobservable thoughts prevent us from establishing cause-effect relationship between teaching and learning.

This second form of cognitive dissonance or epistemological gap could also be linked to a variation of the Festinger theory named ‘Self-Perception theory’ by Bem (1972). This theory suggests that individuals observe and analyse their own overt behaviours and infer their attitudes as if they were outsiders to the situation in which the behaviour occurs. This removes the tension between the inconsistent cognitions. Therefore, within the continuum of an attitude, the attitude is positioned at a point that is congruent with the behaviours. This means that in order to change the attitude, individuals need to behave in a more extreme way than the positioning of their actual attitude state (Fazio et al., 1977).

Finally, a third form of cognitive dissonance/epistemological gap or lack of self-awareness was found for Mark. This coach exhibited a strong philosophy and knowledge based on ‘Guided Discovery’, ‘Player Participation’ and Questioning (see ‘Feedback*’* and ‘Interactive/Reflective Behaviour’, table 3.6). Nevertheless, his coaching behaviours (see table 3.5) are far from aligning with their beliefs stated during the interview. Therefore, it could be important for this coach to engage in reflective practice that increases his behavioural awareness.

To summarise, similar to training and games (Ford et al., 2010; Partington & Cushion, 2012), video-based feedback sessions were prescriptive. In this study, all coaches spent longer

percentage times on ‘feedback’ compared to any other behaviour. Moreover, considerable differences were found between ‘feedback’ and ‘interactive/reflective behaviours’ for all coaches except Kieran, due to his greater amount of ‘player participation’, ‘convergent questioning’ and ‘divergent questioning’. Furthermore, even though research has encouraged practitioners to use more divergent questions because it promotes player engagement in higher-order thinking skills (Cope et al., 2016; Harvey & Light, 2015), this study recorded a higher amount of ‘convergent question’ for the four coaches. Finally, three forms of cognitive dissonance or epistemological gap were identified within the coaches that participated in this study.

CHAPTER 4

SYNTHESIS AND RECOMMENDATIONS

4.1 Achievement of aims

This section demonstrates how the aim and objectives established in chapter 1 have been achieved in the main study (chapter 3) of the thesis:

- Objective 1: To systematically observe, quantify and classify the behaviours of professional youth football coaches during video-feedback sessions (‘what coaches do’).

This objective was attained by the completion of the main study. The systematic observation and calculation of mean percentage time values for each behaviour allowed the quantification of the total of 16 coaching behaviours. This allowed a comparison between coaches and the prediction of possible reasons for such distribution of coach behaviours.

- Objective 2: To interview and explore the coaches´ cognitive processes that underpin professional youth coaches´ behaviours during video-based feedback sessions (‘why coaches do’).

This objective was achieved through the completion of the main study after quantifying the distribution of coach behaviours for each individual coach. Each coach provided a rationale for employing each behaviour. In particular, questions were directed to find reasons underpinning the use of the ‘specific coaching behaviours’ (feedback, player participation, convergent questioning and divergent questioning).

4.2 Discussion of findings

Chapter 3 aimed to quantify and classify the various behaviours that coaches exhibit during video-based feedback sessions and examine their rationale for the use of such behaviours. A mixed-method approach combining systematic observations and qualitative interviews was employed in order to meet the objectives. Due to the dearth of coaching behaviour studies within video-based feedback sessions, the CAIS and ASUOI had to be amended and adapted into a new instrument to ensure that it was representative of the study context. Moreover, semi-structured interviews were conducted individually with each coach. They intended to examine the rationale for the use of feedback, player participation, and convergent and divergent questioning. However, when other themes of interest emerged the interviewer would prompt the interviewee to explore these themes.

This thesis extended the coach behaviour literature by examining an unexplored context, the video-based feedback session. Within this context, similar to studies analysing training and games (Partington & Cushion, 2012; Smith & Cushion, 2006; Partington et al., 2014; Partington & Cushion, 2013), coaching was prescriptive or 'coach-centred' as the four coaches most frequently used behaviour was 'feedback'.

Due to evidence suggesting that learning is enhanced when feedback is positive, reduced in frequency, delayed and externally focused (Masters, 1992; Wulf et al., 2002; Wulf et al., 2010; Swinnen et al, 1990; Sherwood, 1988), there has been a call for 'athlete-centred' approaches in coaching (Ford et al, 2010; Cushion et al., 2012b; Cope et al., 2016). This mainly consists of reducing behaviours that are prescriptive such as instruction and replacing them with behaviours that promote players´ involvement such as questioning. Although there is currently little evidence supporting the effectiveness of questioning, coach pedagogy has advocated the use of divergent questioning because players cognitive engagement in higher-order thinking skills is greater compared to convergent questions (Cope et al., 2016; Harvey & Light, 2015).

However, in this study, with the exception of Kieran, the other three coaches spent less than 25 % in 'Interactive/Reflective behaviours' (player participation and convergent and divergent questioning) and less than 13 % in 'player participation', even though during the interviews they stated that this was the type of environment they wanted to create. Moreover, the four coaches used more 'convergent questioning' (2.17 %, 2.47 %, 6.75 % and 7.10 %) than 'divergent questioning' (2.12 %, 1.90 %, 4.31 % and 6.02 %).

Finally, in line with previous studies (Partington & Cushion, 2013; Partington et al., 2014; Partington et al., 2015), this investigation identified an epistemological gap or cognitive dissonance across the four coaches. In coaching, cognitive dissonance or epistemological gap is

connoted as a lack of knowledge of terms related to teaching that leads to a traditional approach to teaching/coaching (Davis & Sumara, 2003; Light, 2008). Festinger (1957) defined cognitive dissonance as an individual's discomfort due to the tension between two cognitions that contradict each other. Furthermore, this tension is more likely to happen when there are observable aversive consequences.

During the coach interviews, there were instances in which they demonstrated; (1) lack of knowledge of the meaning of a term that defines a teaching approach, (2) ability to recognise good coaching practices but inability to explain the underpinning rationale and/or (3) incongruence among their statements and their quantitative results (i.e., behaviours). Despite coaches presenting with these three forms of cognitive dissonance or epistemological gap, they did not appear to show any discomfort or provoke any aversive consequences for players. Nevertheless, because the interplay of teaching and learning is composed by the interaction of coach and player behaviours and thoughts, and thoughts are unobservable (Partington et al., 2015), it could be argued that aversive consequences could have influenced players´ thoughts but they were not examined.

4.3 Practical implications

This study constitutes a first attempt at systematically capturing and measuring coach behaviours within video-based feedback sessions. The expert-performance approach in coaching states that to understand the process of coaching, everything a coach does as such needs to be exhaustively observed, captured and measured (Ford et al., 2009). Similarly, one of the key principles of the EPPP is to improve the quality of coaching provision to increase the quantity and quality of English players that sign first team contracts (The Premier League, 2011). However, it makes no recommendation on any standardised procedures to analyse or evaluate coaching behaviour. Therefore, the methodology of this investigation could serve as a model to systematically analyse a coach´s performance within the academies of professional football clubs.

The combination of systematic observations and qualitative interviews is very useful because it can provide information on coaching behaviours but also the underlying thought process and rationale for the use of these behaviours. For example, in the present study, Peter and John were the two coaches that delivered more questioning. Similar to the other coaches, their convergent questioning values were higher than their divergent questioning. While there is no reference to this within John´s transcripts at all, Kieran explicitly stated his preference for divergent questioning within video-based feedback sessions (see 'Rationale underpinning divergent questioning', table 3.6). Notwithstanding, his values for convergent questioning (7.10 %) were slightly higher than the divergent questioning (6.02 %).

Similarly, both John and Mark scored very similar on their 'specific coaching behaviours' (Table 3.5). Nevertheless, when performing the thematic analysis in order to organise coaches´ qualitative data, different understandings were identified for both coaches when explaining the reasons underpinning the use of some behaviours, even though they exhibited similar behaviours. Although John was in favour of using player participation and questioning, his rationale for its use was 'weaker', whereas Mark was much more accurate when explaining the underlying reasons supporting the use of these behaviours.

Within this last scenario, even though the distribution of the behaviours of these two coaches was very similar, it seems that the underpinning knowledge for both coaches differs. A Continuous Professional Development (CPD) programme for coaches could align their behaviours and underlying knowledge in order to avoid the presumed tension that is caused by the inconsistency between two thoughts, attitudes, perceptions or behaviours (Festinger & Carlsmith, 1959). Therefore, if a CPD plan was to be delivered to develop coaches, this would have to be adapted to the coaches´ individual profile and needs. In this study, it seemed appropriate to use an intervention with John that would develop his understanding of teaching

and learning concepts such as the meaning of 'guided discovery' and the rationales for reducing 'feedback' or increasing questioning values, and monitor the development of his behaviour pattern over the time. In contrast, given Mark's deeper understanding on learning theory or Kieran´s preference for divergent questioning but hypothetical unawareness, it could be beneficial for them to increase the self-awareness of his behaviours by engaging in reflection-on action.

This term refers to coaches´ retrospective reflection in detail via video analysis and/or with reflective conversations (Cushion et al., 2003; Anderson, Knowles, & Gilbourne, 2004; Partington et al., 2015). For instance, Partington et al. (2015) used this method and delivered a three-seasons intervention programme and coaches taking part decreased their 'instruction' and 'feedback' and increased their 'questioning' and 'silence on task' during training. Modification in behaviours was achieved by a reflective training that consisted of; (1) showing coaches their results on the CAIS; (2) self-review and reflection of footage of their coaching sessions; and (3) formal and informal coach education (FA Youth Awards, workshops and sporadic discussions with FA Coach Educator).

Finally, the current English coaching pathway is composed of five courses. These are The FA Level 1 in Coaching Football, The FA Level 2, The FA Level 3 or UEFA B license, The FA Level 4 or UEFA A License and The FA Level 5 or UEFA Pro License (TheFA, 2016). At youth level, in England, coaches are also required to obtain the Youth Award (Modules 1, 2 and 3) and an Advance Youth Award specific to the age band in which they coach in order to be qualified for a coaching position in a professional youth academy according to Premier League regulations (The Premier League, 2017). The Module 3 of the Youth Award, for example, consists of theory and practice on how to coach at youth level which make emphasis on five different coaching styles: (1) Command, (2) Question & Answer, (3) Observation & feedback, (4) Guided discovery and (5) Trial & error (TheFA, 2014). These five coaching styles are part of a continuum and coaches within this youth module are encouraged to move across coaching styles different to command to promote greater player involvement (TheFA, 2014).

This seems to be done within the context of training or games and it appears that there is not any content within any of the above courses explaining how to implement coach behaviour within video-based feedback sessions. Only, some introductory content related to performance analysis such as team and match analysis in level 3 and coding or evaluating strengths and weaknesses in level 5 are covered (TheFA, 2018a; TheFA, 2018b). Such tasks at academy level are more likely to be done by performance analysts if the academy achieved the category 1 status because of the academy´s obligation of contracting two full time performance analysts (The Premier League, 2011).

Instead, coaches are more likely to deliver video-based feedback sessions. For example, Wright et al (2013) reported that performance analysts stated that coaches at both senior and youth level normally leaded these sessions. Nonetheless, the lack of content covering how to deliver video-based feedback sessions within coaching courses means that coaches are not trained with this purpose. Therefore, given that this is a frequent responsibility of youth and also senior coaches, some content could be integrated into these courses so coaches are trained within a real scenario in which they coach, different to training and games.

4.4 Limitations

This study was limited by the nature of the context, a professional football club´s academy, in which data was collected. Therefore, the difficulties in controlling some of the variables within such a dynamic environment might have had an impact on the results presented.

Firstly, the mere presence of the camera and the lead investigator within the video-based feedback sessions is believed to have engaged some of the coaches in reflexivity processes. This could have involved sharing with other coaches and thinking about the 'ideal' coaching delivery/style within this environment in order to favour learning and improve players´ knowledge. Changes in coach behaviour could also have happened as a result of what Cushion (2016) refers as 'reflection' that imposes certain modes of coaching. During the research, the lead researcher remembers the Academy Head of Coaching asserting that, as part of the coach curriculum, coaches were encouraged to use player-centred behaviours such as questioning and guided discovery. Thus, it could be argued that coaches, instead of modifying the delivery of these sessions for the benefit of players, they changed their behaviours in order to avoid 'standing outside the box' and do what is perceived as a good coaching practice within this environment.

Due to coaches´ slight modification of behaviours within a certain sessions over the data collection process, these data are composed mostly by coach-led sessions, however in a few of the later sessions, players were presenting their own clips and were more player-led. Thus, this data might not be exactly representing how coaches naturally behaved within this environment and mean percentages might have been altered by the few player-led sessions.

Similarly, because of the relatively small sample size of coaches recruited for this study, the generalisability of the systematic observation results is limited. Only four coaches were filmed and analysed within only one football club´s academy and different results could have been found if data had been collected from four different coaches within a different academy. Nonetheless, with regards to the findings of qualitative interviews of this study, previous research in sports coaching (Harvey et al., 2013) state that coach numbers between three and five are acceptable to identify common or contradictory thematic patterns while enabling situational diversity within the data.

Finally, regarding transferability of learning from video-feedback to improve match performance, there is the only little evidence demonstrating improved in-game decision making due to video-feedback (García-González et al., 2013). In the present study, Peter stated the following in his interview: 'Because obviously they´ll see that now and in the next game that

they play, they´ll see that situation arisen again and they´ll know what they need to do'. This quote emphasises that video-based feedback will raise players´ awareness of a specific part of the game that players need to improve but do not necessarily ensures its transfer to an enhanced match performance.

The assumptions here are that video-based feedback combined with questioning might facilitate players´ engagement in metacognitive processes such as knowledge of cognition (declarative, procedural and conditional) and regulation of cognition (planning, monitoring and evaluation). Engaging in this type of practice will possibly have an impact on players´ knowledge (i.e., action plan and current event profiles). However, this does not ensure the automatic transfer of perception, decision making and/or correct action execution under time and space constraints within a game situation. Instead, physical practice replicating the particular part of the game that needs improvement might be more effective when transferring into match-play performance.

4.5 Recommendations for future research

There is future research that can be conducted based on the limitations and findings of this thesis. Variations in the methodology could also extend our understanding of various research questions, therefore the following proposals are presented below:

Systematic observation is a valid methodology used to describe the 'in situ' behaviours of coaches (Cushion et al., 2012a; Cope et al., 2017). Furthermore, when combined with qualitative interviews, a fuller account of the contextual factors and cognitive processes underlying the behaviours can be provided (Cushion et al., 2012a). Previous research in the area of coaching has provided the scientific community with an accurate account of coaching behaviour within training (Ford et al., 2010; Partington & Cushion, 2013; Partington et al, 2014; Potrac et al, 2002, 2007) and to a certain extent, within games (Partington et al., 2012; Smith & Cushion, 2006). However, there is limited evidence on the effectiveness of the utilisation of specific coaching behaviours on player learning within these contexts and the video-based feedback.

Similar to García-González et al. (2013), who demonstrated the benefit of video-feedback combined with open questioning, future work in this area could adopt experimental designs in order to ascertain the effectiveness of different teaching strategies. For example, interventions containing experimental and control groups could be delivered to ascertain the effect that feedback and/or questioning have on players´ learning within this particular context. This could include manipulations to the type of instruction and/or questioning to evaluate player development and quality of knowledge, and how its transfer into in-game decision making.

Moreover, mean percentage time values for 'Interactive/Reflective behaviours', 'Player participation', 'Convergent questioning' and 'Divergent questioning' are useful at providing an indication of the proportion of time coaches were promoting players´ cognitive engagement through active participation. However, this data does not explain the quality of each behaviour. For example, researchers are embracing the use of more divergent compared to convergent questioning to involve learners in more complex thinking skills. In contrast, all coaches in this study spent more time using convergent questioning. Can this be considered poor coaching practice because it has a higher mean percentage time than divergent question? Or instead, a unique divergent question that facilitates player´s engagement and thinking would be enough even though the mean percentage time of divergent questioning was lower.

Instead of examining the distribution of question types, future research could identify how often and when to employ, and/or the sequence of convergent and divergent questions. Divergent questioning has been highlighted to be more beneficial than convergent questioning

because it does not constrain the response options, therefore players engage in high-order thinking skills (Harvey & Light, 2015). Similarly, the 'challenge point' establishes that, within physical practice, because the expectations for performance increases as skill level is enhanced, the difficulty of the task need to be increased in order to challenge learning (Guadagnoli & Lee, 2004). This could be similar within cognitive practice or a video-based feedback context. If the coach identifies that certain knowledge should be understood by a player, it might be appropriate to use divergent questions so that the player generates the responses while increasing task demands (i.e., increasing the challenge point). In contrast, if the question requires a complicated answer that is beyond the player´s current knowledge, it might be easier to guide the players through the use of convergent questions to reduce response options and the demands of the task (i.e., lowering the challenge point).

This research did not take into consideration the questions´ audience (i.e., individual, small group or the full group of players). Questioning behaviours have been proposed as an alternative to instruction and feedback because it encourages active and implicit learning (Williams & Hodges, 2005; Chambers & Vikers, 2006). Specifically, divergent questions have been encouraged due to players´ supposed superior engagement in high-order thinking skills (Harvey & Light., 2015). However, players´ level of engagement might vary depending on the number of individuals who the coach directed the question to. This is something that could be measured in a follow up study to provide more details about the scenario in which questions occur.

Furthermore, there is some evidence that behaviours can be used in sequences to aid the coach fulfil his objective in that particular moment/task. For instance, silence has been outlined as a coaching behaviour that when intentionally used, can provide the players with an opportunity to learn (Ford et al., 2010). For example, a period of silence after a question allows the player to engage cognitively (Cope et al., 2016). Therefore, other sequences could be identified and explored to ascertain the best timing for their use.

Finally, a future coaching CPD in this area could be delivered to coaches within this environment. Instead of looking at overall behaviour distribution across sessions, it could be individualised and adjusted to each coach´s needs by increasing coaches´ (1) interactive/reflective behaviours, (2) awareness of their actual behaviours and/or (3) understanding of the rationales to use each behaviour.

This investigation has extended the coaching behaviour literature within an under-researched context. To date, coaches have only been made aware of the advantages and disadvantages of the use of certain pedagogical behaviours within physical practice. However, it is not yet known what the right balance, proportion or under which circumstances certain

behaviours are better to be used. Possibly due to coaching behaviour being ‘very situation specific and dependent on the interaction of a myriad of influencing contextual variables’ (Jones, 1997, p. 30). This gap in literature is magnified within video-based feedback sessions or cognitive practice because motor control research investigating instructional behaviours has typically employed experimental designs with tasks consisting of physical practice (Masters, 1992; Wulf et al., 2002; Wulf et al., 2010; Swinnen et al., 1990; Sherwood, 1988).

4.6 Conclusions

The following conclusions were reached after the completion of this study:

1. ‘Feedback’ was the most employed behaviour by all the coaches within video-based feedback sessions.

2. All coaches stated that they were willing to promote ‘player participation’ but ‘interactive/reflective behaviour’ was lower than ‘feedback’ across all coaches.

3. Coaches spent more time using ‘convergent questioning’ compared to ‘divergent questioning’.

4. Participants presented three forms of cognitive dissonance or epistemological gap: (1) lack of knowledge of the meaning of a term that defines a teaching approach, (2) ability to recognise good coaching practices but inability to explain their underpinning rationales, and (3) incongruence among coach´s statements and his quantitative results.

CHAPTER 5

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