Article

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Strategic Understandings: An investigation of professional academy youth soccer coaches' interpretation, knowledge and application of game strategies

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Abstract

The purpose of this study was to explore professional soccer coaches' interpretations of features suggesting player game understanding across the age phases of professional academy youth soccer in England, with particular attention paid to the role of strategic understanding. Semi-structured interviews were conducted with coaches (n = 19) of players aged 9 to 23 to better understand how coaches understand and apply methods to develop players' strategic game understanding. Data revealed that coaches prioritized the technical and tactical development of their players over strategic development. However, across the age phases, coaches encountered challenges with coaching for strategic understanding (i.e., maintaining control of the game, players as problem solvers, player reflection, and coaching individuals within a team). We suggest that coaches and program designers need to show more intent toward developing players' strategic understanding, becoming more purposeful when choosing "how" to develop this. In particular, coaches should consider how coaching methods that seek to develop players' metacognitive game skills can be applied, with the goal of developing self-aware, flexible and independent players as learners who demonstrate an appropriately "deep" understanding of the game.

Keywords: learning; metacognition; skill; tactics; thinking

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Introduction

The ability to understand the game is an integral component for players and teams to perform at the highest level (Davids, Araujo, Vilar, & Renshaw, 2013; Grehaigne & Godbout, 1998; Harvey, Cushion, Wegis, & Massa-Gonzalez, 2010; Light, Harvery, & Mouchet, 2014; O'Connor, Wardak, Goodyear, Larkins, & Williams, 2018). Reflecting this importance, demonstration of skills such as reasoning, planning, strategizing and reflecting about performance (Tishman & Perkins, 1995) are seen as indicators of "understanding." Notably, however, the process of learning such skills remains an aspect of player performance that is often difficult for coaches to navigate. One reason for this struggle might be the dynamic nature of invasion games, where players are required to execute a flexible organisation of movements to achieve performance goals (Pill, 2014). For invasion game play, performance goals are likely to emerge from both individual and team solutions for problems related to variants of both time and space, information and organisation (Grehaigne, Richard, & Griffin, 2005). Within this complexity, a flexible performer is one whom is consistently capable of locating the optimum action for the team based upon the changing configurations of gameplay (Grehaigne, Richard, & Griffin, 2005; Pill, 2014). In locating an optimum action, Memmert (2006) uses the "inattention blindness paradigm" to explain that conscious attention to stimuli within a dynamic context (such as soccer) also requires knowledge of situational probabilities so that decisions are made on both real-time perceptions and anticipated actions. For a soccer player, the situation is bound by flexible

application of the game's tactical principles of play (Wade, 1967) and the internal logic of the game (Grehaigne & Godbout, 1995, 1997), in a quest to outwit the opponent.

Principles of play provide a heuristic that enable coaches to generalize tactics both in and out of possession, while the "logic of the game" refers to tactical and strategic notions that cause interaction between "opposition to opponents, cooperation with partners, attack on the adverse camp, and defence of his own camp" (Grehaigne, Godbout, & Bouthier, 1999, p. 8). How a player interacts with both the principles of play and the internal logic of the game is underpinned by an ongoing "oppositional relationship" existing between teams (Grehaigne, Godbout, & Bouthier, 1999; Grehaigne, Richard, & Griffin, 2005). In an oppositional relationship, a team's actions (and actions of players within the team) is influenced by what the opposition team (and their players) do, and thus the operational conditions of any team are to manage disorder whilst preserving some kind of order (Grehaigne, Bouthier, & David 1997). However, *understanding* of how to manage an oppositional relationship is when a team (and the players in the team) are able to (deliberately) influence the opponent's next action so their response is somewhat forecasted, with the goal to cause difficult problems related to time, space, information and organisation (Grehaigne, Richard, & Griffin, 2005). In short, players must make decisions on what they see, what they understand, what they anticipate happening and what they would like to make happen.

Furthermore, this complexity is taking place on a number of levels. In a quest to outwit the opponent, which is central to how an oppositional relationship is managed (Almond, 1986), players are required to select and apply combinations of skill, tactics and strategies on both a global level (two teams) and on partial levels (sub players or two specific players) (Grehaigne & Godbout, 1995). To do so, Grehaigne, Godbout and Bouthier (1999) explain that strategy is planned prior to the game, on both global and

partial levels, with the purpose of applying some general organisation to game play (for a fuller definition of strategy, refer to Grehaigne & Godbout, 1995, p.491). Often in team sport such as soccer, both strategic and tactical decisions and skilled actions are informed by a preferred playing style, which can also be referred to as a "shared mental model" (SMM) of performance. A coach's preferred playing style can alter slightly between coaching contexts, dependant on their players' skillsets. In short, an SSM for team sport is a set of knowledge bases that guide and coordinate players' actions to the demands of the opposition (Giske, Rodahl, & HØigaard, 2014).

However, no matter how well planned the strategy, the team and its' players must also be able to make voluntary tactical decisions in action so that adverse situations posed by the opposition are appropriately dealt with (for a fuller definition of tactics, refer to Grehaigne & Godbout, 1995, p.491). For the player with the ball or nearest the ball, these decisions will also require a degree of skill, defined by Pill (2013) as "the **effective** application of a technique suitable to the performance outcome required of the moment" (Figure 4: p. 9). A definition to which we have added the word in bold, since most skillful players are usually effective! In summary, invasion games require a complex mix of multilayered and temporally integrated pre-planning, perception, decision making, execution and (often) on the hoof reaction; all of which works well under pressure. Therefore, the challenge for coaches is to develop players who are able to execute the appropriate skill in the moment, but who understand why this skill is appropriate according to the desired performance outcome, so that future applications of skill in a moment can be primed by previous experiences of playing games, or prior knowledge about how to play games.

Knowledge Bases for Playing Soccer

In agreement with the findings of Toering, Elferink-Gemser and Visscher (2009), we propose that quality on field performance where players are existing within an "oppositional relationship" correlates with self-regulating qualities, such as reflection, planning, self-monitoring, evaluation, effort and self-efficacy. Findings from Toering et al. (2009) suggest that during play, elite soccer players are significantly more reflective that non-elite soccer players, which is especially important for invasion games players because reflection is the process that offers potential for players to think strategically (Ertmer & Newby, 1996) about how to play the game, and how to learn how to play the game.

We argue that games (specifically soccer) offer a proportion of less time pressured situations where there is potential for players to demonstrate a self-regulated approach toward reflection. This is when a player has a perfect opportunity to think strategically about their live game performance; importantly, the more strategic a player's thought processes the more flexible their performance capability (Perkins, 1993). This is because they are operating more frequently on a meta-level with conditional knowledge bases which offers a greater potential to develop a deep understanding of how to play the game (Toner, 2017). In games, these conditional knowledge bases require constant interaction between declarative knowledge (i.e., knowing about the pros and cons of different ways in which to handle a given situation) and procedural knowledge (i.e., knowing how to best execute what to do in a given situation). We argue the more flexible a performer, the more they will demonstrate in-game instances of strategic thinking, where actions are consciously used to outwit the opponent in order to advantage the team, with particular attention paid one's own awareness of how to control and regulate their own learning (see Table 1).

Player Understanding: Strategic Thinking in Soccer

In this context, it is important to highlight the difference between "having a strategy" and "thinking strategically" as metacognitive processes. It is likely that playing soccer will require a collective strategy for the team to be guided by and some tactical principles that will inform momentary instances as the game plays out (Grehaigne, Godbout, & Bouthier, 1999; Richards, Collins, & Mascarenhas, 2016). However, to maximise the impact of any soccer strategy or tactics, players need to use a range of information sources to successfully navigate their way through a dynamic and complex context, which requires players to respond to varying configurations of play (Grehaigne, Richard, & Griffin, 2005; Pill, 2014). In doing so, we suggest the sources of knowledge referred to by Weinstein and Van Mater Stone (1993) is a suitable framework to understand how a soccer player would think strategically: knowledge about myself (e.g., what are my capabilities and what patterns do I notice in myself?), knowledge about the task at hand (e.g., what does this task require to be successful and how will success in this task be evaluated?), knowledge about strategies for learning (e.g., what obstacles in the game can I remove or avoid, how can I remain motivated and what can I do to remind myself of how to approach a situation?), and knowledge of the game (e.g., what do I know about soccer that will help to achieve all of the above?). We would also include a further category, due to the fact that soccer is an interactive game which requires an oppositional relationship, and a relationship with team mates; what do I know about the people playing the game (e.g., what are my team mates capabilities, what are my opponent's capabilities and what patterns do I notice in others?).

For soccer players to skilfully interact with these sources during the game requires a high degree of control, and without managing one's own thinking in this way,

it is likely that players will be operating cognitively (not metacognitively), or non-cognitively where responses are "fast and effortless" and "apparently intuitive in nature" (Toner, Montero, & Moran, 2015), and as a result will be more reliant on the coach's feedback and direction.

Metacognitive Game Skills

Reflecting the complexity of the processes described above, both metacognition and cognition are essential parts of player understanding. According to Flavell's (1979) original explanation of metacognition, thinking about how to solve a problem is used to make progress (cognitive thinking), whilst thinking about how one is thinking about how to solve a problem is to monitor progress (metacognitive thinking). It is essential for a soccer player to monitor their own progress as the game is being played, because the game presents uncertain situations where the coach is limited to when and how he/she might have an opportunity to "coach." In some ways the player themselves are taking on the role of coach, if they are to effectively control how they use the sources suggested by Weinstein and Van Mater Stone (1993). To control one's own thinking is a complex process which requires constant adjustments of: planning (how will I approach this situation?), monitoring (how is this situation going, and what will I do next?), and evaluating (what was the impact of how I dealt with this situation?) (Ertmer & Newby, 1996). In translating this process into the context of games and, in this case, soccer, Price et al. (2019) have developed three meta-cognitive game skills which indicate a deep understanding of the game.

Metacognitive game skills happen during game play itself for practice and competition and so, therefore, under time pressures and in situations where there is an opponent to play against. Skills include: to plan for my/our next move, to solve and set problems for the opponent, and to source new (and useful) knowledge independently

(cf. Price, Collins, Stoszkowski, & Pill, 2019). Unfortunately however, as Price, Collins, Stoszkowski and Pill (2017) highlighted, the sport coaching literature has paid little attention to the *meta*cognitive processes associated with game play, whereas cognitive skills such as problem solving, decision making and tactical awareness are commonly cited (Kinnerk, Harvey, MacDonncha, & Lyons, 2018; O'Connor, Wardack, Goodyear, Larkins, & Williams, 2018).

Metacognitive Perspectives of Game Understanding

Due to metacognition being under-explored in the domain of expertise amongst sport performers (Dail, 2014; MacIntyre, Igou, Campbell, Moran, & Matthews, 2014) and especially for team sport and games, the potential methods for coaching strategic understanding for soccer are limited. The exception is Price et al. (2017), whose digital video games approach (DVGA) to coaching proposes one potential "how" for coaches should they wish to enhance this element of their players' game understanding. This approach to coaching is underpinned by metacognitive theory, and originates from Gee's (2007, 2013) conceptual work concerning "good digital game design" where the potential for learning and performance is enhanced. The goal of the DVGA is to develop highly flexible players with strategic thought of how they understand the game. By helping players to think and act strategically via exposure to three specific metacognitive game skills (deliberate thinking and action, meta-level problem solving, good learners and teachers), Price et al. (2019) suggest that players' learning capabilities can be enhanced. However, empirical evidence supporting this hypothesis is currently lacking.

Therefore, as a first step to addressing this need, the purpose of the current study was to explore a sample of professional academy soccer coaches' interpretations of

game understanding. Firstly, we were interested in coaches' mental models of this construct, the role of strategic understanding, and the extent to which the methods coaches used to improve this element shared common ground. Secondly, and building from these mental models, we aimed to understand how coaches at this level attempt to develop their players' strategic understanding. Finally, by introducing the concept of developing "deep understanding" (Price et al., 2019) via metacognitive coaching methods, we aimed to explore how coaches encourage their players to reflect on their thinking and understanding.

Method

As our main research question concerned soccer coaches' subjective interpretations of game understanding, the study employed an exploratory case study design as part of an overall interpretivist research paradigm for both data collection and analysis. Qualitative data collection involved semi structured interviews, followed up with member reflections (Smith & McGannon, 2017) to elucidate coaches' views of not just "what" and "how" to coach for game understanding but also, "why" they think this way (Abraham & Collins, 2011).

Context of the Study

All participants in this study were professional soccer coaches in England working at the youth academy level and hence, are bound by the premier league elite player performance plan (EPPP) (Premier League, 2011), which was introduced with the aim of producing more and "better" home grown players by promoting the empowerment of each individual through a player led approach. The EPPP sets out three age phases for player development; Foundation Phase (age 9-11 years), Youth Development Phase (age 12-16 years) and Professional Development Phase (age 17-21 years). All were from professional academies at Category 1 status (x15) and Category 2 status (x4),

working with players from a range of age phases. The EPPP outlines a total of four categories, with category 1 being deemed as "most elite." The categorisation of academies is decided by an independent audit from The Premier League concerning a range of factors including productivity rates and coaching (Premier League, 2011). Importantly, all seven of the academies involved in this study have their own coaching and playing approach, against which coaching staff and players are internally judged. For reasons of confidentiality, it is not possible to publish the coaching or playing approaches adopted by individual clubs.

Participants

There were three criteria for inclusion in the study. First, to have a recognised coaching qualification, awarded by UEFA (Union of European Football Associations) at either B (the industry minimum standard) or A (advanced) level; second, to have at least three years of experience of working with players in an academy environment; third, to be currently working with academy players on a first hand and consistent basis within the EPPP (Premier League, 2011). Initially, a number of coaches who met these criteria were recruited via email to take part in the study. Following this, a further group of coaches, who work within the Youth Development Phase, were recruited as we recognized that it was during this age phase that players move from a 9-aside game format to an 11-aside game format. Therefore, we viewed this age phase as two separate phases; 12-13 years (playing 9-aside), and 14-16 years (playing 11-aside). Thus, participants recruited per age phase were: Foundation Phase (age 9-11 years) = five participants (x4 full time and x1 part time), Youth Development Phase (a) (age 12-13 years) = four participants (x2 full time and x2 part time), Youth Development Phase (b) (age 14-16 years) = five participants (x3 full time and x2 part time), Professional

Development Phase (age 17-21 years) = five participants (x5 full time), totalling 19 participants (all male) who all reported themselves to be British. (see Table 2).

Procedure

Ethical approval for the present study was granted by the University's research ethics committee before informed consent was obtained from all participants. The first author, who is a UEFA qualified soccer coach and FA coach educator with experience of qualitative research methods, conducted all interviews to avoid inter-interview bias (Lincoln & Guba, 1985). The average duration of interviews was 67 minutes (range = 49-85 minutes). All interviews were audio recorded, then transcribed verbatim.

All interviews were conducted over a four-week period at the end of the soccer season. This was a particularly convenient time as the clubs involved were in the process of reviewing their coaching methodologies in preparation for the following season. As such, the interviews encouraged coaches to be open about their club's approach toward player development, and appreciative of the social and cultural challenges within the environment they operate within. To aid the openness of the researcher-participant relationship, at the beginning of all interviews the researcher reinforced the confidentiality and anonymity of data, as well as participants' rights to withdraw at any stage and for any reason.

At the start of each interview, participants were told to think of one player they had coached during the season who they felt had a particularly good understanding of the game compared to their teammates. For the duration of the interview, participants were reminded to think of this player when responding to interview questions. Towards the later part of the interview, coaches were presented with three prompts that represented principles of metacognitive game skills in action (Price et al., 2019): (1) "The plan is to use this strategy, though we might need to re-plan depending on what happens

in the game"; (2) "This is how to solve the problem we face, and we're using this solution so that the game poses problem x to the other team"; and (3)"I've realized that we are finding situation X difficult in this game; I'm going to find new knowledge of the game to alter how I deal with this situation in the future."

The use of these specific prompts was important as a key purpose of this study was to understand how coaches perceive a "deep understanding" of the game to be represented by their players. Upon being presented with each prompt, coaches were asked to explain if and how the prompt might be an effective criterion for game understanding in soccer. Further discussion moved towards the variants of each prompt in game play (practice and competition), followed with how the coach might facilitate its development for their players. Follow up elaboration and clarification probes (e.g., can you describe what that might look like on the field with your players?') were used to encourage the coaches to describe their thoughts using practical soccer examples, to evoke a rich and meaningful dialogue, as well as strengthening understanding of what was being said (Gratton & Jones, 2004).

Data Analysis

The first author read each interview transcript twice in order to become immersed in the data, paying particular attention to the ways that participants differentiated between technical, skill, tactical and strategic understanding of soccer. Following this, an inductive thematic content analysis was conducted which consisted of identification of higher order (global) and lower order (initial) themes, using Braun & Clarke's six step analysis (Braun & Clarke, 2013). These steps included: becoming familiar with the data by reading and re-reading transcripts; generating codes systematically and inclusively; generating initial, lower order themes by organising codes into clusters; re-

viewing initial, lower order themes by looking at the data set holistically with the support from critical friends; defining and naming global, higher order themes, and finally producing the report with selection of key data extracts. During this process, key quotes were extracted from the data and classified into themes.

Trustworthiness

In order to enhance the trustworthiness of both the data collection and analysis, the following practices were utilized. To guide discussion and explore coaches constructs of game understanding, an interview schedule was designed to elicit detail of the "what," "how" and "why" of coaching soccer for understanding (see Table 3). To go beyond surface level responses from the coaches, questions were deliberately broad and open-ended (cf. Stoszkowski, Collins, & Olsson, 2017) and the interview schedule was cross checked by all four authors against its' potential to elicit responses relevant to the purposes of the study (Cresswell, 2007). Although the order of questions asked during each interview varied slightly depending on the direction of the discussion, the same questions were asked to all 19 participants.

As Smith & McGannon (2017) describe, using a critical friend in qualitative research has the potential to create valuable dialogue between researchers, adding rigor to the process. In the current study, the first author conducted the analysis of interview data and generated initial themes. Following this, the second, third and fourth authors were asked to provide critical feedback on the way the raw data had been interpreted and sorted into initial themes. This process helped the first author to reflect on the initial choice of themes and to explore alternatives, whilst also learning how to defend her decisions. Member reflections, which Braun and Clarke (2013) and Tracy (2010) explain go beyond simply checking that the researcher "got it right," were also used to empower participants in the data analysis process, adding both richness and depth to

findings. The first author met with each participant individually following the analysis of their interview to present the themes and associated extracts of data that were generated in the analysis. Together, first author and participant explored their interpretations of the themes with extracts of data, and identified any gaps or similarities concerning these interpretations. Throughout the data analysis process, the first author also reflected on her approach by writing memos in a reflective diary in order to enhance reflexivity and transparency (Tracy, 2010). She then routinely presented and discussed these memos with the broader research team in order to identify any personal biases that may be influencing the research process. Finally, in presenting the findings from the inductive data analysis, the direct quotations selected are contextually rich, and taken from a range of participants within the sample. This allows the reader, based upon their own coaching context, to decide on the applicability of findings concerning "game understanding."

Results

The analysis of data generated four global, higher order themes that were discussed consistently across the age phases (see Table 4): (1) maintaining control of the game; (2) players as problem solvers; (3) player reflection and (4) individuals within a team. In the following sections, each higher order theme is presented alongside associated lower order themes, with exemplar quotes. Pseudonyms have been used throughout to protect the identity of the coaches.

Maintaining control of the game

There were two lower order themes associated with this higher order theme – playing in a style that represents identity of the soccer club and using game plans. All game plans. All coaches identified that they were bound by their club's preference for

playing style (in and out of possession), and that they rarely provided opportunity for players to play in a different style, both in practice and competitive matches.

Interestingly, coaches made the point that the style of play was also their game strategy e.g., “the coherence of a philosophy throughout the different ages that we play means that strategies are often the same” (Simon, u11 coach). On numerous occasions, when asked if the playing style might change during game play, coaches commented on the necessity for academy teams to play in a similar fashion. This is exemplified in the following quotes:

> "I think we’re quite good at the club that we do have a way of playing, and I think if you looked at our teams from under nine right the way up there is, you can see a club way.” (Mark, u14 coach)

> “…we’re doing it for a reason, and particularly at this club, we do have a playing philosophy and as I said, there are some expectations about the way that we play... So…we’ve got to have those things for a reason, and hopefully it’s because the coaches and the players believe in it.” (Craig, u13 coach)

> “...the boys will always have a strategy and a way of playing, that we like to think that we have throughout the whole academy…that might look slightly different at under nines…but as soon as that’s going into eleven-v-eleven, we want to start seeing traits of what we do and what we believe in.” (John, u18 coach).

The second lower order theme referred to game plans in advance of matches, specifically in relation to the role of the coach when deciding on a game plan. Several coaches related strategy to having a “plan A,” which was formulated by the coach after

video analysis of the opponent in advance of the match. The exception were the foundation phase coaches, where video analysis of the opponent was not as prominent. In all cases, coaches expected the players to persist with applying plan A, and viewed opting to use a plan B, C or D as a potential risk for losing player buy in or surrendering to the opposition. For example, John (u18 coach) outlined how "sometimes you do need a plan B, but normally it detracts from plan A, and actually you don't end up performing plan A to the best of its ability." Similarly, another coach questioned why coaches would even consider a plan B:

> "I don't see why you'd give up on it, at this age, when you're talking about development…Why you'd give up on the first initial strategy…are you solving the problem by just like parking it and just saying, you weren't very good at that, so we'll change it a little bit to then something we are good at" (Craig, u13 coach).

Players as problem solvers

Two lower order themes were generated here: game management and dealing with change. In the case of game management, this referred to recognizing and responding appropriately to the state of the game (e.g., time left, score, weather conditions, and players on cautions or sent off). Coaches from all age phases used scenario based practices to help players develop their game management skills, e.g., "it's the last ten minutes, you're two-one down, what are you going to do…But the players see it as a fun, as a situation where they're being tested, they're playing a game." (Jeff, u11 coach). This perspective was echoed by Rod (u13 coach) who described how "we do scenario-based coaching, in terms of you are two-one down against a team playing three-five-two, how are you going to deal with that? Because that's a pressurized environment and you do see them do different things when it's pressurized."

Coaches of all age phases practiced game management within their competitive games program and suggested that the score line should impact how the team play. For example, Craig (u13 coach) said "particularly in tournaments, we do it quite a bit. So…playing against Arsenal, started off high pressing, got a couple of goals, boys mid game had the understanding...like had the confidence to change the playing style." In the foundation phase, coaches also appeared to encourage helping players to manage games, as long as it was not the only focus:

> "If your sole purpose is always to win, then finding a way of winning is the most important thing. If your sole purpose isn't just to win but also to educate and learn about a particular way of playing, then this is probably more acceptable." (Matt, u9 coach).

Jaiden (u10 coach) also explained that winning and learning have the potential to go hand in hand:

> "I wouldn't say, our outcome is to win this week. And naturally, I don't think you ever get away from the fact that football, you try and, like you are trying, that's why you're learning…because you're trying to win." (Jaiden, u10 coach).

In relation to the second lower order theme, the need for players who can deal with change relates to the game of soccer being an open and complex system, where no game can ever be the same. All coaches agreed that the game of soccer is based upon outwitting the opposition, as such it was common for coaches across the age phases to discuss the need for tactical decision makers who base their decisions on the opponent, e.g., "I think for me, tactical would be…that can change from time to time depending what opposition you're up against." (Ray, u18 coach). The dynamics of tactical decision making was also summed up by Mark (u14 coach):

> "I mean there's individual tactics, so 'how am I going to beat my direct opponent?' Or 'how am I going to deal with my direct opponent?' And then there's the team emphasis of 'what do we do as a team when we've got the ball or we haven't got the ball?'"

When coaches referred to the need to adapt to the opposition's actions, it was from a tactical problem-solving viewpoint with no reference to the need for players to monitor their progress in solving this problem or refer back to the team playing style, or the SMM for performance. Furthermore, over half of the YDP and PDP coaches stated that players' solutions to tactical problems was often limited by their technical capabilities. From a perspective of strategic understanding, players must be aware of what they can and cannot do, but also be prepared to control the way in which they interact with other sources to shape not just what they do, but how they think about what they do. For example, David (u16 coach) said "I think your tactics is determined by what you can do and what you can execute. Again, as I said before I still think that their technical ability determines your tactical decisions." Ray (u18 coach) also suggested that strong technical ability can open up a wider range of options for players when seeking to outwit the opponent:

> "You know you've got to have the tools in the box to execute those decisions. So, I see sometimes, I watch games and people go, oh bad decision, and I will go in my head, bad technique, because I see, no, you haven't got the tools in the box to make that decision."

Player reflection

Performance analysis technology was considered a necessary support mechanism by all coaches for developing players' ability to reflect on and in performance. Generally, coaches from the youth development and professional development phases

described engaging with match footage post performance as a sign of a reflective player who can appreciate the tactical elements of game play. However, coaches across the age phases also suggested that players are not particularly skilled with reflection "on" or "in" action e.g., "as I said, in most cases…I don't think they reflect particularly accurately" (Craig, u13 coach). Nevertheless, the coaches explained the potential of performance analysis tools to support reflection on action*:*

> "It's about being able to really begin to question some of those assumptions that a player had about what it was and why they thought it worked. I think that's where we also use analysis quite effectively from an individual perspective" (Tim, u15 coach).

Dean (u16 coach) agreed, suggesting:

> "You also get access to match analysis, like I say, every game is filmed...so the amount of learning and reflection you can do about the problems you face, how you solve them and what you may have done differently."

The next lower order theme (having a why behind game actions) relates to situations where players can verbally explain the proposed consequences of game actions, thus raising questions concerning the relationship between knowing and doing for soccer performance. Age and stage of learning is likely to impact this finding due to social and cognitive maturation processes. This is also significant because how and whether games players make decisions in a conscious way is not definite. In naturalistic and dynamic settings for sport, time pressure is proposed as a reason why unconscious and implicit processes for decision making are unknown, and that many verbal reports on conscious and explicit decision making focus on the reasons behind a decision, or the product of a decision (Raab, 2003). On the basis of evidence presented earlier we would challenge this. For the moment, however, it is important to state that the expression of

declarative knowledge to justify actions is not *necessarily* an indicator for skilled performance (Allard, Deakin, Parker, & Rodgers, 1993), but does *signify* a degree of strategic thinking.

These issues notwithstanding, coaches explained how players might be able to execute certain techniques, skills or tactics; however, it was not often that a player could explain "why" these actions would have an effect on game play:

> "That's the biggest thing I think with the youngsters these days, we're trying to get the 'why' out of them…They can all come up with a suggestion of keep the ball in the corner, but as soon as you ask them 'why,' they're like, 'well?'...they need more, they need another layer to their knowledge almost" (Rod, u13 coach).

> "I think if players have that sort of menu in their head, and think…well if this situation, this dictates this, I will execute this then. I don't know, I think a deeper understanding can give you a bit more strings to your bow so to speak…" (Jeff, u11 coach).

Individuals within a team

This higher order theme incorporated two lower order themes. Playing to strengths refers to individual players and the team having an appreciation of their capabilities, in order to outwit the opponent. Coaches from all age phases noted that their most effective players were those who could make decisions in game play based upon their individual skill sets. For example, Sol (u18 coach) explained that "it's not so much that they've got the best technique, they make the best decisions related to their technique." Jeff (u11 coach) also noted that "the difference between the top players I've seen in our academy so far and the weaker ones is that the top ones are comfortable talking about their strengths and weaknesses," while John (u18 coach) was adamant

that "the top players do that, they look at themselves, they look at where their capabilities are at and how they can reinvent or still affect the game, but maybe it looks a little bit different."

The second lower order theme was recognizing opportunities to practice individual targets, which referred to circumstances where individual players are challenged to enhance an aspect of their play, within a team framework. Coaches emphasised the difficulty for measuring individual player progress according to their target due to the fact they are operating within an environment (the game of soccer) where success is often dependant on how others perform. Interestingly, this was only raised by YDP and PDP coaches, who explained that individual targets can impact the team's performance. For example, Dean (u16 coach) said "I don't know if we maybe create a little bit of selfishness because we're encouraging everybody to think about their own targets, what they need to get better at, what their strengths, what their weaknesses are etc." In the YDP phase, Craig (u13 coach) also explained how he concentrates on coaching players to improve upon individual targets:

> "We'll just play 11-v-11 and then just working with units, so we're just working with individuals, and a lot of the time we're not really overly fussed by the strategy, it's more, we're more working with players on their targets."

Nonetheless, coaches from all age phases expressed how they feel responsible for developing individual players and developing a high-quality team, with little or no emphasis places on the need for players to monitor their own progress with individual challenges or team goals. Sol (u18 coach) suggested that "we're going to get the very best out of you, we're going to maximize everything you've got, but you still want the team to perform as well." Similarly, Jeff (u11 coach) observed that "there's two coaches, probably to sixteen players, how do you affect each individual, their needs,

whilst obviously maintaining the team element as well," while Kai (u14 coach) said "it's a team sport comprising of individuals that need to work together…in my opinion, each one of them, you're their personal football coach."

Discussion

The role of strategic understanding

The primary purpose of this study was to explore coaches' interpretations of game understanding, with a particular emphasis on the role of strategic understanding. Our findings suggest that strategic understanding of the game was inconsistently comprehended between coaches and furthermore, not explicitly coached at any age phase. Thus, there were no universal methods to coaching strategy described by the participants, either across level or club. As in the academic literature to date, tactical decision making and tactical awareness appear to dominate coaches' approaches on what and how to coach game understanding (Kinnerk, Harvey, MacDonncha, & Lyons, 2018; O'Connor, Wardack, Goodyear, Larkins, & Williams, 2018). Some coaches suggested that they did develop players' game understanding away from the soccer field (i.e., in the classroom) when preparing for competition; predominantly through use of video analysis with deductive questioning. However, motor performance studies would advise that such an approach toward learning provides limited opportunity to foster the declarative- procedural relationship (Allard, Deakin, Parker, & Rodgers, 1993) and thus opportunity for players to think strategically via conditional knowledge bases are under facilitated.

Most of the coaches in the current study explained that players are not encouraged to change how they play during competition unless directed to do so by the coach (which is only likely occur during a competitive match where teams are seeking to win points). In the oldest age phase, coaches explained how it was a necessity for the whole

team to believe in the game plan, therefore changing that plan might lead to the coach being viewed as "weak." In professional soccer in England, clubs have a distinct playing style which is implemented throughout the club's youth system, thus promoting a view of game understanding which requires players to learn and apply key patterns of play (i.e., "if they do this, we do that"). A playing style that denies players an opportunity to alter their tactical decisions and strategic direction on a global and partial level, both in practice and competition might not be conducive to development of a team or individuals with strategic understanding.

Although the coaches in the current study were reluctant to facilitate the opportunity for players to think strategically in game play, it was surprising to note that all coaches also acknowledged the game as a complex system, where players are required to adapt to the range of scenarios that the game poses, which is representative of an ecological perspective of games (Davids et al, 2013). The current findings also reveal conflicting ideas from practice to theory concerning the role of player adaptability and player flexibility. Notably, effective strategic understanding of games includes flexibility of thought during the event itself, where the player applies a number of criterions to a live, in-game play situation, in order to detect an optimum solution. This, we suggest, demonstrates a "flexible performance capability" (Perkins, 1993, p.40), where judgement of an action is dictated by the extent to which it might impact upon the opponent. Importantly, however, being flexible is not the same as being adaptable, in that the judgement of a decision to act is not a behavioural response based upon interacting information that elicits an adaptation to the body in order to apply an efficient movement solution (Davids, Handford, & Williams, 1994). In fact, we argue that judgement to act is based upon controlled combinations of declarative, procedural and conditional

591 knowledge (Weinstein & Van Mater Stone, 1993) about the game and the players play-
592 ing the game, with intention to set a difficult problem (and monitor the progress of this
593 problem response) for the opposing team or player(s). This is because team sport games
594 facilitate a continuous oppositional relationship between the teams playing it, and ac-
595 tions must therefore be understood in their entirety (Grehaigne, Richard, & Griffin,
596 2005) with individual confrontation, tactical principles and anticipatory situations con-
597 sidered by and of players.

598 ***Methods used to coach game understanding***

599 In the current study, the decompartmentalisation of declarative ("know
600 why/why not," Price et al., 2019) and procedural ("know-how-to-because," Price et al.,
601 2019) knowledge bases is similar to previous studies that have examined players' game
602 understanding and performance (Grehaigne & Godbout, 1998; Turner & Martinek,
603 1999; Pritchard, Hawkins, Weigan, & Metzler, 2008; Kannekens, Elferink-Gemser, &
604 Visscher, 2009; Harvey et al, 2010). Coaches described the struggle to judge the extent
605 to which players need to know about the game's rules, optimum technical actions, and
606 capabilities of those playing the game (declarative knowledge), in comparison to the
607 extent to which players' need to have the tactical understanding of selecting an appro-
608 priate action during game play (procedural knowledge). This dilemma in itself suggests
609 that coaches are unsure to which the role of implicit unconscious responses (ecologi-
610 cal), explicit conscious decisions (cognitive) affect "understanding." Furthermore, we
611 note that the coaches did not refer to the role of conditional knowledge bases, which is
612 the understanding of how and when to combine declarative and procedural knowledge
613 (metacognitive) ("know-how-to-learn," Price et al., 2019). As discussed previously, in
614 the context of games, conditional knowledge suggests a deep understanding of the game
615 and relates to demonstration of three specific metacognitive game skills: deliberate

thinking and action; meta-level problem solving, and good learners and good teachers (see Price et al., 2019 for a more detailed overview of metacognitive game skills and their relationship to coaching games).

The general consensus from coaches in the current study suggests that players at this level must recognise the state of the game (e.g., score, time remaining, intention of the opponent), the skill sets of players playing the game (opponent, team mates, self), and act accordingly (i.e., tactical appreciation). The coaches did not refer to instances where they encourage or identify instances where players think about how they are thinking about how to set or solve a problem. Despite the fact that games often present high pressured situations where time for conscious reflective cognition and pre reflective cognition is limited (Light, Harvey, & Mouchet, 2014), we argue that even following actions where there is no time to think, all actions should be self-monitored and therefore justifiable if players are to demonstrate a deep understanding of the game. Thus, supporting the coaches' perspectives from this study, which suggested exceptional game understanding is associated with players who are able to articulate "why" they executed a particular action. However, extent of conscious action for games players is yet to be determined, and it's process remains unclear (Macquet, 2009), thus indicating a need to investigate how games players approach problems during game play.

The findings in the current study suggest that soccer curriculums are intensively focussed upon coaching to develop players' individual capabilities, with little emphasis on how the opponent influences players' thinking and actions during both practice and competition. A practical example of this, consistently discussed by coaches, was the process of setting players individual specific challenges to achieve during game play, which were dependant their personal strengths or areas for development. This approach to curriculum design differs from contemporay constructivist ideas of curriculum

641 design (cf. Bruner, 1960) that suggest that the curriculum progressively "construct"
642 independent self-regulated leaners using progressive complex, from simple to complex
643 design where authentic problems (in a soccer context, problems that consider the oppo-
644 nent) can be revisited in more complex ways using problem solving discovery learning.
645 This is where the player(s) decides on necessary skills, tactics or strategies to deploy,
646 despite what areas they need to personally practice. Furthermore, the coaches suggested
647 that by focusing on "ourselves" the coach and their team are more likely to cause the
648 opponent problems, and consequently outwit the opponent. Coaching a team to focus
649 on individual and team strengths or goals, rather than the actions of the opponent is in
650 contrast to an ongoing "oppositional relationship" for sport (Grehaigne, Godbout, &
651 Bouthier, 1999; Grehaigne, Richard, & Griffin, 2005) where actions of the opponent
652 inform momentary tactical decisions in an effort to find a way to win the game (Al-
653 mond, 1986). Our findings are consistent with other empirical studies, where youth
654 soccer coaches prioritize technique or skill practice using deduced principles of game
655 play (Ford, Yates, & Williams, 2010; O'Connor, Larkin, & Williams, 2018), before
656 supporting players to enhance their in-action psychological skills (i.e., outwitting the
657 opponent by responding to the opponent using metacognitive game skills).

658 The coaches in the current study expressed a concern that concentrating on the
659 opponent's capabilities to inform players' actions might be considered as a short-term
660 performance driven or a winning focused approach to player development. Therefore,
661 coaches and coach developers may need to ascertain a sense of "comfortableness" with
662 using the opponent as a key influencer for developing deep understanding by determin-
663 ing imminent in-game actions and rationalizing past in-game actions. In contrast to pre-
664 vious conceptual work in game understanding (e.g., Grehaigne et al., 1999; Grehaigne
665 et al., 2005; Grehaigne et al., 2005), we suggest that strategy should be purposefully

altered as play emerges (and is therefore not just formulated on a macro level when there is ample time available to think). In this sense, there is a need to think strategically about the strategy, tactics and skills deployed, because games are about finding ways to gain advantage and to disadvantage the opponent. It is not logical to dismiss the opponent when thinking strategically if we understand games to be an ongoing episode of "outwitting the opponent," nor is it helpful for player understanding if the coach controls all thinking relating to how their team will play, and why their team will play in this way. By preparing players in practice and providing players with opportunity in matches to think metacognitively, team's will be more capable of independently out-witting their opponent. This is because they will have opportunity to learn how to mon-itor their own progress in game play and make appropriate adjustments according to what they know and how they think about the opponent, themselves and team mates, the game, how they learn best, and the performance goal. However, in the absence of high-quality scouting information and as an essential skill to be developed, we highlight metacognition as something which appears to be missing in the current diet for players at our sample academies.

Conclusion

The findings of the current study suggest that professional youth soccer coaches in England share inconsistent interpretations of a player who has a strategic understand-ing of the game. None of the coaches interviewed purposefully set out to coach their players' strategic understanding of the game, neither in practice nor competition. The findings also highlight that there is no common coaching method used by the coaches to develop their strategic understanding, although coaches appeared to agree on the skills that demonstrate players' superior game understanding (e.g., reflection, game management, justification of game actions, adaptability and playing to strengths). To

add, the coaches viewed metacognitive game skills as valued aspects of player performance, so long as the coach retained some level of control over what and how the players are thinking and acting during game play.

If coaches believe that a "deep understanding" of the game is an important aspect of player performance, then we advise that key decision makers within professional soccer clubs and their coaching staff should work collaboratively to establish a player development program that also aims to foster their players' metacognitive game skills. Due to strategy being a construct inherent in all games, it is logical to advise for coaches to plan opportunities for players to improve their strategic understanding of the game and to trial coaching methods that seek to deliver this benefit for player learning and performance. There are understandable social and cultural barriers within professional sports coaching contexts concerning choices of what, how and why to coach. Therefore, integrating the development of metacognitive game skills into the coaching curriculum will require ongoing and context specific support for coaches.

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