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An investigation of the effect of athletes' age on the coaching behaviours of professional top-level youth soccer coaches

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1 Abstract

2 The aim of the study was to investigate the behaviours, cognitive processes and practice
3 activities of twelve English youth professional soccer coaches across six different age groups.
4 Systematic observation data were collected using a modified version of the Coach Analysis
5 and Intervention System which provided a detailed analysis of coaching behaviours
6 performed during practice. Interpretive interviews were then triangulated with the
7 behavioural data to identify the cognitive processes underlying the behaviours performed.
8 The behavioural results showed that the coaches of the younger age groups used more
9 instruction and the coaches of the older age groups used more divergent questioning and
10 significantly more total feedback and punitive behaviours. The coaches of the younger age
11 groups used more training form activities than the coaches of the older age groups who used
12 more playing form activities. However, the interviews revealed that instead of the age of
13 athletes' directly affecting the cognitive process of coaches it was in fact the coaches
14 underlying beliefs about coaching, their previous experiences and perceived pressures from
15 the context that determined the behaviours performed.

16 Keywords: *Coaching behaviour, practice activities, soccer, youth*

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1 Introduction

2 As Harwood (2008) demonstrates professional soccer presents a living and ecologically
3 sensitive version of a full long-term player-development model (Côté, 1999; Côté & Hay,
4 2002; Côté, Baker & Abernethy, 2003), a highly organized and structured community of
5 schoolboy academy (8–16 years), apprentice academy (16–19 years) and senior players. In
6 such models coaching and development programs or systems geared toward shaping
7 performance-enhancement are required to be appropriate to the player’s age and stage of
8 development (Fraser-Thomas, Côté & Deakin, 2005; Holt & Dunn, 2004; Smith & Smoll,
9 2007); central to this process coaches have the powerful and unique potential to influence
10 athlete development (Côté, Bruner, Erickson, Strachan & Fraser-Thomas, 2010;
11 Poczwardowski, Barott & Jowett, 2006) while significantly influencing and controlling
12 performance, in addition to impacting upon the social and cultural dynamics of the
13 environment (Cushion, Ford & Williams, 2012a; Smoll & Smith, 2002). Coaches’ actions
14 significantly impact players’ behaviours, cognitions and affective responses, influencing what
15 is learned and achieved (Mageau & Vallerand, 2003; Smoll & Smith, 2002), as well as their
16 social and emotional well-being (Cushion et al., 2012a; De Marco, Mancini & Wuest, 1996;
17 Horn, 2002; Jones, Housner & Kornspan, 1997).

18 In addition to the performance demands of the sporting environment, coaches must be
19 aware of how the needs of athletes change across the developmental spectrum, from
20 childhood to adulthood (Côté & Gilbert, 2009). Importantly, athletes’ outcomes and coaches’
21 knowledge are characterized differently, at different stages of an athlete’s development, for
22 example, developing a 10 year-old soccer player will require different coaching expertise
23 than developing Olympic or professional level players (Côté & Gilbert, 2009). A mismatch
24 between children’s developmental needs and coaching behaviours leads to more dropout,

1 injuries, and shorter careers than when children are trained by a competent age appropriate
2 coach (Fraser-Thomas, Côté & Deakin, 2008a, Fraser-Thomas et al., 2008b; Wall & Côté,
3 2007). However, to ensure positive coaching experiences for athletes, “significantly more
4 understanding of appropriate athlete-centered coaching is necessary” (Côté et al., 2010, p.
5 64). This includes recognition that differences in coaching are required for athletes of
6 different age and competitive level (Côté et al., 2010; Côté & Fraser-Thomas, 2007). In
7 particular, Smith and Smoll (2007) suggest it is important that coaches’ vary behaviour to
8 adapt to athletes’ age, and recommendations about coaching children and youth athletes exist.
9 For example, coaches should use behaviours that build confidence and support the athletes’
10 self-worth to increase self-esteem (Côté et al., 2010; Lyle & Cushion, 2010). Moreover,
11 ‘positive’ coaching behaviours create opportunities for optimal progression and development,
12 while appropriate positive feedback, reinforcement, praise and hustle will develop intrinsic
13 motivation and confidence (Hays, Maynard, Thomas & Bawden, 2007). As well as using
14 specific positive and developmental coaching behaviours, youth sport coaches should provide
15 positive supportive relationships and act as role models (Lerner, Fisher & Weinberg, 2000).

16 However, despite prescriptions *for* coaching, there have been relatively few
17 investigations *of* coaching particularly against the backdrop of athlete or contextual variables
18 such as age. For example, Morgan, Spray and Harwood (2008) investigated 60 coaching
19 sessions of 15 English Premier League Academy soccer coaches at three different age groups
20 (U12, U15, and U18) and found instruction and feedback most frequently used with older
21 players (under 18’s), whereas demonstration and questioning had the highest frequency with
22 younger age groups (under 12’s). While Ford, Yates and Williams (2010) examined how the
23 use of different coaching behaviours is influenced by the specific practice activity in which
24 athletes engage or by the skill and age of the athletes. Ford et al. (2010) also investigated the

1 extent to which coaches alter their practice activities and behaviours as a function of the age
2 and skill of players. Ford et al. (2010) examined 70 coaching sessions across three different
3 ages (9, 13, and 16 years) and skill level (English Premier League Youth Academy, English
4 Football League Schools of Excellence, and Recreational). Significantly, in contrast to
5 Morgan et al. (2008) these authors reported that, despite a recommended shift as players' age
6 and improve in skill, coaching behaviour did not change as a function of the age, or skill level
7 of the players coached (Ford et al., 2010). Therefore, in the development and evaluation of
8 prescriptions for youth coaches, there remains a need to undertake detailed investigations to
9 determine what coaches actually do (Gallimore & Tharpe, 2004; Smith & Cushion, 2006).

10 Systematic observation is a recognised methodology (cf. Partington & Cushion,
11 2013a; Potrac, Jones, & Cushion, 2007) with a significant body of research focused
12 specifically on coach behaviour (Gilbert & Trudel, 2004) that identifies 'instruction' as the
13 most frequently used behaviour by soccer coaches (e.g., Cushion & Jones 2001; Ford et al.,
14 2010; Kahan 1999; Millard 1996; Partington & Cushion, 2013a; Potrac et al., 2007).
15 However, observation instruments are limited in that they only measure direct styles of
16 coaching (Cushion, Harvey, Muir & Nelson, 2012b; Sherman & Hasan, 1984; Smith &
17 Cushion, 2006). As such, behavioural research is unable to provide insight into the cognitive
18 process underlying behaviours (Cushion et al., 2012b; Gilbert & Trudel, 2004; Partington &
19 Cushion, 2013a). Identifying a coaches' cognitive process for the application of a particular
20 behaviour has provided fresh insight into the obstacles challenging a coach when making
21 decisions (Partington & Cushion, 2013b). Moreover, systematic observation, while useful,
22 has generally not been designed with context in mind, and its application has often assumed
23 that both coaches and coaching are homogenous across contexts. This, arguably, has led to

1 overly simplistic description and a down-playing of contextual and mediating factors
2 impacting behaviours recorded such as athletes' age (Brewer & Jones, 2002).

3 Despite the overall quantity of behavioural research carried out, coaching behaviours
4 (e.g. Cushion & Jones, 2001) and practice activities (e.g. Deakin & Copley, 2003) have
5 tended to be examined in isolation and coaching treated as homogenous (Cushion et al.,
6 2012a; Ford et al., 2010; Partington & Cushion, 2013a), with limited specific examination of
7 the impact of contextual and mediating factors. However, there is “no stereotypic coaching
8 personality or set of behaviours which leads to success in coaching” (Markland & Martinek,
9 1988, p. 299). Yet, there is evidence to link effective coaching and player learning to the
10 quality of the coaches' instructional behaviour (e.g., Carreira Da Costa & Pieron, 1992;
11 DeMarco et al., 1996; Gallimore & Tharp, 2004; Hodges & Franks, 2004). Moreover, there
12 are scientific principles that underlie the provision of effective instruction (Cushion et al.,
13 2012a; Hodges & Franks, 2004). However, attempting to apply the findings from an analysis
14 of behaviour or practice in prescriptive ways ignores the particular context under which those
15 studies have been conducted (Dodge & Hastie 1993; Kahan, 1999). Importantly, the
16 aggregation of behaviours provides evidence of certain patterns of behaviour and use of
17 particular behaviours permeating coaching, providing a commonality of practice that cannot
18 be ignored (Cushion, 2010).

19 So, despite its limitations Cushion et al. (2012a) argue systematic observation has an
20 essential functional step in answering the question: What is going on here? In addition,
21 research should consider the cognitive process for the behaviours of individual coaches, to
22 identify how they operate within particular contexts, and how contextual factors such as
23 players age mediate their practice (Partington & Cushion, 2013b). Sophisticated systematic
24 observation that identifies coach behaviour is supported by methods to uncover the

1 underpinning knowledge and strategies coaches' use, while providing a deeper understanding
2 of the factors that coaches' believe explain their practice (Partington & Cushion, 2013a;
3 Smith & Cushion, 2006). To achieve this, rigorous application of quantitative methods (e.g.,
4 observational techniques) complemented by sound interpretations of qualitative data have
5 been recommended (Ford et al., 2010; Partington & Cushion, 2013a; Potrac, Jones &
6 Armour, 2002; Smith & Cushion, 2006). Professional soccer particularly remains under-
7 researched, with no mixed-methods research being applied to understanding the coaching
8 behaviour and related mediating contextual factors of professional youth coaches.

9 Therefore, the aim of the study was to build on studies in similar contexts using a
10 sophisticated analysis tool combined with interpretive interviews to examine the relationship
11 between coaching behaviour and practice type with the age and stage of development of the
12 players. Systematic observation and interpretive interviews were used to describe coaching
13 behaviour, and to identify the 'how' and 'why' of these behaviours according to the age and
14 stage of development of the athletes being coached, establishing what factors influence
15 specific behaviours and practice.

16

17 Method

18 *Setting*

19 The setting was an English Football Association Premier League Centre of Excellence, the
20 highest division of professional male football in England. Data were collected mid-season
21 (November to March) over 16 weeks from all available age groups (under 10's, 11's, 12's,
22 13's, 14's and a combined under 15/16's) with each group having two coaches. The rationale
23 for splitting the age groups for the study were informed by the organisation of the Centre of

1 Excellence i.e. the sport divides the ages this way; previous research (Ford et al. 2010) split
2 coaches into three categories (under 9, under 13, and under 16 years) also following the splits
3 inherent within the sport; and Côté's (1999) three stages of development in sport, sampling
4 (age 6-12), specializing (age 13-15) and investment (age 16+ years) which suggest
5 differential coaching within each of the stages and ages. The coaching programme consisted
6 of two training sessions and one game per week, a total of five hours. The two coaches each
7 led one of the sessions however during games they worked together. The coaches' role was to
8 develop players to progress to the next age group and onto gain a professional contract.
9 Progression was decided by the Centre of Excellence manager and youth team (under 18's)
10 coach.

11 *Participants*

12 Twelve male professional youth soccer coaches with an average of 8 years coaching
13 experience ($SD = 4$ years) and aged 18-52 ($M = 32$ years; $SD = 11.14$ years) participated.

14 *Insert Table 1

15 Eight of the coaches (under 12's to under 15/16's) held the Union of European Football
16 Associations (UEFA) B Coaching Licence and four of these coaches had attained a teaching
17 qualification (one under 12 coach, one under 13 coach and both under 14 coaches). The
18 remaining four coaches held the Football Association Level 2 Coaching Award and were
19 undertaking the B licence (under 10's and under 11's). Additionally, two of the coaches had
20 played professional football at the top-level in England (under 15/16's coaches).

21 *Systematic observation*

22 Systematic observation allows a trained observer to use a set of guidelines and procedures to
23 observe, record and analyse observable events and behaviours (Franks, Hodges & More,

1 2001). A modified version of the Coach Analysis Intervention System CAIS (see Cushion et
2 al., 2012b) was used where the feedback category was split into knowledge of results and
3 knowledge of performance because this had been highlighted by the coach's in a previous
4 study (cf. Partington & Cushion, 2013a). Only the primary behaviours of the CAIS were
5 utilised (see table 1).

6 *Insert Table 2.

7 *Interpretive interviews*

8 Systematic observation provided detailed descriptive quantitative data, while interpretive
9 interviews provided in-depth analysis and insight into the cognitive processes of coaches'
10 behaviour and practice (e.g., Ford et al., 2010; Smith & Cushion, 2006). The study used semi-
11 structured interviews with questions derived from the CAIS behaviour categories (see table
12 2), and the observation of the coaches. For example the use of instruction, feedback,
13 questioning, verbal/non-verbal and management behaviours. The first stage was for the
14 individual coaches to discuss their behaviours, practice and rationale. The second stage
15 included the actual CAIS behaviour and practice time data being presented. The third stage of
16 the interview was based on the actual behaviours and practice activities to add further
17 discussion of any relevant themes.

18 *Procedure*

19 *Systematic observation*

20 The twelve participants were filmed over 67 training sessions with 3,728 minutes of training
21 recorded. Each participant was filmed during between 5 and 9 ($M = 6.66$, $SD = 1.37$) training
22 sessions. Four trained coder's with experience of systematic observation (Hughes & Franks,
23 2004) coded the data separately allowing time to analyse all aspects of the footage to increase

1 validity and reliability of the coding (Patton, 1990). Two observer agreement procedures
2 were undertaken using inter and intra observer reliability tests. Both inter and intra observer
3 reliability for this study exceeded the 85% agreement criterion (van der Mars, 1989), the
4 former of 92.5% ($SD = 2.49$), and the latter 90.2% ($SD = 1.89$).

5 *Interviews*

6 The interviews took place after the systematic observation. The findings from the CAIS
7 systematic observations structured the interview schedule to ensure relevant topics were
8 covered. The coaches' individual behaviour percentages and practice time were identified in
9 the second part of the interview, which provided further discussion and clarification. The
10 combined use of open questions and probe question allowing issues to be explored fully until
11 saturation was deemed to have occurred (indicated by no new information being added) (i.e.
12 What makes you coach that way?) (Glaser & Strauss, 1967). Similar lead questions were
13 asked of all participants to obtain consistent responses in terms of depth and complexity (i.e.
14 Describe how you coach?) (Patton, 1990). Each interview lasted between 30-60 minutes.
15 Participants were provided a copy of their transcribed interview, all twelve coaches after
16 minor modifications agreed this was an accurate account. The transcribed interviews were
17 then discussed with the primary researcher to ensure accuracy of the content before data
18 analysis took place.

19 *Data Analysis*

20 *Coaching behaviours*

21 Overall, data were collected on 12 coaching behaviours for each coach. The categories of
22 coaching behaviours acted as the dependent variables for this study (i.e. instruction (x3),
23 questioning (x2), feedback (x3), silence (x2) and punitive (x2)). For example, pre-instruction,

1 concurrent instruction and post-instruction were the three dependent variables grouped within
2 ‘instruction’. The rest of the dependent variable groupings can be seen in Table 3, and these
3 are organised by three age groups (i.e. U10-11, U12-13 and U14-15/16) that served as the
4 independent variable for the study. Table 3 shows the total number of behaviours for each
5 group of behaviours along with percentages and rate per minute. In line with previous coach
6 behaviour studies (e.g., Partington & Cushion, 2013a; Potrac et al., 2002; Potrac et al., 2007;
7 Smith & Cushion, 2006), inferential statistical analyses were conducted on the percentages of
8 these data as a reliable variable (Ford et al., 2010).

9 As there were five separate groups of coaching behaviour, five one-way multivariate
10 analysis of variance (MANOVA) tests were conducted to assess if there would be one or
11 more mean differences between the independent variable of age groups in each of the five
12 groups of coaching behaviours. MANOVA was felt to be a suitable form of analysis and
13 preferable to a series of separate univariate analysis of variance tests due to its ability to
14 maximally discriminate between age groups on a linear combination of each set of multiple
15 dependent variables while protecting against inflated type I error and additionally considering
16 the inter-correlations between multiple variables in the analysis (Tabachnick & Fidell, 2007).
17 To control for violations of assumptions such as the heterogeneity of variance between each
18 of the behaviours as well as issues that may arise due to low sample size, the test statistic
19 chosen for interpretation was Pillai’s Trace which is the strongest against violations of
20 assumptions in MANOVA (Tabachnick & Fidell, 2007).

21 Firstly, an omnibus test for the MANOVA was conducted. If this omnibus test yielded
22 a significant result, follow-up tests to the MANOVA were conducted via a series of one-way
23 ANOVA’s on each of the dependent variables. Finally, if the one-way ANOVAs revealed
24 any significant differences in the data, a series of post-hoc analyses (Fisher’s LSD) examined

1 if there were any individual mean differences across the individual coaching behaviours for
2 each of the three age groups. Inferential statistical analyses were completed using the
3 percentages data, as this recommended as a reliable variable (Ford et al., 2010). Results are
4 reported at an alpha level of 0.05 for the initial MANOVA and Bonferroni corrected for the
5 purposes of interpretation follow up analyses. For example, if there were two dependent
6 variables, the alpha level would be $0.05/2 = 0.025$ (Tabachnick & Fidell, 2007).

7 *Interpretive interviews data*

8 Abductive analysis was implemented to allow both theory and practice to support the
9 systematic observation data. Abductive analysis is a combination of deductive and inductive
10 thinking that involves ‘transition back and forth between data collection, reflection upon
11 experience, and relating these to broader theoretical concepts’ (Nelson & Cushion, 2006, p
12 177). The first stage was deductive as individual coaches discussed their behaviours, practice
13 and cognitive rationale on themes determined by the researcher driven by theory (i.e. what
14 coach behaviours are used and why?). After the CAIS data were presented to the coach mid-
15 way through the interview, an inductive approach allowed other themes to be discussed (i.e.
16 personal experiences, coach education). Interviews were tape recorded and transcribed
17 verbatim. During the second stage interview transcripts were read and coded at a descriptive
18 level (Patton, 1990). Descriptive coding refers to the marking of text segments in the
19 transcripts with codes that can denote a text passage containing specific information in order
20 to allow its retrieval (Patton, 1990). The codes were grouped into major categories and the
21 transcripts were then analysed using the procedures and techniques of inductive content
22 analysis (Patton, 1990). Exemplar quotations from the coaches are presented to illustrate the
23 themes (cf. Sparkes, 1998).

24 Results and analysis

1 *Coaching behaviours*

2 A total of 33,775 recorded behaviours for the twelve coaches over 3,728 minutes practice
3 time (see table 3) were recorded.

4 *Insert Table 3

5 *Multivariate omnibus tests*

6 A statistically significant MANOVA effect was obtained for punitive behaviours only Pillai's
7 Trace = .877, $F(4, 18) = 3.517$, $p < .05$, although the result for feedback behaviours also
8 approached significance Pillai's Trace = .981, $F(6, 16) = 2.569$, $p = .06$ (see table 3). The
9 multivariate effect size for punitive coaching behaviours and feedback behaviours was
10 estimated at .439 and .491, respectively, which implies that 43.9% and 49.1% of the variance
11 in the canonically derived dependent variable was accounted for by age. As a result of the
12 significant omnibus test for punitive behaviours, a series one-way ANOVA was completed
13 on this category.

14 *One-way analysis of variance results and post-hoc tests*

15 For punitive coaching behaviours, significant differences between age groups were observed
16 for scolding coaching behaviours, $F(2) = 9.997$, $p < .01$, partial $\eta^2 = .690$ with post-hoc tests
17 revealing significantly higher rates of scolding coaching behaviours between the U14-15/16
18 coaches ($M = 4.05$) when compared to the U10-11 ($M_{diff} = -3.15$, $p < .01$) and U12-13 coaches
19 ($M_{diff} = -2.90$, $p < .01$), respectively (see table 3). Furthermore, while non-significant, another
20 point to note was the markedly higher amount of knowledge of performance feedback
21 provided to the players by the U14-15/16 coaches ($M = 9.975$), when compared to the
22 coaches of the U10-11 ($M_{diff} = -7.38$) and U12-13 coaches ($M_{diff} = -5.35$; see table 3).

23 *Practice*

1 In total the coaches of the under 10's to under 15/16's used more training form activities
2 (2042 minutes, 44%) than playing form activities (1686 minutes, 56%). The under 10's and
3 11's combined and the under 12's and 13's combined used more training form than playing
4 form activities. Six out of the eight individual coaches in these two groups used more training
5 form than playing form. The under 14's and under 15/16's used more playing form than
6 training form activities. Three out of the four individual coaches used more playing form than
7 training form. These differences are outlined in table 4.

8 *Insert Table 4

9 *Interpretive Interviews*

10 Results from the abductive analysis from the interpretive interviews are presented (see tables
11 5-7). The key themes were:

- 12 • Cognitive rationale (for the use of different behaviours in relation to the age of the
13 players).
- 14 • Personal experiences and beliefs (influence on behaviours versus coach education or
15 critical understanding).
- 16 • Poor understanding and awareness of behaviours implemented (how to use behaviours
17 to develop players).

18 *Insert Table 5.

19 *Insert Table 6.

20 *Insert Table 7.

21 Discussion

1 *Instruction*

2 Given the results of previous research (e.g., Cushion & Jones, 2001; Ford et al. 2010;
3 Partington & Cushion, 2013a; Potrac et al., 2002; Potrac et al., 2007 inter-alia) it is not
4 surprising to see instruction as the largest behaviour. For all three age groups concurrent
5 instruction was the largest discrete behaviour ($M = 25.99$, $SE = 3.42$) and total instruction
6 was the largest combined behaviour ($M = 43.85$, $SE = 5.05$). Although not significant the
7 coaches with the under 10/11's used more instruction than the under 12/13's and under 14/15
8 and 16's coaches, and explained this as a need to give young players more information; "the
9 younger athletes do not understand certain aspects of football yet so they needed to be told"
10 (under 11's coach 4). Although not significant the coaches of the under 10/11's used higher
11 concurrent instruction than the under 12/13's and under 14/15 and 16's coaches, explaining
12 that giving more instruction is beneficial for player development leading to quicker results,
13 and is a more effective use of practice time.

14 "It is important as a coach with the younger athletes to give constant
15 instruction in order to correct the mistakes made and to ensure
16 improvement" (under 10's coach 2)

17 "When they are playing a game in training it is quicker to tell them how to
18 improve, rather than stopping the session" (under 11's coach 4)

19 The perspectives of the younger age and older age group coaches can be contrasted, the latter
20 having more and recent coach or related education (i.e. teaching degree). These coaches
21 discussed 'players learning by doing' (under 14's coach) and giving 'players an opportunity
22 to learn by themselves' (under 13's coach). Two older age group coaches (also teachers)
23 discussed giving post instruction to engage the athletes in reflection.

1 “Players all learn by making mistakes and decisions of their own so
2 probably post instruction would be better to allow players to reflect on the
3 decisions they make during practice” (under 14’s coach 10)

4 Importantly, the data suggested that coaches attempted to be player centered but this was
5 based on their perceptions and understanding of what this should look like. The players’ age
6 was a determining variable in coach behaviour, but this was not related to any specific
7 evidence based coaching guidelines (cf. Côté et al., 2010; Lyle & Cushion, 2010). Instead it
8 was the coaches’ biography, experience and educational background that provided the
9 understanding of learning, and informed their decisions around coaching behaviour and
10 ‘meeting the needs of their players’.

11 “In the past my coaching has not always got the best out of my players or
12 they do not seem to understand what I mean, so I will try different styles”
13 (under 13’s coach 8)

14 “In my teacher training a lot of focus was on adapting to the needs of the
15 students. Which I suppose I use in my coaching” (under 14’s coach 9)

16 Other contextual factors also impacted the coaches’ behaviour. For example, the under
17 10/11’s coaches identified a perceived expectation from parents observing sessions to be
18 doing ‘something’ when coaching. Therefore, they would give instruction to players.

19 “There is an expectation from parents for the coach to be giving instruction
20 whilst watching instead of just being silent. I try not to think about this but it
21 naturally effects you when coaching” (under 10’s coach 1)

22 However, the older age group coaches with more overall coaching experience and experience
23 in professional football did not feel or perceive this pressure. For example:

1 “When I first started coaching I was conscious of parents however not any
2 more I just coach the way I need to... I know why I do what I do and have
3 confidence in myself, I won’t change” (under 14’s coach 10)

4 These data suggest that player age was *not* an influencing factor informing the coaches’
5 behaviour. Instead, in this case perceived expectations of the role combined with pressure
6 from parents observing appears as a powerful contextual factor for the less experienced and
7 less educated coaches. In light of this it could be argued that the coaches’ behaviour was
8 shaped by the context more than the developmental needs of the players or sound learning
9 principles (cf. Potrac et al., 2002).

10 *Questioning*

11 Questioning is an important coaching skill; approached correctly it can allow athletes deep
12 self-learning (Schön, 1987). Questioning can be characterised as divergent (open with many
13 possible responses) or convergent (leading to one or a few responses). The coaches in this
14 study used mainly instruction 43.85% and feedback 10.32%, instead of questioning 7.16%.
15 The questioning tended to be convergent 5.03% rather than divergent 2.17% questions. In this
16 case there was a link with the coaches believing that the athletes’ age affected their use of
17 questioning. The older age group coaches believed that questioning was more successful
18 because previous knowledge was accessible:

19 “Rather than keep telling the players what to do, questions can reinforce the
20 knowledge they already have” (under 15/16’s coach 11)

21 Conversely, the coaches suggested that the younger age groups did not have sufficient
22 knowledge, so should receive instructional behaviours:

1 “I don’t use as much questioning because the players at this age might have
2 not done this before” (under 10’s coach 1)

3 All of the coaches in this study used more convergent questioning (5.03%) than
4 divergent questioning (2.17%), although this was not significantly different. However, they
5 could not articulate the differences in type of questioning or the theory and benefits of
6 divergent questioning. Coaches explained how they preferred ‘quicker questions’ and ‘easier
7 questions to both ask and for players to answer’ (convergent questions) to allow more
8 practice time. This is reflected in the data with a reduction between convergent and divergent
9 questioning between under 10’s and 11s (4.78%) to under 14’s and 15/16’s (0.75%). The
10 coaches of the younger athletes were conscious of the ‘time that it took to ask and for the
11 players to answer’ as well as contextual factors such as ‘the cold weather’ when using
12 divergent questions.

13 The older player coaches also suggested using questions to find out what they thought
14 had gone wrong.

15 “In the past I have asked a player what happened then after they have made
16 a mistake and sometimes their answer is different to what I thought it would
17 be... I can then truly correct the actual mistake instead of just presuming
18 and offering a coaching point which doesn’t actually answer the true
19 problem” (under 14 coach 9)

20 This strategy had evolved from previous coaching experience, or unmediated experimental
21 learning, rather than coach education, leading them to ask questions to identify the source of
22 player mistakes. For example:

1 “On my coach education award (UEFA B Coaching License) the focus was
2 on different drills and the knowledge of football instead of the different
3 types of questions or when and where to use them. The questions I ask have
4 come from practice or I have heard other coaches’ use, some questions don’t
5 get a response from the players so I change them so the players can
6 understand and answer” (15/16’s coach 11)

7 Only the more experienced coaches offered an explanation of benefits to their use of
8 questioning. The less experienced coaches seemed to offer only superficial explanations
9 without a full understanding of using questions to engage athlete learning.

10 “I use questioning because it is good coaching and on my F.A. Level 2. I
11 had to use questions to pass the assessment” (under 11 coach 3)

12 *Feedback*

13 More feedback was given to the under 14’s and 15/16’s (14.53%) compared to the under 12’s
14 and 13’s (10.60%) and to the under 10’s and 11’s (5.83%). The coaches of the older age
15 groups felt there was a crucial stage in learning prior to graduating to become a full-time
16 professional (youth team scholar) so feedback was perceived as key.

17 “High levels of feedback is important at this stage with the players
18 hopefully moving on to become a youth team scholar... at this age group we
19 cover a lot so we also give feedback to ensure they improve from mistakes
20 and continue the good stuff” (under 15/16’s coach 11)

21 Feedback not only followed mistakes but was also used to give information to players
22 following correct performance. The older players being close to full-time contracts created a
23 perceived time pressure for the coaches, with limited time ‘left’ to give feedback. This also

1 led to a ‘more is better’ approach, predicated by an assumption that constant feedback would
2 increase improvement in players. In contrast, the coaches of the younger age groups felt that
3 athletes had more time to learn, therefore although feedback was important the coaches did
4 not want to overload them. However, despite clear personal beliefs underpinning their views,
5 the behavioural data shows the coaches using instructional behaviours (i.e. short cues,
6 reminders or prompts) during performance instead of specific feedback on the outcome of the
7 action, or information on the athletes’ movement pattern that caused the result. The coaches
8 could not articulate the benefits of using knowledge of results to facilitate athletes’
9 independent learning.

10 “It is of more benefit to the players to give knowledge about the
11 performance than just a number” (under 13’s coach 7)

12 “I would use knowledge of performance between the two because that will
13 help the athlete more” (under 12’s coach 5)

14 *Silence*

15 Athletes’ age did not affect the use of silence by the coaches, with no significant difference in
16 total silence or silence ‘on-task’ and ‘off-task’. Past studies (Potrac et al., 2007; Smith &
17 Cushion, 2006) have identified coaches using silence deliberately during practice. Smith and
18 Cushion (2006) suggested that coaches are conscious of verbal interventions denying athletes
19 opportunities to learn. However, none of the twelve coaches could articulate silence as a
20 conscious coaching strategy. There appeared to be no understanding of the value of silence to
21 allow the athlete to engage in self-learning, for coach reflection to develop the next coaching
22 intervention, or for analysis of player performance.

1 “I am silent because I have nothing to coach... no mistakes are being made”

2 (under 12’s coach 5)

3 “I do not think of using silence when I coach, if I’m silent there is no

4 process to this” (under 15/16’s coach 12)

5 *Punitive/Scold*

6 Smoll and Smith (2006) suggest that if 3% of coach behaviour is punitive this will negatively
7 impact the learning and psychosocial environment. The coaches in this study used
8 significantly more scold/punitive behaviours with older athletes (4.05%) compared to the
9 younger athletes (0.95%). This was as part of a conscious behavioural strategy perceived to
10 be effective to “remove constant mistakes made by players”:

11 “Sometimes as a coach if the same mistake is being made I will throw my
12 arms in the air or use an expression so the player can see I’m not happy.....

13 I tend to only deliberately do it though when the player keeps making the
14 same mistake..... I have done it in the past because I am emotionally
15 involved and it frustrates me to see players at this level making simple
16 errors” (under 15/16’s coach 12)

17 In contrast, the coaches of the younger players up to under 13’s did not use punitive or scold
18 behaviour as it would “damage a player’s confidence” and negatively “effect his
19 performance”. This appears in line with recommendations concerning positive coaching
20 behaviour with youth athletes (Côté et al., 2010; Hays et al., 2007; Lyle & Cushion, 2010).
21 However, the 10’s and 11’s coaches’ explanation for ‘punishment’ was that it is used in a
22 ‘fun’ way with the younger age groups. However, the coaches did not articulate this to their

1 players so the impact was dependent on the players' perception of such behaviour, which
2 could be negative (Jones, Armour & Potrac, 2004; Potrac et al., 2007).

3 *Practice*

4 Although there was a difference in the use of practice activities, with the coaches of the
5 younger age groups using more training form than playing form compared to the older age
6 group, no rationale for the choice of practice activity was linked to the age of the player's.
7 Instead contextual factors such as space determined the practice activity chosen. The coaches
8 of the older players explained, 'I design sessions using phases of play because I have the
9 space to do so' where as the young coaches suggested 'the use of space limits what I can plan
10 to do with the players'. However, a limited amount of space does not mean a coach has to use
11 training form activities instead of playing form activities (c.f. Partington & Cushion, 2013a).

12 General Discussion

13 Unlike Ford et al.'s (2010) research, the current study found some differences in coaching
14 behaviour between coaching groups when considered by age, some of which were significant.
15 However, in this case the underlying reasons for these differences were not clearly based on
16 any age-related player development or coaching principles, but were instead reflective of a
17 mix of the coaches underlying beliefs about coaching, their previous experiences and
18 perceived pressures from the context (i.e. parent expectations). This would tend to support the
19 notion that coaching behaviour is "very situation specific and dependent on the interaction of
20 a myriad of influencing variables" (Jones, 1997, p. 30).

21 Wragg, Haynes, Wragg & Chamberlin (2000, p. 217) expressed in the context of
22 teaching: "The way people teach is often the way they are...". The interview data suggested
23 that the coaches had developed a way of coaching that they perceived "got results". Bruner

1 (1999) describes such implicit theories as ‘folk pedagogies’; i.e. strong views about how
2 people learn and what is ‘good’ for them. These views were largely based on an established
3 ‘traditional’ pedagogy or practice in soccer characterised by being directive and prescriptive
4 in nature (Harvey, Cushion & Massa-Gonzalez, 2011; Potrac & Cassidy, 2006; Williams &
5 Hodges, 2005). However, this approach, can be both limited and limiting being rooted in
6 personal experience, and beliefs about ‘good’, ‘better’ or ‘best’ ways to coach. The
7 interviews suggested that the coaches did not readily realise or reflect on the influence of
8 their personal experience, nor appreciate the ways in which their assumptions about coaching
9 guided their practice (cf. Harvey et al., 2011). Behavioural differences were linked to the
10 coach’s perceptions and experience and appeared attributable to how they were learned. Yet,
11 given the qualification level and experience of the coaches, these views about coach
12 behaviour and player learning appeared not to have been challenged or changed, confirming
13 previous research that coaching remains largely based on experiences and the interpretation
14 of those experiences (e.g., Cushion, Armour & Jones, 2003; Gilbert & Trudel, 2006).

15 The distinctions between some of the coaches’ behaviour with different age groups
16 appeared arbitrary and linked to their beliefs about coaching. The descriptions around the use
17 of questioning and feedback were particularly illustrative of this with the coaches past
18 experiences and understandings about ‘how things should be done’ driving practice. Training
19 time was identified as a finite resource, so coaches needed to work on, and be seen to be
20 working on, those aspects that developed the players. The coaches’ folk pedagogy or implicit
21 ‘theory-in use’ (Argyris & Schön, 1974) appeared to align with cognitive/behavioural
22 approaches, with the players passive and perceived as empty vessels to be filled (Cushion,
23 2011). This was either in preparation for the rigors of adult soccer with the older age groups,
24 or as having ‘no knowledge’ of the game as younger players. Arguably, ‘telling’ players what

1 to do gave the less experienced coaches a notion of control and the impression of a more
2 effective use of practice time (Potrac et al., 2007; Partington & Cushion, 2013b). The use of
3 silence or lack thereof was particularly telling in this regard with silence being ‘off task’ seen
4 as ‘wasting coaching time’. This is in direct contrast to research by Smith and Cushion (2006)
5 where employing silence was a deliberate coaching strategy, again illustrating the context
6 specific and coach driven nature of coach behaviour . Stepping back and being silent to
7 facilitate learning requires a shift in the power differential between coach and player, the
8 coach becoming a partner in learning (Light, 2004; 2008) rather than the driving force, and
9 the coaches’ in the present study seemed unclear about taking this step.

10 Lastly, the pedagogical benefits and consequences of the use of questioning and
11 punitive/scold behaviour were not clearly articulated by the coaches. Punitive coaching
12 behaviours, regardless of the age of the athletes can negatively impact the learning
13 environment, and a fear of failure can be fostered if players are not allowed to make, and learn
14 from, mistakes (Smith & Smoll, 2007; Jones et al., 2004). Questioning behaviours have been
15 highlighted as important in allowing players to verbalise and develop knowledge bringing it to
16 a level of consciousness and stimulating reflection-on-action (Schön, 1983). Questioning also
17 brings knowledge to the conscious level through dialogue and discussion between coaches
18 and players. This in-turn provides an environment for player’s to begin to internalise
19 knowledge (Daniels, 2001) so it can be displayed as knowledge-in-action (Schön, 1983). The
20 older age group coaches hinted at this as a rationale for asking questions. However, the data
21 suggested that the coaches were largely utilising ‘traditional’ coaching methods, and
22 perceived themselves as holding the knowledge and expertise.

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1 Table 1. Coaches' biography

Coach	1	2	3	4	5	6	7	8	9	10	11	12
Age group	10's	10's	11's	11's	12's	12's	13's	13's	14's	14's	15/16's	15/16s
Years' experience	2	3	5	5	11	10	8	9	12	8	16	12
Highest coaching award	L2	L2	L2	L2	B	B	B	B	B	B	B	B
Teaching qualification	No	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No

2 L2: The Football Association Level 2 Coaching Award

3 B: Union of European Football Associations (UEFA) B Coaching Licence

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- 1 Table 2. State and behaviour categories and definitions of the amended hand notation adaptation of
 2 the Coaching Analysis and Intervention System (Cushion, Harvey, Muir & Nelson, 2012)

State - Playing Form	Definition
Small-sided game	Match-play with reduced number of players and two goals
Phase of play	Uni-directional match play towards one goal
Conditioned game	As small-sided games, but with variations to rules, goals or areas of play (e.g. possession/ball retention only games, or teams scoring by dribbling across end-line)

3

State - Training Form	Definition
Fitness	Improving fitness aspects of the game (e.g. warm-up, cool down, conditioning, rest)
Technical	Isolated technical skills unopposed alone or in a group
Skills	Re-enacting isolated simulated game incidents with or without focus on particular technical skills

4

Discrete Behaviour	Definition
Pre-Instruction	Initial information/instruction given preceding the desired action
Concurrent Instruction	Cues, reminders, prompts (given during execution of the desired action)
Post-Instruction	Information given after the execution of the desired action
Convergent Questioning	Limited number of correct answers/options - more closed
Divergent Questioning	Multiple responses/options - more open
Response to a question	Coach responds to a question that may or may not be directly related to practice
Feedback - Knowledge of Results	The coach gives feedback on the outcome of an action.
Feedback - Knowledge of Performance	Coach gives information on the movement pattern that caused the result.
Reinforcement	Corrective statement that contain information to correct and improve the next attempt/a participant's performance (can be delivered concurrently or

	post)
Positive Feedback	Feedback from the coach that is positive
Negative Feedback	Feedback from the coach that is negative
Silence (On-task)	Coach monitors practice without reacting verbally or non-verbally, maintaining eye contact with the players
Silence (Off-task)	Coach is visibly not engaged in the practice
Management	Management of the players - related coach behaviour contributing directly to practice
Humour	Jokes or content designed to make players laugh or smile
Hustle	Verbal statements or gestures linked to effort to activate or intensify previously directed behaviour
Praise	Positive or supportive statements or gestures not relating to a specific skill attempt
Punishment	Specific punishment following a mistake
Scold	Verbal or non-verbal behaviours demonstrating displeasure at the player/s performance or practice behaviour
Other	Any other behaviour not fitting any of the categories

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1 Table 3. Comparison of the coaches' behaviour in practice between the different age groups (rate per
 2 minute (RPM), percentage of behaviours (mean), standard deviation (SD) and total behaviours)

Behaviour	Under 10s and 11s			Under 12s and 13s			Under 14s and 15/16s		
	RPM	%	Total	RPM	%	Total	RPM	%	Total
Pre instruction	1.48	14.73 (6.40)	2334	1.21	16.13 (3.96)	1242	1.12	10.85 (1.72)	1214
Concurrent instruction	2.75	30.68 (2.40)	4478	2.00	27.30 (6.29)	2113	2.01	19.98 (1.56)	2259
Post instruction	0.41	4.48 (0.59)	656	0.31	4.10 (0.88)	332	0.34	3.28 (1.80)	431
TOTAL instruction	6.12	49.88 (4.85)	7468	3.52	47.53 (5.99)	3687	3.47	34.13 (4.32)	3904
Convergent questioning	0.55	5.63 (1.96)	924	0.41	5.50 (1.87)	415	0.40	3.95 (1.39)	409
Divergent questioning	0.07	0.85 (0.69)	116	0.18	2.33 (0.83)	198	0.33	3.20 (1.55)	410
TOTAL questioning	0.62	6.48 (2.21)	1040	0.59	7.83 (1.50)	613	0.73	7.18 (1.80)	819
Response to a question	0.23	2.40 (0.47)	377	0.19	2.58 (1.27)	202	0.11	1.00 (0.68)	128
Feedback - K of R	0.04	0.73 (1.00)	52	0.15	1.88 (0.96)	164	0.12	1.03 (1.01)	143
Feedback - K of P	0.27	2.60 (1.30)	426	0.35	4.63 (3.26)	333	0.93	9.98 (3.64)	1051
Feedback - Reinforcement	0.15	2.53 (2.81)	229	0.30	4.13 (2.42)	326	0.35	3.58 (2.30)	463
TOTAL feedback	0.46	5.83 (2.81)	707	0.80	10.60 (1.69)	823	1.40	14.53 (4.43)	1657
Positive Feedback	0.30	4.25 (2.92)	461	0.49	6.78 (3.78)	538	0.54	5.30 (1.85)	572
Negative Feedback	0.06	0.95 (0.84)	92	0.25	3.25 (1.51)	267	0.36	4.08 (2.28)	415
Silence - On-Task	0.72	8.38 (2.63)	1162	0.28	3.70 (3.14)	253	0.61	5.55 (3.54)	704
Silence - Off-Task	0.11	1.18 (0.61)	190	0.10	1.30 (1.47)	113	0.04	0.43 (0.45)	36
TOTAL silence	0.83	9.55 (2.95)	1352	0.38	4.98 (2.19)	366	0.65	6.00 (3.33)	740
Management	0.44	4.50 (1.06)	699	0.38	4.85 (2.39)	419	0.57	5.85 (1.37)	644
Humour	0.14	1.73 (0.86)	235	0.13	1.80 (1.34)	151	0.06	0.60 (0.20)	63
Hustle	0.46	4.35 (2.93)	800	0.12	1.73 (1.31)	131	0.40	4.13 (3.02)	364
Praise	0.88	8.80 (2.45)	1454	0.51	6.73 (3.04)	521	1.31	13.13 (4.14)	1312
Punishment	0.01	0.05 (0.10)	11	0.01	0.10 (0.14)	8	0.00	0.00 (0.00)	0
Scold	0.09	0.90 (0.37)**	152	0.09	1.15 (1.53)	97	0.40	4.05 (1.10)	414
TOTAL punitive*	1.00	0.95 (0.37)	163	1.00	1.25 (1.66)	105	0.40	4.05 (1.10)	414
Other	0.04	0.38 (0.33)	72	0.00	0.00 (0.00)	0	0.00	0.00 (0.00)	0
Total	9.19	100	14920	7.46	100	7823	10.00	100	11032

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4 *Significant multivariate omnibus test ($p = 0.05$)

5 **Significant difference between under 10s and 11s coaches compared to under 12s and 13s and under 14s and
 6 under 15/16s

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1 Table 4. Comparison of the coaches practice activities between the different age groups

Age group	Under 10 and 11s		Under 12s and 13s		Under 14s and 15/16s	
Practice Activity	Training form	Playing form	Training form	Playing form	Training form	Playing form
Time (minutes)	850	714	765	277	427	695
Percentage of practice activity	54	46	73	27	38	62

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1 Table 5. Cognitive processes for the behaviours of the under 10 and 11 coaches from the abductive
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Behaviour	Cognitive processes (number of coaches out of 4)	Example of interview data
Instruction	To control the group of players (3)	‘sometimes when players are messing around they just need telling to stop’
	Contextual factors (i.e. parents) (3)	‘is an expectation from parents for the coach to be giving instruction whilst watching’
	Give players info whilst playing to help learning (4)	‘when playing it is quicker to give information to players by just telling them’
Questioning	The contextual and situational factors affect the type of questioning (4)	‘depends on time in terms of the weather conditions or how quickly you need to get them back into action, quite often we try to get them to answer the questions themselves but also their are ways were you can almost lead them down a funnel to the correct answer, I ask leading questions to get the player to the answers quicker’
	Use convergent questions because its quicker (3)	
Feedback	Important to give more positive feedback than negative feedback (4)	‘I try to give as much positive feedback as possible but there is the odd occasion where your meant to give negative feedback, I just try not to do it as much with the age group I have’
		‘no negative, all positive, all positive feedback with the younger age groups’
Silence	No cognitive process (4)	‘no real reason for being silent’
Punitive	Don’t punish or use scold with younger children (4)	‘I don’t use press-ups or send players round the pitch when they make mistakes at this age’

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1 Table 6. Cognitive processes for the behaviours of the under 12 and 13 coaches from the abductive
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Behaviour	Cognitive processes (number of coaches out of 4)	Example of interview data
Instruction	Players don't always need telling they can learn by doing – learnt from coach education (2)	'the new courses (F.A. Youth Award) based around children learning it for themselves from playing rather than the coach always going in and teaching them'
Questioning	Use of questioning when coaching is important for learning (4) Important to get players to think about the answer when questioning (2)	'to develop the players, I would say I use more question and answer, I am trying to get the kids to answer for themselves' 'I would not give them the answer myself...when asking them something I don't just give them yes or no questions I like the players to think about it themselves before answering'
Feedback	Give more positive feedback than negative (4)	'I would always try to give positive feedback as much as I can, I would like to shy away from negative feedback as much as possible'
Silence	No cognitive process (4)	'I don't be silent for a reason'
Punitive	Don't punish or use scold with younger children (4)	'I don't think I punish or use scold when I coach it won't help the players learn'

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- 1 Table 7. Cognitive processes for the behaviours of under 14 and 15/16 coaches from the abductive
 2 analysis

Behaviour	Cognitive processes (number of coaches out of 4)	Example of interview data
Instruction	Post instruction engages players in reflection (2)	‘instruction is used at the end of a particular part of a session to allow the players to learn for themselves’
	To control the group of players (3)	‘when you coach the older age groups for example the 15s and 16s you obviously need to clamp down on other things like behaviour’
Questioning	Players already have knowledge so questions can be used to draw on this (3)	‘players see something’s that coaches don’t’ ‘rather than keep telling the players what to do, questions can reinforce the knowledge they already have’
Feedback	Don’t understand the benefits of using knowledge of results (3)	‘I don’t understand how using knowledge of results can facilitate learning’
	Knowledge of performance is a better feedback behaviour for learning (3)	‘I will give immediate feedback on a technique to improve performance’
Silence	No cognitive process (4)	‘Silence is not a behaviour I have a process for..... when I’m silent its because there is nothing to coach’
Punitive	Removes player mistakes (3)	‘I might give players press-ups to do if they make a mistake’

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