Title

'Zooming in' on the antecedents of youth sport coaches' autonomy-supportive and controlling interpersonal behaviours: A multimethod study.

Abstract

Grounded in self-determination theory and the motivational model of the coach-athlete relationship, the purpose of this study was to explore the antecedents of youth sport coaches' autonomy-supportive and controlling behaviours using a multimethod approach. Recreational level youth swimming and football coaches (N = 12) participated in semi-structured interviews and were observed leading a coaching session. Interviews were thematically analysed and coaching sessions were analysed using the multidimensional motivational climate observation system. Analysis of the triangulated data revealed that the coaches were both autonomy-supportive and controlling in their interactions with athletes, but predominantly autonomy-supportive. Coaches reported that they coached in this way due to factors associated with their personal orientation (significant others' influence, learning experiences, and beliefs about the role of the coach), the coaching context (time pressure), and perceptions of athletes' characteristics (readiness for autonomy, gender, and quality of motivation). The findings are discussed in relation to personal and social processes that may determine coaching behaviours, and suggestions for coach development and future research are noted.

Key words: autonomy support and control, antecedents, youth sport, coach behaviours, self-determination theory.

22

Introduction

Coaching behaviours can have a significant impact on athletes' sport experiences (1). A theoretical framework that has been useful for examining the effects of coaches' behaviours on athletes' outcomes is self-determination theory (SDT) (2). According to SDT, coaches can enhance or diminish athletes' sport experiences depending on the degree to which their coaching behaviours are autonomy-supportive or controlling (3). A plethora of SDT research recognises and forewarns coaches of the negative consequences associated with coaching athletes using controlling strategies, and instead promotes autonomy-supportive coaching as a healthier alternative. Many coaches, however, continue to engage in behaviours that are perceived as controlling rather than autonomy-supportive (4). This is particularly evident within the context of grassroots youth sport (e.g., 5,6). Very little attention, however, has been given to investigating the antecedents of coaches' autonomy-supportive and controlling behaviours (7). Therefore, the purpose of the study was to examine the underlying reasons for autonomy-supportive and controlling coaching behaviours.

Autonomy support is evident when coaches offer choices, explain their instructions, acknowledge athletes' feelings and perspectives, and create opportunities for initiative taking (3). Controlling behaviours include issuing demands, distributing task-contingent rewards, punishments, and guilt-inducing criticisms, using intimidation techniques, and encouraging athletes' ego-involvement (8). Autonomy-supportive coaching behaviours are considered optimal as they are associated with desirable outcomes for athletes such as psychological need-satisfaction (9), autonomous motivation (10), sustained engagement (11), and enhanced performance (12). Meanwhile, controlling coaching behaviours are regarded as damaging because they are linked with undesirable outcomes for athletes such as psychological need-

46 frustration (13), controlled motivation (14), increased burnout propensity (15), and other

47 negative consequences (e.g., negative affect, disordered eating, depression) (16). Research

48 findings indicate that coaches may exhibit both autonomy-supportive and controlling

49 behaviours to differing extents (e.g., 17). However, coaches who provide their athletes with

50 little autonomy support are not necessarily highly controlling and vice versa (18). Therefore,

51 there is a need for research that investigates these two dimensions of coach behaviour and their

52 antecedents at the same time, which could aid the design of interventions aimed at improving

53 the coach-created motivational environment in youth sport (1).

54 A useful theoretically-based framework for investigating the antecedents of coaches'

55 autonomy-supportive and controlling behaviours is Mageau and Vallerand's (3) motivational

56 model of the coach-athlete relationship (MMCAR). Their model proposed that three

57 underlying factors directly determine coaches' autonomy-supportive behaviours: the coach's

58 personal orientation, perceptions of athletes' behaviour and motivation, and the coaching

59 context. The MMCAR has been used effectively to develop understanding of the antecedents

60 of teachers' behaviours (e.g., 19). Furthermore, research has demonstrated that the proposed

61 antecedents also provide explanations for coaches' use of controlling behaviours (e.g., 20,21).

62 Coaches' personal orientation concerns the internalised behaviours that they are likely to

63 exhibit based on their background and attitude towards coaching (22). To date, researchers

64 have not directly examined the proposed relationship between coaches' personal orientation

65 and autonomy-supportive and controlling coaching behaviours. Using an action research

66 process, Ahlberg, Mallett, and Tinning (23) attempted to help a rugby coach create a training

67 environment that offered athletes more choice and provided rationales for requested tasks (i.e.,

68 autonomy support). They found that the coach's self-awareness increased during the

69 intervention, but the autonomy-supportive behaviours conflicted with his controlling personal

70 orientation and beliefs regarding effective practice. This study demonstrates some support for

71 the relationship, however, further research is needed to better understand it.

72 The second feature of Mageau and Vallerand's (3) MMCAR, the coaching context, is also

73 connected with coaches' interpersonal behaviours. A small number of studies have identified

74 contextual challenges associated with operationalising autonomy-supportive coaching

75 behaviours (e.g., unsupportive colleagues, time constraints, work-life conflict) (21,24), but this

76 remains an underexplored area. Lastly, Mageau and Vallerand (3) proposed that coaches'

77 perceptions of athletes' behaviour and motivation influences their behaviours. Specifically, that

78 coaches are more inclined to engage in autonomy-supportive behaviours when they believe

79 athletes have a high level of self-determined motivation. This proposition has gained some

80 empirical support in sport (e.g., 21,25), however, researchers have yet to investigate the

81 relationship between coaches' perceptions of athletes' behaviour and motivation and

82 controlling coaching behaviours.

83 At present, research examining the antecedents of coaches' autonomy-supportive and

84 controlling behaviours has relied almost solely on quantitative self-report instruments such as

85 questionnaires (e.g., 21,26). This work has demonstrated empirical support for the theoretical

86 propositions of SDT in relation to outcomes of coaches' behaviours. However, such approaches

87 limit the depth of insight gained into the complexity of why coaches behave as they do.

88 Qualitative research methods offer opportunities to explore the intricacies and subtleties of

89 factors already shown to influence coaches' interpersonal behaviours (27). Therefore,

90 qualitative modes of inquiry will be useful to explore the antecedents presented in the MMCAR

91 (3) and enrich our understanding of the motivational basis of coaches' behaviours (7).

92 Furthermore, there has been an absence of studies utilising naturalistic observation to help

93 explain coaches' interpersonal behaviours, despite the fact that its use is regarded as a

94 worthwhile method for obtaining first-hand evidence to help comprehend and encapsulate the

95   context in which coaches operate (28). Such insight is relevant to researchers seeking to better

96   understand the in-situ behaviours of coaches in various sport settings (7). The aim of the

97   present study was, thus, to begin addressing current knowledge gaps by exploring the

98   antecedents of youth sport coaches' autonomy-supportive and controlling behaviours using a

99   multimethod approach.

100   **Methods**

101   *Participants*

102   The participants were 12 (nine male and three female) youth sport coaches working within

103   Scotland. The coaches specialised in football (N = 6) and swimming (N = 6), and worked

104   with recreational level athletes aged between 4 and 18 years old. The coaches' age ranged

105   from 21 to 61 years ($M = 36.9$, SD = 15.9). Their total years of coaching experience ranged

106   from three to 30 years ($M = 12.7$, SD = 8.5). All the coaches held a national coaching

107   qualification (i.e., three had a level 1 qualification, five had a level 2 qualification, and four

108   had a level 3 qualification), three of the coaches held an academic coaching qualification, and

109   one of the coaches held a secondary school teaching qualification. The coaches reported their

110   job status as either paid (N = 7) or voluntary (N = 5) in a part-time role.

111   *Research Design and Data Collection Methods*

112   The present study utilised a concurrent triangulation mixed methods approach. Therefore,

113   both quantitative and qualitative data were collected from the coaches during the same time

114   period then compared to see what they revealed about their behaviours and the antecedents of

115   those behaviours. This side by side integration of results is recommended for its capacity to

116   combine the strengths of different methods and produce well supported findings (29).

117   *Antecedents of Coaching Behaviours*. Semi-structured interviews were used to acquire rich,

118   dense accounts of the coaches' experiences (30). An interview guide (available from the

119   authors on request) was produced based on synthesized findings from SDT research in sport

120   coaching as well as other domains (parenting, education, health, workplace) (1), SDT

121   concepts, and the MMCAR (3). Resulting questions focused on the three antecedents of

122   autonomy-supportive and controlling coaching proposed in the MMCAR: personal

123   orientation (e.g., "What would you constitute as representing effective coaching, and what

124   impact, if any, does this have on your coaching behaviours?"); coaching context (e.g., "What

125   impact, if any, does your working environment have on your coaching behaviours?"); and

126   perceptions of athletes' behaviour and motivation (e.g., "What impact, if any, do your beliefs

127   about athletes have on your coaching behaviours?").

128   *Coaching Behaviours*. The multidimensional motivational climate observation system

129   (MMCOS) (31) was used to explore the coaches' behaviours during practice. The MMCOS

130   assesses different aspects of the coaching environment relating to both SDT and achievement

131   goal theory (32). However, as the current study was situated in SDT and focused on autonomy-

132   supportive and controlling coaching behaviours, the coaching environment was only coded

133   according to autonomy-supportive and controlling environmental dimensions and related

134   coaching behaviours (e.g., "Acknowledges feelings and perspective", "Provides rationale for

135   tasks/requests/constraints", "Demonstrates negative conditional regard"). The potency rating

136   (i.e., the universality, strength, and look) for each coded dimension was recorded on the

137   following scale: 0 (not at all), 1 (weak potency), 2 (moderate potency), 3 (strong potency). The

138   validity and reliability of the MMCOS has been demonstrated in youth sport research (e.g., 5).

139   ***Procedures***

140   Following ethical approval by the authors' institutional ethics committee, coaches were

141   recruited through the authors' existing networks within sport via email and telephone.

142   Coaches of swimming and football were included because recent evidence suggests that these

143   are, respectively, two of the most popular individual and team sports performed by children

144   and adolescents globally (33). Involvement in this study was voluntary and the coaches

145   provided informed consent prior to data collection. All data was collected by the first author

146   who had a firm understanding of SDT and experience of coaching youth sports. Each coach

147   was observed for 60 minutes during a normal training session. Event recording was used,

148   therefore every time a predefined behaviour was witnessed, that behaviour was noted on the

149   MMCOS coding sheet. Each coach then took part in a recorded one-to-one interview lasting

150   an average of 40 minutes. All data belonging to each coach was assigned a pseudonym

151   providing anonymity in the presentation of the findings.

152   *Data Analysis*

153   Following the coach observations, the mean and standard deviation of each coded coaching

154   behaviour as well as the percentage of total behaviours were calculated. This enabled

155   examination of shared and individual patterns of behaviour. Then the mean potency ratings and

156   standard deviations were calculated providing the overall strength of the coaches' observed

157   autonomy-supportive and controlling behaviours (31). Following the interviews, verbatim

158   transcripts were generated and read several times by the authors to develop a sense of

159   familiarity with the depth and breadth of the data (34). Thereafter, an inductive/deductive

160   thematic analysis approach was adopted by the first author to detect factors coaches perceived

161   resulted in autonomy-supportive and controlling coaching, in line with as well as extending

162   beyond the antecedent dimensions presented in MMCAR (3). Sparks, Dimmock, Whipp, and

163   Lonsdale (35) successfully used the same type of thematic analysis to generate deep and novel

164   insights into PE teachers' behaviours that students perceived as relatedness-supportive.

165   Preliminary themes were then discussed by the authors, at which point a consensus was reached

166   on the final themes and their meaning (36). Coaches were also scored on the potency of their

167   self-reported autonomy-supportive and controlling behaviours using the same rating scale as

168 the MMCOS. Then the authors calculated the overall group mean potency ratings and standard

169 deviations for the self-reported autonomy-supportive and controlling behaviours. Lastly, the

170 interview data was triangulated with the observation data to assess how well coaches' self- and

171 observer-reports matched, identify potential reasons why, and strengthen the trustworthiness

172 of the findings (37,38). Cross-concordance ratings were generated by calculating the numerical

173 difference between the potency ratings given for each coach, and assigning a consistency rating

174 using the following scale: 0 (high consistency), 1 (medium consistency), and 2 (low

175 consistency). For example, if a coach's self-reported autonomy-supportive behaviours had a

176 potency rating of 3 and their observed autonomy-supportive behaviours had a potency rating

177 of 2, the difference is 1 point, so their scores were judged as having a medium level of

178 consistency. Whereas, if a coach's self-reported and observed controlling behaviours both had

179 a potency rating of 2, their scores were classed as having a high level of consistency because

180 there is a difference of 0 points. Mean cross-concordance ratings and standard deviations were

181 also calculated to establish a group measure of the overall consistency across results.

182 **Results and Discussion**

183 ***The Observed and Self-Reported Motivational Climate***

184 Analysis of the observation data show that the autonomy-supportive environmental

185 dimension of each coach-created motivational climate received a higher potency rating

186 (M = 2.08, SD = 0.67) than the controlling environmental dimension (M = 0.83, SD =

187 0.72), suggesting that, on average, coaches created a moderately autonomy-supportive

188 and minimally controlling motivational climate (Table 1). Furthermore, the coaches

189 displayed far more autonomy-supportive behaviours (M = 9.58 (77.7%), SD = 3.99) than

190 controlling behaviours (M = 2.75 (22.3%), SD = 2.80). This behavioural pattern is

191 consistent with findings from a study of observed training sessions of 57 recreational level

youth football coaches from England, Greece, and France, where coaches were 69.9%

need-supportive and 30.1% need-thwarting (6). Moreover, the average potency rating

assigned to each coach's self-report suggested that they believed their behaviours were

moderately autonomy-supportive (M = 2.25, SD = 0.75) and weakly controlling (M = 1.58,

SD = 0.67), and cross-concordance analysis revealed that their interview scores had

medium levels of consistency with their observation scores (Table 1). While these results

are encouraging, there was still room to improve the motivational environment being

created, which emphasised the need for greater understanding of these two types of

behaviours, particularly how and why they are both employed. The current study is the

first to examine which autonomy-supportive and controlling behaviours recreational level

coaches were employing and why at the same time.

Table 1. Potency of and consistency between observed and self-reported autonomy-supportive and controlling coaching behaviours.

	Autonomy-supportive				Controlling			
	Observation		Interview	Cross-Concordance rating***	Observation		Interview	Cross-Concordance rating***
Coach (sport)*	Total number of recorded behaviours	Potency score**	Potency score**		Total number of recorded behaviours	Potency score**	Potency score**	
David (F)	18	3	2	1	1	1	3	2
Charlie (F)	4	1	3	2	4	1	2	1
Martin (F)	6	2	3	1	7	2	1	1

Derek (F)	15	3	2	1	0	0	2	2
James (F)	10	2	1	1	7	2	1	1
Steven (F)	9	2	2	0	4	1	1	0
Allan (S)	11	2	3	1	0	0	1	1
Lucy (S)	6	1	2	1	1	1	2	1
Frances ca (S)	8	2	3	1	3	1	2	1
Kevin (S)	9	2	1	1	0	0	1	1
Blair (S)	12	3	2	1	6	1	2	1
Rachel (S)	7	2	3	1	0	0	1	1
M (SD)	9.58 (3.99)	2.08 (0.67)	2.25 (0.75)	1.00 (0.43)	2.75 (2.80)	0.83 (0.72)	1.58 (0.67)	1.08 (0.51)

206   *F = Football; S = Swimming

207   **Potency scores: 0 = Not at all; 1 = Weak; 2 = Moderate; 3 = Strong.

208   ***Cross-concordance ratings: 0 = High level of consistency; 1 = Medium level of

209   consistency; 2 = Low level of consistency.

210   *Antecedents of the Coaches' Autonomy-Supportive and Controlling Behaviours*

211   Further analysis of the coaches' interview and observation data resulted in 10 raw data

212   themes that were organised into seven lower- and three high-order themes based on the

213   antecedent dimensions in Mageau and Vallerand's (3) MMCAR (Figure 1).

214

215   Figure 1. Reported antecedents of autonomy-supportive and controlling behaviours.

Raw data theme	Lower-order theme	Higher-order theme
Coaching experiences as an athlete	Significant others' influence	Coach's personal orientation
Parent advice		
Formal coach education	Learning experiences	
Coaching priorities	Role of the coach	
Practice objectives	Perceived time pressure	The coaching context
Age and stage of athletes	Readiness for autonomy	Perceptions of athletes' characteristics
Athlete preferences	Athlete gender	
Cultural beliefs		
Athlete enthusiasm	Athletes' behaviour and motivation	
Coaches' understanding of motivation		

216

Coach's Personal Orientation

218   This higher-order theme reflected behaviours and factors associated with the coaches'

219   personal orientation towards coaching captured through three lower-order themes: significant

220   others' influence, learning experiences, and role of the coach.

221   *Significant Others' Influence.* The coaches' indicated that significant others during their

222   development influenced their coaching behaviours. Charlie commented that he behaves

223   similarly to a coach he enjoyed working with as an athlete:

224   My [former] coach, one that stands out…when I started off [coaching] I feel like I

225   took a lot of his demanding attitude onto the field cause he was always like, 'this is

226   what I want, that's how it should be'…I thought he was a good coach… I thought that

227   was the way to coach.

228   Charlie's observation scores indicated that he displayed some of the coaching strategies learnt

229   from his experience of being coached. "Uses controlling language" accounted for 50% of his

230   total number of recorded controlling behaviours, while the autonomy-supportive behaviour

231   "Provides opportunity for player input" was never recorded. Conversely, Steven reported that

232   he tries to coach the way he wished he was coached as an athlete:

233   [I used to have] disagreements with coaches on the way our team was playing or the

234   way we had set up etc. and [throughout] the arguing…I never got a reason behind

235   it…so from that I wanted to understand why we do things, so whenever I'm doing a

236   drill…I'll usually try explain to them why we are doing it and what the purpose of it

237   is.

238   Evidence of Steven's effort to explain his thinking to athletes was provided through his

239   observation scores; "Provides rationale for tasks/requests/constraints" made up 55.6% of his

240   total number of recorded autonomy-supportive behaviours. The findings reported here

241   demonstrate the different ways that coaches' behaviours can be influenced by how they,

242   themselves, were coached (39,40). Interestingly, although Charlie and Steven both

243   experienced controlling coaching as athletes, only Steven felt more inclined to offer

244   autonomy support as a result. Charlie, on the other hand, was prepared to emulate the

245   controlling behaviours of his past coach. An explanation for this came from his remark about

246   the values instilled in him by his father and coach:

247   My dad played football as well and he was always like, 'be professional', so he put

248   that into my [head] when I was playing, and my coach was on the same level as my

249   dad, so I took bits from that.

250 Charlie's upbringing and past experiences as an athlete appear to have collectively shaped his

251 view of effective coaching practice. This finding supports views that coaches learn about

252 coaching as athletes through an 'apprenticeship of observation' (41,42) and highlights a

253 social constructivist perspective of coach learning (43,44). Coach developers should therefore

254 seek to help coaches recognise the external influences on their views about coaching by

255 encouraging them to critically reflect on why they coach as they do, and when needed raise

256 awareness of alternative perspectives to prevent patterns of controlling coach behaviour being

257 adopted unconsciously (45–47).

258 *Learning Experiences.* Despite early influences on Charlie, he reported that completing a

259 university degree in sports studies encouraged him to be less controlling and more autonomy-

260 supportive:

261   I'm always asking them how they feel about it rather than just saying, 'do what I say,

262   this is it, and I'm right'…through doing my dissertation, I found [out about this

263   approach] through that…so I changed my coaching from what I actually studied.

264 There appears to be a lack of symmetry between this comment and Charlie's observation

265 scores, as he did not exhibit the autonomy-supportive behaviour "Acknowledges feelings and

266 perspective" and, as discussed earlier, controlling language was one of the controlling

267 behaviours he used. Nevertheless, taking part in a formal coach education programme that

268 considered SDT principles had, at the very least, opened Charlie up to the idea of coaching

269 'with' athletes rather than 'at' them, and he subsequently developed a more autonomy-

270 supportive personal orientation. Hence, the findings highlight the potential usefulness of

271 theoretically grounded formal learning in promoting motivationally adaptive coaching

272 behaviours (48, 49). However, our findings also provide evidence that increasing coaches'

273 knowledge about autonomy-supportive and controlling coaching behaviours, alone, does not

274 guarantee positive changes in practice. To achieve this, not only must coaches be able to

understand the importance of using autonomy-supportive coaching strategies, they must also

be able to recognise the autonomy-supportive and controlling elements of their own practice

and the associated outcomes for their athletes (23). A similar focus in teachers' training

helped teachers support the autonomy of students (50). Building in situ or contextualised

opportunities into formal coach learning such as coach education may provide the

opportunity to increase awareness of personal coaching practices (41) and athletes' reactions

to them similar to those achieved in Ahlberg et al. (23) and Byrne (20).

Role of The Coach. The coaches' behaviours were influenced by what they judged as the role

of the coach. Blair reported engaging in controlling behaviours because he deems them

effective at increasing the level of effort athletes exert in practice:

> It tends to get results, like they do train hard when I'm more firm and angry…It can be
>
> challenging because you feel like they're not gonna enjoy it the same and this could be
>
> the session that makes them drop out of the sport, so it's not a nice feeling...it doesn't
>
> stop me, it just makes me feel a bit more uncomfortable.

By prioritising effort over enjoyment, persistence, and even the emotional bond with the

athlete, Blair seems to believe that coaching is about spurring athletes to try harder at athletic

tasks. Rachel, meanwhile, stated that she adopts autonomy-supportive behaviours because

she considers them important for the development of athletes who can train and perform well

independent of others:

> I don't write [the session content] on a whiteboard…I have it printed out and put it in
>
> a poly-pocket and they get on with their work…and that's the way I want them to
>
> be…I don't want them to be totally dependent on me. I want them to be able to go to a
>
> competition and feel confident, to be able to go and do their own warm up, to work
>
> hard [even] if they weren't with me.

299   Rachel appears to take a more empowering view of coaching than Blair since she targets

300   independent thinking. In terms of how these reported coaching priorities translate into

301   practice, "Using controlling language" – a behaviour related to Blair's comment about being

302   'firm and angry' with athletes – accounted for 50% of his total number of recorded

303   controlling behaviours. And in Rachel's observation, "Encourages initiative taking" made up

304   42.9% of her total number of recorded autonomy-supportive behaviours. This suggests a

305   translation of how Blair and Rachel interpreted their role as coaches into how they behaved

306   towards their athletes. There are reports in more general coaching research which suggest that

307   coaches' behaviours are influenced by the coach's perceptions of the required behaviours of a

308   coach (e.g., 51–53). Future research might investigate factors that influence coaches' role-

309   related beliefs to better understand how they are developed and the implications for

310   autonomy-supportive and controlling coaching behaviours. Gilbert and Trudel's (53) study of

311   role frames of model youth team sport coaches may offer a useful starting point for mapping

312   the network of such influences.

313   ***The Coaching Context***

314   The second higher-order theme described the impact a contextual factor, perceived time

315   pressure, had on the coaches' behaviours. Steven reported that he offers athletes less of a

316   rationale for tasks during shorter training sessions compared to longer ones:

317   Across two hours you've got a lot of time to work with them and a lot of time to

318   reason and explain, whereas in 20 minutes you've got a clear aim to get this done in a

319   short space of time, so you have no time to waste [by reasoning and explaining].

320   David, meanwhile, said that he is quicker to punish athlete misbehaviour during shorter

321   sessions:

322   You're spending a lot of time rushing them to get the practice done or get changed, so

323   you're a bit tense, and because of being a bit tense you might coach differently… if

there's a kid maybe not doing exactly what he's been told…you'd probably just pull

him out of the session…because if there is only a little bit of time you need to spend it

properly.

In the hour-long period that the coaches were observed, as detailed earlier "Provides rationale

for tasks/requests/constraints" accounted for over half of Steven's total number of recorded

autonomy-supportive behaviours. Steven's reported reaction to time pressure is consistent

with recent results by Cooper and Allen (54) who found perceived time pressure to have a

negative impact on the level of autonomy support adventure sport coaches offered their

participants, thus underscoring the need to support coaches to develop strategies to ease

external pressure such as time, so that motivationally maladaptive behavioural responses

become less likely (21,26).

Interestingly, David and Steven seem to have a specific view of 'good' coaching and a 'good'

training session. David speaks about wanting to use his coaching time 'properly' and Steven

about having 'no time to waste'. Both appear to mean using time productively by completing

practice drills, which in David's case focused on improving athletes' tactical/technical skills.

Having a one-dimensional, competence-focused perspective of 'productive' coaching may

explain why David did not use autonomy-supportive behaviours to help him achieve his

session objective. Autonomy-supportive behaviours target psycho-social (i.e., autonomy and

relatedness) as well as performance outcomes (i.e., competence) (3) and are thus, by their

nature, more aligned with a holistic perception of effective coaching (55–57). The present

findings add weight to the argument that coaches should consider a range of outcomes when

determining what effective coaching involves and what a productive session looks like (55).

As a result coaches may be more likely to adopt autonomy-supportive approaches (7) and

explore how autonomy-supportive coaching can still yield 'productive' sessions (58,59).

348   ***Perceptions of Athletes' Characteristics***

349   The final higher-order theme captured the impact of coaches' perceptions of athlete

350   characteristics on their autonomy-supportive and controlling behaviours. Three lower-order

351   themes were identified: readiness for autonomy, athlete gender, and athletes' behaviour and

352   motivation.

353   *Readiness for Autonomy.* Lucy stated that she tends to provide younger athletes with less

354   autonomy support than older athletes, "because obviously they are little and they're still

355   learning". She goes on to explain that:

356   I pick the drills for them, but when I get up to the next group, I'll say, 'right we're

357   gonna do a 25m butterfly drill, pick your drill as long as it's done well'…it's their

358   ability, their understanding, their knowledge of the strokes and the sport…plus also

359   maturity. If I said to the little ones, 'right you've got ten minutes to do what you want',

360   they'd just splash about and play and be typical kids.

361   Lucy was observed coaching younger athletes (aged approximately 6-9 years) and never

362   displayed the autonomy-supportive behaviour "Provides meaningful choice" which is

363   consistent with her self-report about coaching young athletes. This result indicates that some

364   coaches have doubts about the maturity and 'readiness' (e.g., self-regulation skills, sport

365   knowledge) of younger athletes to take on autonomy and still develop competency, which

366   results in offering these athletes fewer opportunities for autonomous learning. There is

367   evidence, albeit within education (60), that autonomy support and competence support "can,

368   and should exist side-by-side in a naturally supportive way" (61, p. 193). And research has

369   also shown that athletes can be taught how to deal with increased autonomy (14), therefore

370   limiting athletes' autonomy support on the basis of age and a perception that they are not

371   ready or able to benefit from autonomy-supportive behaviours may be inappropriate. Future

372   research in the youth sport context that examines the effect of autonomy-supportive

373 behaviours employed *with* or *without* competence support, similar to Vansteenkiste et al.

374 (60), is needed to better understand if, and how, autonomy support can be used effectively

375 when coaching young athletes and lead to a less problematic translation of theory to practice

376 (7).

377 *Athlete Gender*. In this lower-order theme, Martin, Charlie, and James discussed the impact

378 athlete gender had on their behaviour. The sentiment was that when it comes to coaching

379 female athletes, "it's totally different…you need to coach them differently" (Martin). More

380 specifically, Charlie and Martin explained that they often provide female athletes with more

381 of a rationale for tasks than male athletes:

382   I felt I had to be more autocratic with the men than the females. The men were just

383   like, 'tell us what we need to do', and that's what they always kept saying…They

384   were happy being told what to do. But coaching women…they're always asking

385   questions, they always want to know why they're doing [something]…They want to

386   know more information instead of [the coach just] saying, 'do that' (Charlie).

387   Girls ask a lot of questions so you need to be prepared with answers, whereas guys

388   will just go along with it (Martin).

389 Charlie and Martin were observed coaching a group of female athletes together, with Charlie

390 assisting Martin who led the training session. "Provides rationale for

391 tasks/requests/constraints" accounted for 33.3% of Martin's total number of recorded

392 autonomy-supportive behaviours, suggesting, in this instance, a degree of consistency

393 between his self-reported and observed behaviours. The same cannot be said of Charlie as he

394 was not seen providing a rationale while coaching.

395 Previous studies have recognised that male and female youth athletes tend to have different

396 coaching preferences (e.g., 62,63). Consequently, as Charlie and Martin claimed, some

397 athletes may not wish to 'be in control' and prefer to be directed by their coach (7). However,

398 research has demonstrated that very little variance exists between how male and female

399 athletes interpret autonomy-supportive/controlling climates, psychological needs, and

400 indicators of well- and ill-being (64). Some research has suggested that male athletes prefer

401 more coach control compared with female athletes (e.g., 65–67), however, other research

402 suggests there may be no differences (e.g., 68). Whether coach control is preferred or not,

403 athletes still need to feel they have a voice in who has control (69). Thus, if coaches

404 underestimate male athletes' need for autonomy and make less of an effort to provide them

405 with autonomy support, they risk thwarting their psychological need-satisfaction and

406 autonomous motivation.

407 Interestingly, and serving as an example of interactions between different antecedents of

408 autonomy-supportive and controlling coaching behaviours (7), James alluded to the influence

409 of his personal orientation on the different way he treats male and female athletes:

410   I would probably be on top of the boys more…I probably gave more lee-way to the

411   girls than I did with the boys in terms of when they turned up for training and match

412   days and stuff like that...through[out] my life it's been like that, the females, I tend to

413   give them that wee bit more respect than [the males] and be more pleasant to them, be

414   more polite, be more helpful. (James)

415 To 'be on top of the boys' is a colloquialism that can be interpreted as meaning to be in

416 control of them, and when James was observed coaching a group of male athletes, "Uses

417 controlling language" made up 71.4% of his total number of recorded controlling behaviours.

418 Therefore, it could be argued that James' words and actions match in this instance. Speaking

419 more broadly, it could also be argued that James' self-reported and observed behaviours are

420 to some extent consistent with traditional gender schemas (70). Gender schemas are the

421 beliefs individuals hold about what it means to be male or female in their culture. These

422   beliefs develop from a young age, are relatively stable (e.g., James was 58 years old at the

423   time of data collection and expressed that he has always felt this way), and have a strong

424   effect on how individuals perceive and treat men and women (71). Given that the traditional

425   gender characteristics (72) of a female (nurturing, expressive, understanding, and sensitive)

426   are more aligned with autonomy-supportive values, and those of a male (self-assured,

427   aggressive, and influential) are more akin to controlling ones, it is plausible that some

428   coaches may act more autonomy-supportive towards female athletes and less so with males

429   because they believe that these are 'gender-appropriate' coaching approaches. Future, more

430   targeted research should explore this possibility in greater detail. Future research should also

431   continue to examine the interactions and combined effects of antecedent factors to strengthen

432   our understanding of them and their impact on coaches' behaviours (7).

433   *Athletes' Behaviour and Motivation*. The coaches spoke about how they act differently

434   towards seemingly disinterested athletes than they do towards those who show enthusiasm for

435   the sport or session. Francesca reported that she offers unenthusiastic athletes less

436   opportunities for initiative taking and independent work than those who are eager to take part:

437   I have kids who come in who don't want to swim and you find that quite

438   challenging cause you are reiterating constantly what to do and you're having to

439   keep telling them to get off the wall, keep swimming, put stuff on the board…I

440   am in control of how much rest they get and how much they get to move so you

441   kinda control them…[whereas with those who do want to take part] you can put a

442   set up and manage them on their time management, so you get to give them a wee

443   bit of responsibility to control their own time and [make] their own judgment.

444   However, Derek claimed that he tries harder to understand and acknowledge the feelings and

445   perspectives of unenthusiastic athletes:

446   If during the session athletes aren't motivated or that bothered I'll maybe have a

447   word with them…I'd take them aside and have a chat with them, you know say,

448   'what's the problem here? What you thinking?'.

449 There are clear parallels between the coaches' descriptions of an 'unmotivated' athlete

450 (e.g., 'don't want to swim' [Francesca], 'aren't…that bothered' [Derek]) and an athlete

451 lacking in self-determined motivation (3). Therefore, it can be inferred that the coaches

452 considered a 'motivated' athlete to have a more self-determined motivational orientation.

453 Based on this interpretation, these findings support the view that coaches are likely to use

454 autonomy-supportive behaviours when they perceive athletes' motivation as self-

455 determined (21, 25). However, the findings also challenge the assumption that coaches

456 are likely to resort to controlling behaviours when they believe athletes lack such

457 motivation (3). Indeed, athletes deemed 'unmotivated' prompted an act of autonomy-

458 supportive coaching by Derek to reengage them. Therefore, the relationship between

459 coaches' perceptions of athletes' behaviour and motivation and autonomy-supportive and

460 controlling coaching behaviours may not be as straightforward as previously believed

461 and requires further exploration.

462 The coaches' comments also suggest that they take a rather simplistic view of

463 motivation, one where athletes are either motivated or unmotivated, which conflicts with

464 the continuum of motivation types proposed by SDT (2). Since only self-determined

465 types of motivation are judged to be advantageous for athletes (73), the coaches' current

466 understanding of motivation is likely to be unhelpful or even damaging. Therefore,

467 further investigation of coaches' perspectives on motivation may provide insight about

468 how coaches' understanding of 'everyday' concepts like motivation affect their

469 behaviours and serve as a means to engage coaches in critical reflection about why they

470 coach as they do and the affect it has on athletes' level of self-determination.

Practical Implications

Our findings suggest that coaches' behaviours are influenced by their biographies as well their current context and athletes. Therefore, when seeking to assist coaches to improve their interpersonal coaching behaviours and subsequent motivational climate, it may be useful to start with learning more about the coaches as individuals as well as their coaching context and athletes (e.g., through discussion) and where possible in situ (e.g., observation) (7,43). This approach may assist coaches and coach developers to gain an understanding of where autonomy-supportive coaching behaviours reinforce or are consistent with how the coaches think and behave, but also where it may present challenges to their thinking and implementation (20,23,74). Critical reflection will be vital to this process (41), encouraging coaches to "stand back and reflect upon their construction and application of professional knowledge" (p. 224). Placing emphasis on raising coaches' self-awareness of how and why they coach will assist coaches to connect their practice with theory(ies) and the theory (SDT) with their practice. Thus facilitating choices about behaviours that are intentional and conscious rather than based on uncritical adoption of 'tradition' (41,47). Such an approach fosters situated learning and sense making which research suggests have been lacking in formal learning opportunities such as coach education and limiting its impact (75).

Limitations and Future Directions

As with any research, there were some limitations. First, due to accessibility restrictions each coach was observed on only one occasion. Future research should observe coaches over multiple sessions or through a longitudinal design to lessen the impact of the researcher and strengthen the reliability of the picture generated of their 'normal' coaching behaviours. Second, the first author collected the observed data live, therefore, researcher bias might have interfered with accurate reading of what was observed (76). In addition, no

495 statistical tests were carried out on the observed data due to the limited statistical power of

496 the small sample size. Furthermore, qualitative assessments are inherently subjective,

497 therefore, our findings should be interpreted with care and not extrapolated to the overall

498 population. However, the methods selected were justified given the exploratory rather

499 than confirmatory design of the study. Moreover, coaches were observed first then

500 interviewed immediately after. This procedure was useful in allowing for interview

501 questions to be directed towards behaviours witnessed during each observation but not

502 vice versa. For example, although coaches mentioned employing different behaviour

503 with athletes who varied in motivation, none of the coaches were observed coaching

504 athletes with known varying levels of self-determined motivation (i.e., one of the found

505 antecedents), which prevented a comparison of their self-reported and observed

506 behaviours with regards to variations in athletes' motivation. Therefore, future research

507 using the same methods might separate the interviews and observations in time, change

508 the order, and/or conduct multiple observations and interviews so that in addition to our

509 approach where interview questions were shaped by the observation, subsequent

510 observations can examine specific behaviours mentioned during each interview.

511 Employing different multimethod procedures may help to develop this relatively new

512 approach to studying SDT based coach behaviour and as a result deepen our

513 understanding of the nuances of coaching recreational youth sport participants.

514 Future research may also wish to engage coaches working in different contexts to assess

515 whether the antecedents we found are prevalent in different contexts (e.g., elite level sport)

516 and in different coaching roles (e.g., full-time coaches). Lastly, the present study focused

517 solely on the antecedents of autonomy-supportive and controlling coaching behaviours.

518 However, there are other dimensions of coach behaviour recognised by SDT (3), so

519   future research should also investigate the influences on structure and interpersonal

520   involvement, as even less is known about these factors.

Concluding Remarks

522   The purpose of this study was to investigate, through the lens of SDT, the antecedents of

523   coaches' autonomy-supportive and controlling behaviours. Our findings demonstrated that

524   although the coaches employed autonomy-supportive coaching techniques they also used

525   controlling ones. Examination of the reported explanations for why the coaches worked this

526   way revealed that the coaches believed their personal orientation, perceptions of athletes'

527   characteristics, and the coaching context influenced their interpersonal coaching behaviours.

528   In particular, education and significant others were reported to influence coaches'

529   appreciation of an autonomy-supportive coaching approach. However, the extent to which

530   appreciation translated into actual behaviours was reported to be influenced further by

531   coaches' perceptions of: the role of the coach; what is 'good' training; time pressure; and

532   athletes' readiness for independence, gender, and quality of motivation. The present study

533   increases our understanding of psycho-social environmental conditions that facilitate or

534   inhibit autonomy-supportive coaching behaviours, and enhances our awareness of the

535   complexity of the coach-focused elements of Mageau and Vallerand's (3) coach-athlete-

536   motivational sequence. First, by revealing a range of antecedents of coaches' behaviours, the

537   findings advance previous SDT research which, apart from a few exceptions, has neglected

538   the barriers and enablers of autonomy-supportive and controlling coaching. Second, using

539   interviews allowed for a detailed exploration of the coaches' perspectives, which has been

540   largely absent in the large scale quantitative SDT research (7). Third, including coach

541   observations allowed for an objective assessment of the coaches' autonomy-supportive and

542   controlling behaviours during practice and offered information on the consistency between

543   their observed and self-reported behaviours (77). This strategy helped reveal potential

544   antecedents of coaches' behaviours which could have otherwise been missed, thereby

545   demonstrating the usefulness of a multimethod approach. Lastly, this study offers insight into

546   interactions between different antecedents, which begins to express the complexity of why

547   coaches act the way they do.

551   **Declaration of Conflicting Interest**

552   The authors declare that there is no conflict of interest.

553   **References**

554   1.   Matosic D, Ntoumanis N and Quested E. Antecedents of need supportive and controlling
555   interpersonal styles from a self-determination theory perspective: A review and implications
556   for sport psychology research. In: Raab M, Wylleman P, Seiler R, Elbe A-M and
557   Hatzigeorgiadis A (eds) *Sport and exercise psychology research: From theory to practice.* 1st
558   ed. London: Elsevier, 2016, pp.145-180.

559   2.   Ryan RM and Deci EL. Self-determination theory and the facilitation of intrinsic motivation,
560   social development, and well-being. *American Psychologist* 2000; 55: 68–78.

561   3.   Mageau GA and Vallerand RJ. The coach–athlete relationship: A motivational model. *Journal*
562   *of Sports Science* 2003; 21: 883–904.

563   4.   Fraser-Thomas J and Côté J. Understanding adolescents' positive and negative developmental
564   experiences in sport. *The Sport Psychologist* 2009; 23: 3–23.

565   5.   Smith N, Quested E, Appleton PR, et al. Observing the coach-created motivational
566   environment across training and competition in youth sport. *Journal of Sports Sciences* 2017;
567   35: 149–58.

568   6.   Tessier D, Smith N, Tzioumakis Y, et al. Comparing the objective motivational climate
569   created by grassroots soccer coaches in England, Greece and France. *International Journal of*
570   *Sport and Exercise Psychology* 2013; 11: 365–383.

571   7.   Occhino JL, Mallett CJ, Rynne SB, et al. Autonomy-supportive pedagogical approach to sports
572   coaching: Research, challenges and opportunities. *International Journal of Sports Science and*
573   *Coaching* 2014; 9: 401–415.

574   8.   Bartholomew KJ, Ntoumanis N and Thøgersen-Ntoumani C. A review of controlling
575   motivational strategies from a self-determination theory perspective: Implications for sports

576   coaches. *International Review of Sport and Exercise Psychology* 2009; 2: 215–33.

577   9.   Coatsworth JD and Conroy DE. The effects of autonomy-supportive coaching, need
578   satisfaction, and self-perceptions on initiative and identity in youth swimmers. *Developmental*
579   *Psychology* 2009; 45: 320–8.

580   10.   Carpentier J and Mageau GA. When change-oriented feedback enhances motivation, well-
581   being and performance: A look at autonomy-supportive feedback in sport. *Psychology of Sport*
582   *and Exercise* 2013; 14: 423–35.

583   11.   Almagro BJ, Sáenz-López P and Moreno JA. Prediction of sport adherence through the
584   influence of autonomy-supportive coaching among Spanish adolescent athletes. *Journal of*
585   *Sports Science and Medicine* 2010; 9: 8–14.

586   12.   Gillet N, Vallerand RJ, Amoura S, et al. Influence of coaches' autonomy support on athletes'
587   motivation and sport performance: A test of the hierarchical model of intrinsic and extrinsic
588   motivation. *Psychology of Sport and Exercise* 2010; 11: 155–61.

589   13.   Balaguer I, González L, Fabra P, et al. Coaches' interpersonal style, basic psychological needs
590   and the well- and ill-being of young soccer players: A longitudinal analysis. *Journal of Sports*
591   *Sciences* 2012; 30: 1619–1629.

592   14.   Pelletier LG, Fortier MS, Vallerand RJ, et al. Associations among perceived autonomy
593   support, forms of self-regulation, and persistence: A prospective study. *Motivation and*
594   *Emotion* 2001; 25: 279–306.

595   15.   Quested E and Duda JL. Antecedents of burnout among elite dancers: A longitudinal test of
596   basic needs theory. *Psychology of Sport and Exercise* 2011; 12: 159–167.

597   16.   Bartholomew KJ, Ntoumanis N, Ryan RM, et al. Self-determination theory and diminished
598   functioning: The role of interpersonal control and psychological need thwarting. *Personality*
599   *and Social Psychology Bulletin* 2011; 37: 1459–1473.

600   17.   Hodge K and Lonsdale C. Prosocial and antisocial behavior in sport: The role of coaching
601   style, autonomous vs. controlled motivation, and moral disengagement. *Journal of Sport and*
602   *Exercise Psychology* 2011; 33: 527–47.

603   18.   Bartholomew KJ, Ntoumanis N and Thøgersen-Ntoumani C. The controlling interpersonal
604   style in a coaching context: development and initial validation of a psychometric scale.
605   *Journal of Sport and Exercise Psychology* 2010; 32: 193–216.

606   19.   Taylor IM, Ntoumanis N and Standage M. A self-determination theory approach to
607   understanding antecedents of teachers' motivational strategies in physical education. *Journal*
608   *of Sport and Exercise Psychology* 2008; 30: 75–94.

609   20.   Byrne K. *Developing an autonomy-supportive learning environment: Improving coaching*
610   *practice through action research*. Masters Thesis, The University of Queensland, Australia,
611   2010.

612   21.   Rocchi M and Pelletier LG. The antecedents of coaches' interpersonal behaviors: The role of
613   the coaching context, coaches' psychological needs, and coaches' motivation. *Journal of Sport*
614   *and Exercise Psychology* 2017; 39: 366–78.

615   22.   Mallett CJ. Self-determination theory: A case study of evidence-based coaching. *The Sport*
616   *Psychologist* 2005; 19: 417–429.

617   23.   Ahlberg M, Mallett CJ and Tinning R. Developing autonomy supportive coaching behaviours:
618   An action research approach to coach development. *International Journal of Coaching Science*
619   2008; 2: 3–22.

620   24.   Stebbings J, Taylor IM, Spray CM, et al. Antecedents of perceived coach interpersonal
621   behaviors: The coaching environment and coach psychological well- and ill-being. *Journal of*
622   *Sport and Exercise Psychology* 2012 Aug; 34: 481–502.

623 25. Rocchi MA, Pelletier LG and Couture AL. Determinants of coach motivation and autonomy
624   supportive coaching behaviours. *Psychology of Sport and Exercise* 2013; 14: 852–859.

625 26. Iachini AL. Development and empirical examination of a model of factors influencing coaches
626   provision of autonomy-support. *International Journal of Sports Science and Coaching* 2013;
627   8: 661–675.

628 27. Strauss A and Corbin J. *Basics of qualitative research: Procedures and techniques for*
629   *developing grounded theory*. Thousand Oaks, CA: Sage, 1998.

630 28. Cowan DT, Taylor IM, McEwan HE, et al. Bridging the gap between self-determination
631   theory and coaching soccer to disadvantaged youth. *Journal of Applied Sport Psychology*
632   2012; 24: 361–374.

633 29. Creswell JW. *Research design: Qualitative, quantitative, and mixed methods approaches*. 3rd
634   ed. Thousand Oaks, CA: Sage, 2009.

635 30. Fontana A and Frey JH. The interview: From structured questions to negotiated text. In:
636   Denzin NK and Lincoln YS (eds) *Handbook of qualitative research*. 2nd ed. Thousand Oaks,
637   CA: Sage, 2000, pp.645–672.

638 31. Smith N, Tessier D, Tzioumakis Y, et al. Development and validation of the multidimensional
639   motivational climate observation system. *Journal of Sport and Exercise Psychology* 2015; 37:
640   4–22.

641 32. Nicholls JG. *The competitive ethos and democratic education*. Cambridge: Harvard University
642   Press, 1989.

643 33. Hulteen RM, Smith JJ, Morgan PJ, et al. Global participation in sport and leisure-time physical
644   activities: A systematic review and meta-analysis. *Preventive Medicine* 2017; 95: 14–25.

645 34. Vaismoradi M, Turunen H and Bondas T. Content analysis and thematic analysis: Implications
646   for conducting a qualitative descriptive study. *Nursing and Health Sciences* 2013; 15: 398–
647   405.

648 35. Sparks C, Dimmock JA, Whipp PR, et al. "Getting connected": High school physical
649   education teacher behaviors that facilitate students' relatedness support perceptions. *Sport,*
650   *Exercise, and Performance Psychology* 2015; 4: 219–236.

651 36. Braun V and Clarke V. Thematic analysis. In: Cooper H, Camic PM, Long DL, Panter AT,
652   Rindskopf D and Sher KJ (eds) *APA handbooks in psychology® APA handbook of research*
653   *methods in psychology, vol. 2. research designs: Quantitative, qualitative, neuropsychological,*
654   *and biological*. American Psychological Association, 2012. pp.57–71.

655 37. Creswell JW and Miller DL. Determining validity in qualitative inquiry. *Theory into Practice*
656   2000; 39: 124–30.

657 38. Patton MQ. Two decades of developments in qualitative inquiry: A personal, experiential
658   perspective. *Qualitative Social Work* 2002; 1: 261–283.

659 39. Cassidy TG, Jones RL and Potrac P. *Understanding sports coaching: The social, cultural and*
660   *pedagogical foundations of coaching practice*. Abingdon: Routledge, 2008.

661 40. Lemyre F, Trudel P and Durand-Bush N. How youth-sport coaches learn to coach. *The Sport*
662   *Psychologist* 2007; 21: 191–209.

663 41. Cushion CJ, Armour KM and Jones RL. Coach education and continuing professional
664   development: Experience and learning to coach. *Quest* 2003; 55: 215–230.

665 42. Jones RL, Armour KM and Potrac P. Constructing expert knowledge: A case study of a top-
666   level professional soccer coach. *Sport, Education and Society* 2003; 8: 213–29.

667 43. Gilbert WD and Trudel P. Learning to coach through experience: Conditions that influence
668   reflection. *Physical Educator* 2005; 62: 32–43.

669   44.   Stoszkowski J and Collins D. Communities of practice, social learning and networks:
670   Exploiting the social side of coach development. *Sport, Education and Society* 2014; *19*: 773-
671   788.

672   45.   Koh KT, Lee TP and Lim SH. The internet as a source of learning for youth soccer coaches.
673   *International Journal of Sports Science and Coaching* 2018; 13: 278–289.

674   46.   Stoszkowski J and Collins D. Sources, topics and use of knowledge by coaches. *Journal of
675   Sports Sciences* 2016; 34: 794-802.

676   47.   Cassidy T and Rossi T. Situating learning: (Re)examining the notion of apprenticeship in
677   coach education. *International Journal of Sports Science and Coaching* 2006; 1: 235–46.

678   48.   Duda JL, Quested E, Haug E, et al. Promoting Adolescent health through an intervention
679   aimed at improving the quality of their participation in Physical Activity (PAPA): Background
680   to the project and main trial protocol. *International Journal of Sport and Exercise Psychology*
681   2013; 11: 319–327.

682   49.   Langan E, Toner J, Blake C and Lonsdale C. Testing the effects of a self-determination theory-
683   based intervention with youth Gaelic football coaches on athlete motivation and burnout. *The
684   Sport Psychologist* 2015*;* 29: 293–301.

685   50.   Su Y-L and Reeve J. A meta-analysis of the effectiveness of intervention programs designed to
686   support autonomy. *Educational Psychology Review* 2011; 23: 159–88.

687   51.   Potrac P, Jones R and Armour K. "It's all about getting respect": The coaching behaviors of an
688   expert english soccer coach. *Sport, Education and Society* 2002; 7: 183–202.

689   52.   Nash CS, Sproule J and Horton P. Sport coaches' perceived role frames and philosophies.
690   *International Journal of Sports Science and Coaching* 2008; 3: 539–54.

691   53.   Gilbert WD and Trudel P. Role of the coach: How model youth team sport coaches frame their
692   roles. *The Sport Psychologist* 2004; 18: 21–43.

693   54.   Cooper D and Allen J. "I don't want to give them my brain for the day…and then take it
694   back": An examination of the coach-created motivational climate in adult adventure sports.
695   *International Sport Coaching Journal* 2020; 7: 175–188.

696   55.   Côté J and Gilbert W. An integrative definition of coaching effectiveness and expertise.
697   *International Journal of Sports Science and Coaching* 2009; 4: 307–323.

698   56.   International Council of Coaching Excellence (ICCE), Association of Summer Olympic
699   International Federations (ASOIF) and Leeds Beckett University. International sport coaching
700   framework version 1.2. 2013. Available from: https://www.icce.ws/_assets/files/iscf-1.2-10-
701   7-15.pdf.

702   57.   Henriksen K and Stambulova N. Creating optimal environments for talent development: A
703   holistic ecological approach. In: Baker J, Cobley S, Schorer J and Wattie N (eds) *Routledge
704   handbook of talent identification and development in sport*. Routledge, 2017. pp.271–284.

705   58.   Souza AD and Oslin J. A player-centered approach to coaching. *Journal of Physical
706   Education, Recreation and Dance* 2008; 79: 24–30.

707   59.   Pill S. *Perspectives on athlete-centred coaching*. Abingdon, Oxon: Routledge, 2017.

708   60.   Vansteenkiste M, Sierens E, Goossens L, et al. Identifying configurations of perceived teacher
709   autonomy support and structure: Associations with self-regulated learning, motivation and
710   problem behavior. *Learning and Instruction* 2012; 22: 431–439.

711   61.   Reeve J. Self-determination theory applied to educational settings. In: Deci EL and Ryan RM
712   (eds) *Handbook of self-determination research*. Rochester, NY: University of Rochester Press,
713   2002, pp.183–203.

714   62.   Martin SB, Dale GA and Jackson A. Youth coaching preferences of adolescent athletes and

715   their parents. *Journal of Sport Behavior* 2001; 24: 197–212.

716   63.   Sharma R. Preferred leadership behaviours of male and female badminton players.
717   *International Journal of Science Cultur and Sport* 2015; 3: 73–83.

718   64.   Adie JW, Duda JL and Ntoumanis N. Autonomy support, basic need satisfaction and the
719   optimal functioning of adult male and female sport participants: A test of basic needs theory.
720   *Motivation and Emotion* 2008; 32: 189–99.

721   65.   Beam JW, Serwatka TS and Wilson WJ. Preferred leadership of NCAA Division I and II
722   intercollegiate student-Athletes. *Journal of Sport Behaviour* 2004; 27: 3-17.

723   66.   Terry PC and Howe BL. The coaching preferences of elite athletes competing at
724   Universiade'83. *Canadian Journal of Applied Sport Sciences* 1984; 9: 201–8.

725   67.   Chelladurai P and Saleh SD. Preferred leadership in sports. *Canadian Journal of Applied Sport*
726   *Science*s 1978; 3: 85–92.

727   68.   Sherman CA, Fuller R and Speed HD. Gender comparisons of preferred coaching behaviors in
728   Australian sports. *Journal of Sport Behaviour* 2000; 23: 389-406.

729   69.   Deci EL and Ryan RM. The general causality orientations scale: Self-determination in
730   personality. *Journal of Research in Personality* 1985; 19: 109–134.

731   70.   Bem SL, Ruble DN and Szkrybalo J. Gender schema theory: A cognitive account of sex
732   typing. *Psychological Review* 1981; 88: 354–64.

733   71.   Martin CL, Ruble DN and Szkrybalo J. Cognitive theories of early gender development.
734   *Psychological Bulletin* 2002; 128: 903–933.

735   72.   Foldy EG. Dueling schemata: Dialectical sensemaking about gender. The *Journal of Applied*
736   *Behavioral Scienc*e 2006; 42: 350–372.

737   73.   Amorose AJ and Anderson-Butcher D. Autonomy-supportive coaching and self-determined
738   motivation in high school and college athletes: A test of self-determination theory. *Psychology*
739   *of Sport and Exercise* 2007; 8: 654–670.

740   74.   Lyons M, Rynne SB and Mallett CJ. Reflection and the art of coaching : fostering high-
741   performance in Olympic Ski Cross. *Reflective Practice* 2012; 13: 359–372.

742   75.   Allen JB and Reid C. Scaffolding women coaches' development: A programme to build
743   coaches' competence and confidence. *Women in Sport and Physical Activity Journal* 2019; 27:
744   101–109.

745   76.   Kawulich BB. Participant observation as a data collection method. *Forum: Qualitative Social*
746   *Research* 2005; 6: 1–22.

747   77.   Smith N, Quested E, Appleton PR, et al. A review of observational instruments to assess the
748   motivational environment in sport and physical education settings. *International Review of*
749   *Sport and Exercise Psychology* 2016; 9: 134–159.

750

751

752

753