

1

2

3

4

5 “I don’t want to give them my brain for the day... and then take it back”: An examination of the
6 coach-created motivational climate in adult adventure sports.

7

8

9

10 Date of Submission: 8 March, 2019

11 Date of Re-submission: 2nd September, 2019

12 Date of Acceptance: 10th January, 2020

13 **Title:** “I don’t want to give them my brain for the day... and then take it back”: An examination of the
14 coach-created motivational climate in adult adventure sports.

15

16 **Abstract**

17 In contrast to cross-sectional age trends of declining adult participation in sport, engagement in
18 adventure sports is increasing among adults. The coach may have an important role to play in shaping
19 the motivational climate to encourage and retain participants in adventure sport. The purpose of this
20 study was to provide an in-depth examination of the coach-created motivational climate in non-
21 competition focused adult adventure sport by adopting a multiple methods approach. The study was
22 grounded in a multidimensional theoretical perspective that combines achievement goal theory
23 (Nicholls, 1984; Ames, 1992) and self-determination theory (Deci & Ryan, 2000; Ryan & Deci,
24 2000). Questionnaires, interviews, and observations of coaching sessions were employed to assess
25 coaches’ ($N=6$), participants’ ($N=25$), and observers’ perspectives on the empowering and
26 disempowering nature and features of coaching sessions. Analysis of the data demonstrated consistent
27 views that the coaches’ created a strongly empowering and only weakly disempowering climate.
28 Insight was gained about why and how coaches created this climate as well as the challenges they
29 experienced in maintaining an empowering climate for adults in adventure sport contexts. The place
30 of structure, control, relatedness support and coaches’ philosophies is discussed.

31

32 **Keywords:** Coaching practice, achievement goal theory; self-determination theory; competence;
33 autonomy; relatedness.

34

35 **Introduction**

36 Adults' participation in physical activity affords numerous benefits such as improved social
37 relationships and better psychological and physical health (Sport England, 2017; World Health
38 Organisation, 2018) and yet, many adults do not meet physical activity guidelines and participation
39 declines with age (Scottish Government, 2017; NHS Digital, 2017). Consistent with this overall trend,
40 in the United Kingdom (UK), participation in many traditional or formal team sports is also declining
41 (Sport England, 2015). In stark contrast, however, participation in activities in the outdoors has
42 increased (Sport England, 2015). Of the total active population, 27.6% (8.9 million) is active in the
43 outdoors and of the 2.5 million (28%) participants who are regularly active in the outdoors, 70% (1.7
44 million) are participating in Adventure Sports (e.g., kayaking, skiing, mountaineering, mountain
45 biking, climbing). Although not all adventure sport participants receive coaching, coaches play a
46 critical role in assisting participants to learn to undertake the activities (Collins & Collins, 2012) and
47 therefore they support entry to and maintenance of participation in adventure sports. Taking a
48 theoretically grounded approach and employing multiple methods, the current study examined
49 participants', coaches', and observers' perceptions of coaching practice in non-competitive adult
50 adventure sports, specifically exploring the coach-created motivational climate.

51 Adventure sports have been defined as sports that are non-competitive in origin, take place in
52 complex and dynamic environments, where awareness of risk is critical, individualised rules are
53 'policed' by the participants (culturally formed and led) and there is challenge by choice (Collins &
54 Collins, 2012; Berry, Lomax & Hodgson, 2015). Adventure sport participants' motivation goes
55 beyond simple excitement or 'thrill seeking' to feeling connected within the natural environment and
56 a focus on achievement based on their own progress and personal mastery (i.e., task goal orientation)
57 (Collins & Collins, 2012; Kerr & Mackenzie, 2012; O'Connell, 2010).

58 Research examining adult participants' sport experiences of coaching has focused on Masters sport
59 which involves adults typically over the age of 35 years who train regularly in order to compete in
60 rule-based sport and often formally register with organisations, clubs, or events (Young, 2011).
61 Research demonstrates that coaches are influential figures in athletes' sport experiences. Adults
62 recognize benefits from working with a coach such as improved performance, self-efficacy, and

63 health outcomes (Callary, Rathwell, & Young, 2015; Ferrari, Bloom, Gilbert, & Caron, 2016).
64 Working with a coach is associated with more self-determined motives for participation and lower
65 ego-orientation (Medic, Young, Starkes, & Weir, 2012) and coaches' support and encouragement is
66 associated with participants' commitment (Santi, Bruton, Pietrantonio & Mellalieu, 2014).
67 Furthermore, with regards to coaching practices, research in Masters sport, indicates that athletes
68 prefer coaches who are friendly and care about them, consider the athletes' perspectives and desires,
69 and provide planned and challenging sessions, constructive feedback to help them improve
70 performance, and information to support competition performance (Callary et al., 2015; MacLellan,
71 Callary, & Young, 2018). To date, only two studies have examined coaches' perspectives of working
72 with Masters athletes (Callary, Rathwell, & Young, 2017; MacLellan, Young, & Callary, 2019). Both
73 studies found that coaches reported they provide athletes with a rationale for various learning
74 activities, understand and support athletes' self-direction in training, acknowledge athletes' improved
75 performance, and attempt to relate well with the athletes. Callary et al. (2017) also found that for
76 some coaches some actions are seen as risky and problematic such as 'giving' control to the athletes.
77 The research examining coaching in adults' sport provides valuable insight into the coaching
78 preferences of Masters athletes and the influence and practices of coaches working with these adult
79 athletes. To date, however, research examining coaches' perspectives is limited and it has examined
80 coaching from an andragogical perspective (e.g., Callary, Rathwell, & Young, 2018; MacLellan,
81 Callary, & Young, 2019).
82 To further develop our understanding of adult sport participants' experiences and begin to explain
83 why coaches' actions influence participants, research that draws on theory to examine participants'
84 and coaches' perspectives at the same time is needed. Adopting a theoretically-grounded approach to
85 our examination of coaching in adult adventure sports, the current study focused on the coach-created
86 social psychological environment or 'motivational climate' which is a prominent concept in two
87 theories: Achievement Goal Theory (AGT) (Ames, 1992, Nicholls, 1984) and Self-Determination
88 Theory (SDT) (Deci & Ryan, 2000; Ryan & Deci, 2000).
89 *The motivational climate: Two theoretical perspectives or a multidimensional perspective*

90 The motivational climate was defined as the characteristics of the social psychological environment that
91 convey information about what is, or should be, considered important in that context and captures the
92 characteristics of the environment that influence learning and performing (Ames, 1992). According to
93 AGT, coaches who foster a task-involving climate focus participants on self-referenced effort and
94 improvement, cooperation and role importance. In contrast, coaches who focus participants on their
95 ability in comparison to others and emphasize the importance of superiority, outperforming others, and
96 rivalry foster an ego-involving climate (Ames, 1992, Nicholls, 1984). According to SDT, coaches who
97 foster an autonomy-supportive motivational climate support the satisfaction of participants' basic
98 psychological needs (autonomy, competence, relatedness) (Deci & Ryan, 2000; Ryan & Deci, 2000;
99 Mageau & Vallerand, 2003). In contrast, coaches who create a controlling motivational climate thwart
100 need satisfaction (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2009). An important contribution
101 from AGT which extends SDT is that rather than considering the support for competence per se, AGT
102 proposes that supporting task-focused competence is more adaptive than an emphasis on ego-focused
103 competence. To date, researchers examining the motivational climate have provided valuable insight
104 into participants' perceptions and the outcomes for participants of these differing climates. This
105 significant body of work generally supports the tenets of AGT and SDT, in particular that task-involving
106 and autonomy-supportive climates are associated with adaptive motivational outcomes and ego-
107 involving and controlling climates are associated with maladaptive outcomes for participants (Harwood,
108 Keegan, Smith, & Raine, 2015; Occhino, Mallett, Rynne, & Carlisle, 2014).

109 Building on the research from AGT and SDT, a number of researchers have proposed that considering
110 the climate dimensions from each theory (i.e., task-involving, ego-involving, autonomy-supportive,
111 controlling, relatedness support, and relatedness thwarting) together, rather than in isolation, provides
112 a fuller understanding of coaches' actions and the influence on participants' motivation and well-
113 being (Allen & Hodge, 2006; Appleton & Duda, 2016; Duda, 2013; Keegan, Spray, Harwood &
114 Lavallee, 2014; Mallett & Hanrahan, 2004; Smith et al., 2015). Research has demonstrated that
115 considering the climate dimensions together is useful, particularly when examining the mechanisms
116 (i.e., basic psychological needs satisfaction or thwarting) in the relationships between coaches' actions
117 and participants' outcomes. Furthermore, this research indicates that the climate dimensions are not

118 redundant when included together, rather they explain unique variance and demonstrate only modest
119 correlations (e.g., Quested & Duda, 2010; Reinboth, Duda, & Ntoumanis, 2004). Duda (2013)
120 adopted a multiple theory approach to examining the coach-created motivational climate proposing
121 that the climate can be more or less empowering and disempowering. An empowering climate is task-
122 involving, autonomy-supportive and socially-supportive; and a disempowering climate is ego-
123 involving and controlling. Furthermore, along with colleagues Duda proposed the coaching
124 behaviours associated with an empowering or disempowering motivational climate (Appleton,
125 Ntoumanis, Quested, Viladrich, & Duda, 2016; Smith et al., 2015). This empowering
126 conceptualisation of coaching has much in common with the International Sport Coaching Framework
127 (ICCE, 2013) which promotes an athlete-centred approach to coaching.

128 *Participants' perceptions of the motivational climate: There is more to understand*

129 A considerable body of research has demonstrated the maladaptive implications of ego-involving and
130 controlling climates and the adaptive implications of task-involving and autonomy-supportive climates
131 (e.g., Adie, Duda & Ntoumanis, 2008; Harwood et al., 2015; Occhino et al., 2014; Smith et al., 2016).
132 This research is not without its limitations and there remain areas that are less well understood
133 (Harwood, et al., 2015; Occhino et al., 2014). Harwood et al.'s (2015) systematic review found that
134 most research examined the perceptions of school or college participants with almost 80% of samples'
135 mean ages under 20 years and only three studies reporting a sample mean age over 25 years.
136 Furthermore, Harwood et al. (2015) also found that two-thirds of the studies were conducted in either
137 PE or team sports with relatively few studies (12.5%) examining individual sports. In addition, they did
138 not specifically examine the extent to which the studies focused on competition-based compared with
139 non-competition focused sports. It is reasonable, however, to suggest that all the team sports samples
140 as well at least some of the individual sports samples (e.g., track and field athletes and Winter Olympics
141 athletes) had a competitive element. We argue here that adventure sports are typically individual rather
142 than team sports and are often not focused on competing against others (Collins & Collins, 2012).
143 Therefore, adventure sports provide a useful context to extend our understanding of the motivational
144 climate in adult, individual non-competitive settings.

145 Much of the research examining the motivational climate has focused on competition-oriented sport
146 and been limited to the perceptions of participants, irrespective of age, which can vary substantially
147 even when participants have the same coach (Harwood et al., 2015; MacLellan et al., 2018). Although
148 still within competition-focused sport, the work of Smith and colleagues (e.g., Smith et al., 2015; 2016)
149 in youth sport has begun to address this limitation by examining the motivational climate from multiple
150 perspectives including coaches and observers as well as participants. In these large-scale quantitative
151 studies, however, there is little opportunity to develop in depth understanding of the coaches'
152 perspective, in particular, why they behave as they do and how they intend to create the motivational
153 climate. In addition, information on the background of the coaches is limited. Given the coaching
154 context (i.e., youth sports), these coaches are likely to be amateur, volunteer, part-time, and possibly
155 unqualified, at least to any level above introductory coaching. As a result there is a gap in our
156 understanding of the motivational climate experienced by adult participants in non-competitive
157 individual sports and the intentions and behaviours of those who foster the motivational climate, in
158 particular expert coaches (i.e., experienced, qualified). Research that adopts alternative methodologies
159 that enable 'fine grained analysis' of how the climate is created through behaviours and in certain
160 situations or contexts is warranted to extend existing knowledge upon which recommendations are
161 made to coaches (Harwood et al., 2015; Occhino et al., 2014). Furthermore, research that includes in-
162 depth qualitative data collection techniques such as interviews with coaches provides an opportunity to
163 understand better the coaches' perspective (Occhino et al., 2014; Partington & Cushion, 2013).

164 *Adventure sports coaching and the motivational climate*

165 Adventure sports coaches work in a range of environments and roles from self-employed, running
166 their own businesses to working for established outdoor sport organizations. They require regular
167 professional development and work within regulated professional standards. Effective coaches value
168 positive adventurous experiences, individualise coaching to meet participants' needs (including
169 psychological needs) and focus on fostering participants' intrinsic motivation, decision-making, and
170 independent performance in the environment (Berry et al., 2015; Collins & Collins, 2016; Cooper &
171 Allen, 2018; Lorimer & Holland-Smith, 2012). However, little is known about the motivational
172 climate created by adventure sports coaches. Whilst research suggests coaches' values may be

173 consistent with an empowering motivational climate, whether this translates into empowering
174 coaching strategies and an empowering motivational climate perceived by participants has not been
175 examined. Furthermore, there is still potential for disempowering coaching through practices that are
176 ego-involving (e.g., emphasizing comparative ability within the group or the importance of ‘firsts’ –
177 first ascent), controlling (e.g., coach-led to minimize risk and ensure safety of participants), and
178 relatedness thwarting (e.g., limited time to ‘get to know’ participants due to short, episodic courses).
179 Therefore, the purpose of this study was to examine the motivational climate fostered by expert
180 adventure sport coaches, specifically to 1) examine adult participants’ perceptions of the motivational
181 climate; 2) determine the coaching behaviours employed to create the climate; and 3) examine
182 adventure sport coaches’ beliefs, values and intended motivational climate. This research will assist
183 those responsible for adult sport to better understand the motivational climate and the potential it has
184 to contribute to initiating and sustaining participation and promoting optimal psychological
185 functioning of adult participants.

186 **Method**

187 *Participants*

188 Adventure sport coaches ($N=6$) (M age=36.7 years, $SD=8.7$ years) were purposefully sampled and
189 agreed to participate in the study. They were selected because they coached adults performing in a non-
190 competitive environment, were considered expert in their practice, and had specific expertise in a
191 different adventure sport (winter mountaineering, off-piste ski touring, white water kayaking, rock
192 climbing, mountain biking, canoeing). The criteria for expertise were similar to those employed by
193 researchers in adventure sports coaching (Collins & Collins, 2016; Cooper & Allen, 2018) and other
194 sports (Abraham, Collins, & Martindale, 2006; Côté, Salmela, Trudel, Baria & Russell, 1995; Nash,
195 Martindale, Collins & Martindale, 2012). Specifically, expertise was based on: minimum of 10 years
196 coaching, highest level of National Governing Body (NGB) coaching qualification, academic
197 qualification, published adventure sport-specific work (e.g., Technical DVDs, Magazine articles,
198 Technical Books), high level of personal performance (e.g., international expedition experience), active
199 engagement in adventure sport coaching and coach education delivery, and NGB recommendation
200 (Table 1).

201 Adult adventure sports participants who were being coached by the coaches ($N=25$; winter
202 mountaineering ($n=4$), off-piste ski touring ($n=5$), water kayaking ($n=4$), rock climbing ($n=2$), mountain
203 biking ($n=8$), white canoeing ($n=2$)) agreed to participate in the study. They were participating in
204 organised coaching sessions lasting between two hours and a full day. These sessions were generally
205 part of a two to five day skill development course the participants had paid to be part of, a common
206 form of coaching in adventure sports. Therefore, the participants had some experience with the sport
207 and were intermediate level rather than novice performers. None had met or worked with the coaches
208 prior to the start of their course.

209 The authors were the observers for the study. Both have expertise in the motivational theory guiding
210 the study and are experienced coaches. The first author is also an expert adventure sports coach.
211 Therefore, between them, the observers had appropriate understanding of the theory, coaching, and
212 context to inform analysis of the data collected.

213 *Study Design*

214 Motivational climate research has typically focused on participants' self-reported perceptions rather
215 than actual coaching behaviours employed (see Webster et al., 2013; Smith et al., 2015; Smith et al.,
216 2016 for exceptions). To address this limitation, and similar to Smith et al. (2015), we employed
217 multiple research methods, gathering the perceptions of the adventure sports participants, coaches and
218 independent observers. We also conducted interviews with the coaches to explore their perceptions of
219 and explanations for their behaviours and the motivational climate. Grounded in an interpretive
220 paradigm (Hodge et al., 2014; Potrac, Jones & Nelson, 2014), where the aims are to illuminate and
221 understand human experience, our approach purposefully selected expert coaches and gathered data
222 from multiple sources that enabled us to triangulate our findings and provide a more comprehensive
223 understanding of the motivational climate.

224 *Procedure*

225 After ethical approval for the study was obtained from the authors' institution, the coaches were
226 identified, invited, and agreed to participate in the study. Prior to the observation, the first author met
227 with the coaches to explain the purpose and process of study and answer any questions. Potential
228 coaching sessions suitable for the study were identified (i.e., sessions coaching adult participants). Prior

229 to the start of each session the first author met with the adults in the coach's group to explain the study,
230 answer any questions and invite them to participate in the study. They all agreed to participate.
231 Following recruitment, the first author video and audio recorded a coaching session led by each coach
232 involving the participants. The coaching sessions lasted between 50 – 90 minutes. The coach wore a
233 small clip-on microphone and hidden voice recorder. The observer videoed from an unobtrusive
234 position away from the coaching environment to minimize the effect of the observer/camera on the
235 coaches' behaviours and experiences of participants (Smith et al., 2015; Webster et al., 2013). The
236 environments and terrain in which the coaching sessions took place (e.g., rivers, snow covered mountain
237 cf. static football pitch) present significant challenges for observation and recording of authentic
238 coaching sessions. Performance expertise and familiarity with the contexts enabled the first author to
239 safely negotiate these potentially dangerous environments and ensure quality recordings of coaching
240 sessions *in situ*. For example, in order to stay close enough to record the off-piste ski-touring coaching
241 session, the first author skied without the aid of poles and held the video camera in one hand as he
242 followed the coach and participants as they skied their way down the mountain. After the session, the
243 participants and coaches completed a questionnaire to gather their perceptions of the motivational
244 climate. Finally, the coaches were interviewed to explore their views on how and why they coached as
245 they did and the impact they perceived their coaching interactions had on participants. Prior to the
246 interview, a pilot interview took place with a coach of similar expertise to those in the study (Purdy,
247 2014; Gray & Collins, 2016). Only slight amendments were made, primarily regarding the probes.
248 Interviews lasted approximately 20 minutes, were recorded and then transcribed verbatim.

249 *Data Collection*

250 *Observed motivational climate.* Three 10-minute clips were selected from the total recording of each
251 coaching session. These were purposefully chosen to ensure there was interaction between the coach
252 and participants during the clips and the clips represented the start, middle and end of the session (Smith
253 et al., 2015; Smith et al., 2016; Webster et al., 2013; Collins & Collins, 2016). The clips were analyzed
254 and coded using the Multidimensional Motivational Climate Observation System (MMCOS) (Smith et
255 al., 2015). The MMCOS has two higher-order factors: empowering and disempowering. There are four
256 environmental dimensions that promote an empowering climate (autonomy-supportive, task-involving,

257 relatedness-supportive and structured), and three environmental dimensions that promote a
258 disempowering climate (controlling, ego-involving and relatedness-thwarting). For each environmental
259 dimension there are three to six lower order behaviours, giving a total of 34 coaching behaviours that
260 promote either an empowering or disempowering motivational climate. Initial research has supported
261 the validity and reliability of the MMCOS in youth team sport (Smith et al., 2015; Smith et al., 2016).
262 All the coaching clips were independently coded by the authors. Coding followed the recommendations
263 of Smith et al. (2015). Every time a lower order behaviour was seen it was noted, this helped to provide
264 a potency rating for the seven environmental dimensions (0 = Not at all; 1 = Weak emphasis; 2 =
265 Moderate emphasis; 3 = Strong emphasis). When all three clips had been coded there was a possible
266 score of zero to nine for each of the seven environmental dimensions. The final potency rating for each
267 environmental dimension was determined from this (0 = Not at all; 1-3 = Weak emphasis; 4-6 =
268 Moderate emphasis; 7-9 = Strong emphasis). Following coding, inter-rater reliability was assessed
269 through calculation of interclass correlations (ICC) for the environmental dimensions and higher-order
270 overall climate dimensions (Smith et al., 2015). The correlations ranged between .65 and .97 (Table 3).
271 The ratings were, then, compared, discussed and potency ratings for the motivational climate
272 dimensions for each coach were agreed. Following this analysis, overall ratings for higher-order factors
273 of empowering and disempowering climates were discussed and agreed (Smith et al., 2015).

274 *Adventure sports participants' perceptions of the motivational climate.* To gather participants'
275 perceptions of the motivational climate created by their coach they completed the coach-created
276 Empowering and Disempowering Motivational Climate Questionnaire (EDMCQ-C) (Appleton et al.,
277 2016). The EDMCQ-C contains 34 questions, including nine task-involving, five autonomy-supportive
278 and three socially-supportive items capturing an empowering climate; and seven ego-involving and 10
279 controlling items comprising a disempowering climate. For the purpose of this research some items
280 were modified to be more relevant for adventure sport coaching. For example, the original item: 'My
281 coach really appreciated players as people, not just athletes', was modified to read: 'My coach really
282 appreciated learners as people, not just clients'. The term learner was used rather than athlete or
283 participant because in the adventure sports context those undertaking skill development would view
284 themselves as 'learning', as opposed to being an athlete. Participants read the stem 'Thinking back to

285 when you were being coached today...’ and responded to each item on a 5-point Likert scale (1 =
286 Strongly disagree to 5 = Strongly agree). Initial evidence for the reliability and validity of the EDMCQ-
287 C has been provided in previous research (Appleton et al., 2016; Smith et al., 2016). In the current
288 study, the reliability for the subscales were above .70 (Cronbach’s alpha, Nunnally, & Bernstein, 1994)
289 with the exception of autonomy-support (Table 2), a finding consistent with Appleton et al. (2016). This
290 subscale requires caution in the interpretation.

291 *Adventure sport coaches’ perceptions of the motivational climate.* Appleton et al.’s (2016) EDMCQ-C
292 was also used to capture the coaches’ perceptions of the empowering/disempowering climate they
293 created. Similar to Smith et al. (2015), the items were modified to ensure the items were coach
294 orientated and relevant to the adventure sports coaching domain. For example, the original item: ‘My
295 coach lets us know that all the players are part of the team’s success’, was modified to read: ‘I let my
296 learners know that they are all part of the group’s success’. Coaches read the stem ‘Reflecting back to
297 when you were working with the group today...’ and responded to each item on a 5-point Likert scale.
298 Due to the small number of coaches, the reliability of the coaches’ questionnaire subscales were not
299 calculated, however, evidence of reliability of this scale has been demonstrated (Appleton et al., 2016).
300 One-to-one semi-structured interviews were conducted to obtain insight into coaches’ perspectives on
301 why they coach as they do and the impact they perceive their interactions are having. The interviews
302 contained pre-determined questions used as a guide with additional probes for further investigation.
303 Questions explored coaches’ understanding of the concept of motivational climate, consideration of the
304 climate in their coaching, perceptions of the association with values and beliefs, influences on and
305 adaptations to their coaching, and appropriateness for participants’ needs. For example, the question:
306 what do you understand by the term ‘motivational climate’? was used to explore coaches’ knowledge
307 of the concept and establish an agreed understanding as a basis for following questions. Other example
308 questions included: how would you describe the climate you create? How do you do this? What
309 situations (if any) require different types of motivational climates? How do you adapt what you do?
310 This semi-structured approach ensured there was flexibility to explore additional areas emerging
311 through discussion (Patton, 2002; Purdy, 2014).

312 *Data Analysis*

313 For each coach, the means and standard deviations were calculated for the participants' and coaches'
314 perceptions of the motivational climate dimensions, the empowering and disempowering climate
315 (Table 2), and potency ratings (Table 3). Overall means and standard deviations were then calculated
316 for participants' and coaches' perceptions and observers' ratings for each dimension and empowering
317 and disempowering climate overall (Table 2 & 3). A cross interview analysis of the interview
318 transcriptions was conducted. Coaches' responses to questions were grouped together, common
319 themes established, and key similarities and differences identified (Patton, 2002).

320 Following collation of the multiple data sources, detailed analysis was conducted of the participants',
321 coaches' and observers' reports of each environmental dimension and the coaches' understanding and
322 explanations for how and why they created the motivational climate. An inductive approach to the
323 analysis was adopted allowing themes to be developed from the data. However, the theoretical
324 concepts underpinning the questionnaires and observation tool also provided sensitising concepts for
325 the analysis (Patton, 2002). This enabled the researchers to examine how the motivational climate is
326 manifest in adventure sport coaching (Patton, 2002). Independently the researchers moved between
327 the sources of data using a comparative approach and analytical memos to establish commonalities
328 and differences in the nature of the motivational climate (Patton, 2002). The researchers, then,
329 discussed their interpretations and meaning of the data, identifying areas of agreement as well as
330 differences. Where differences were noted, they returned to the data, including revisiting video
331 recordings, discussing their views in turn and reached agreement on the meaning of the data and the
332 lower and higher order themes. This analysis process ensured not only triangulation of data by
333 examining views from multiple sources (Smith et al., 2016; Patton, 2002) it also contributed to the
334 trustworthiness of the findings (Cresswell & Miller, 2000; Patton, 2002).

335 **Results**

336 The analysis of the data from multiple sources (observers, participants, coaches) and methods
337 (observation, questionnaire, interview) resulted in six lower order themes that were organized into two
338 high order themes: empowering motivational climate for adults; dynamic motivational climate. These
339 themes are described below along with illustrative evidence. When interpreting the mean scores for

340 participants' and coaches' perceptions of the motivational climate, it is important to note that these can
341 vary from one (strongly disagree) to five (strongly agree). Observers' mean potency rating scores for
342 the overall motivational climate can vary from zero (not at all) to three (strong) and for the dimensions
343 of the climate can vary from zero (not at all) to nine (strong).

344 *Empowering motivational climate for adults*

345 This theme comprised the evidence indicating that the adventure sport coaches created an
346 empowering motivational climate as well as how the climate was created and why. Overall, the
347 perceptions of the coaches, participants, and observers were consistent, indicating that the coaches
348 created an empowering motivational climate with very little emphasis on disempowering dimensions.
349 The coaches' and adult participants' perceptions were similar, with the coaches' perceptions
350 compared with the participants' perceptions (where 5 reflects 'strong agreement') generally
351 suggesting a slightly less empowering (M=4.12, SD=0.22 cf. M=4.30, SD=0.35) and slightly more
352 disempowering climate (M=1.81, SD=0.23 cf. M=1.22, SD=0.35). Consistent with both coaches and
353 participants, the observers' ratings (where 3 indicates strong potency and 0 indicates no potency)
354 indicated strong empowerment (M=2.67, SD=0.52) and almost non-existent disempowerment
355 (M=0.33, SD=0.52). This theme included three lower order themes: founded in coaches' beliefs and
356 translated into action; intentional but tacit empowering climate; and a place for structure.

357 *Founded in coaches' beliefs and translated into action.* The coaches' beliefs and values about coaching
358 reflected an empowering approach to coaching such as: "what works best for the learner, kind of
359 empowering them" (C4); autonomy supportive: "I'm encouraging people to choose, to make choices...
360 I think they should have control of outcomes, because it's their outcomes that they continue to explore
361 and develop. The end result has to be owned by them" (C6); and relatedness supportive: "to create an
362 atmosphere that is supportive, letting students realize you're there for them, trying to help them discover
363 reasons why they want to actually be in that learning environment." (C3) Furthermore, the coaches'
364 questionnaire responses indicated they believed they were engaged in autonomy-supportive (M=4.30,
365 SD=0.21), social supportive (M=4.17, SD=0.18), and task-involving (M=3.89, SD=0.45) behaviours in
366 their coaching. Therefore, their intentions were to act in accordance with their empowering beliefs and
367 values and they thought they were doing so.

368 Participants' perceptions and observers' ratings indicated that the coaches were translating these
369 empowering beliefs into behaviours that fostered an empowering motivational climate. Participants'
370 mean scores were high on all three empowering environment dimensions: socially-supportive (M=4.41,
371 SD=0.50), task-involving (M=4.28, SD=0.50), and autonomy-supportive (M=4.22, SD=0.38) and the
372 observers' ratings indicated strong potency for the empowering dimensions; autonomy support
373 (M=6.83, SD=0.52), relatedness support (M=6.67, SD=1.03) and task-involvement (M=6.00,
374 SD=1.03). Based on the observation data, the empowering behaviours that occurred most often included
375 providing opportunity for participants' input and rationales for tasks (autonomy support), adopting a
376 warm communication style and ensuring participants are included in activities (relatedness support),
377 providing guidance through activities (structure) and emphasizing task-focused competence feedback
378 (task-involving) (Table 4). The consistency of findings across multiple sources and methods suggested
379 that because of the coaches' beliefs about coaching and their coaching experience, they were able to
380 translate these beliefs into observably empowering actions and, importantly, these actions were
381 recognised as empowering by participants.

382 *Intentional but tacit empowering climate.* Despite engaging in coaching behaviours considered
383 empowering, the coaches' deeply held beliefs and experience enabled them to almost 'forget' about the
384 motivational climate aspect of their coaching as it had become second nature, ingrained in their practice.
385 It was only when questioned about what they did and why, that the empowering nature of their coach-
386 created motivational climate surfaced and became explicit to them. This resulted in the juxtaposition of
387 the intentional yet tacit nature of the motivational climate these coaches created. On one side, from the
388 interviews, it was clear that the coaches considered the environment they created in their coaching. C1
389 commented: "They will have their own slightly different motivation, and I try to create an environment
390 [that is suitable] for them." Importantly, not only did the coaches consider the climate, but they
391 intentionally employed coaching strategies that resulted in creation of an empowering motivational
392 climate. C4 commented on the importance of developing participants who were able to make decisions
393 themselves rather than rely on the coach: "What I don't want is to give them my brain for the day and
394 then take it back at the end of the day... I need them to, in a way, sort of understand the process we're
395 going through... where we're going to... these are maybe our guidelines that we're working to. And you

396 work out what best works for you within that... Rather than being told exactly how to do it.” However,
397 the climate was also tacit in the coaches’ actions, i.e., part of how they generally went about coaching
398 as opposed to explicitly planned with the climate in mind. C5 commented: “I’m not sure I actively
399 consider what I’m doing in terms of motivational climate... Yes, I consider it, but I don't really see how
400 I could not consider it... It's implicit, that's what I'll be trying to achieve.” C6 commented how the
401 motivational climate wasn’t “in my mind actively, but in response to what appears to be going on, as it
402 is happening with the students all the time.”

403 *A place for structure.* Structure is not included in the questionnaires developed to assess the
404 empowering/disempowering motivational climate. From the observations, however, the structure of
405 sessions was the strongest dimension of the coaches’ empowering motivational climate ($M=8.33$,
406 $SD=0.82$). Specific behaviours, that were commonly observed included providing guidance through
407 activities and providing instruction and organization (Table 4). Structure may appear at odds with
408 support for autonomy and empowerment through a sense of constraining individuals’ freedom. In the
409 interviews, however, the coaches recognized that appropriate use of structure could facilitate autonomy
410 and empower participants. Coach 5 gave an example of providing ‘tools’ (ideas, information) to help
411 participants to explore and develop: “I really like giving people tools and saying go play with that... I
412 like to do that as quickly as possible to see people's faces when they work it out for themselves, that
413 smile on their faces.” The coaches’ recognized that structure could also foster participants’ confidence
414 and actual competence, both of which were necessary to enable participants to continue their
415 involvement in the sport with more independence. Coach 3’s description of his work with a paddler
416 indicates a structured process of development of competence that empowers future engagement:

417 ...in conversation we managed to get to the point where after the first repetition, which he didn’t
418 perform at all well, we managed to look at the strokes that he used and create a little model.
419 Which meant that he could navigate to the point he needed to be to deliver, what was quite an
420 advanced skill... and he delivered very well. So, I guess there are a couple of needs met there,
421 the satisfaction and successful outcome of the actual skill was attained, but it was attained because
422 we'd actually given a bit of information on how to read what the water was doing and he had
423 more information to work off. He can take that away... that helps in other similar situations.

424 *Dynamic motivational climate*

425 This theme comprised the evidence indicating that the motivational climate was not static but rather
426 change and adaptation was often required dependent on contextual factors. C2 commented: “I felt the
427 motivational climate was quite dynamic through the two days, in the sense that it changed.” An example
428 of this was a gradual ‘handing over of control’ to participants evident in the pattern of observations,
429 where four of the coaches exhibited controlling behaviours (albeit weak potency) early in the sessions.
430 Towards the end of the session there was no evidence of controlling behaviours from any of the coaches
431 (Table 3). C2 reinforced this pattern commenting: “I started with a lot of control and then just gradually
432 eased back over the two days.” Another example, was evident in Coach 5’s measured approach to who
433 was ‘leading’ in sessions, “I want a continuum with the aim being to get to the end of the process so to
434 pass over control to them. Not that you can always do that straight away.” Other examples of the
435 dynamic nature of the climate were captured in the three lower order themes: challenges to an
436 empowering climate; a place for control; buffering control with relatedness support.

437 *Challenges to an empowering climate.* All the coaches identified challenges creating and maintaining
438 their preferred (empowering) motivational climate. These included feeling pressured, participants’
439 needs/wants/ability, dynamic physical environment and weather conditions, and safety concerns. With
440 regards to pressure, C1 explained: “I try to take a lot less control, give a lot more of the decision making
441 to the students, but I recognise very quickly that when I feel under a lot of pressure I would grab the
442 control and keep it.” A specific situation where coaches felt pressured and as a result, felt challenged in
443 their ability to create an empowering motivational climate was when they delivered National Governing
444 Body (NGB) award courses. The coaches felt that on these courses the participants’ motivation, the
445 defined syllabus and time constraints negatively affected the empowering nature of the motivational
446 climate they were able to create. C3 commented: “There is a time constraint put on you, you try as much
447 as you can to allow choices to exist, but really you're constantly steering and directing things to just get
448 through content in the time allowed.” C4 commented: “you almost don’t have time to build that
449 relationship.” Physical environmental conditions and their dynamic nature such as the quality and levels
450 of snow or water and/or the weather also led coaches to change their coaching behaviours and resultant
451 climate. C1 identified that “I was furious with myself, I had turned into a nag. Part of it was because of

452 the physical nature of the environment, and the weather, just having to keep things moving.” The
453 feature of the climate that changed most often was the controlling dimension.

454 *A place for control.* It was clear that the coaches felt there was a place for control in what they did, C1
455 commented: “I need to step in and take control here, because of the risk and hazards involved.”
456 Participants’ and coaches’ perceived a weak disempowering climate (M=1.44, SD=0.35 and M=1.81,
457 SD=0.23 respectively) which was corroborated in the observation (M=0.33, SD=0.52). However, some
458 disempowering behaviours were still evident. For example, the participants’ and coaches’ perceptions
459 of controlling behaviours, a dimension of a disempowering climate, were low but still reported by them
460 (M=1.50, SD =0.35; M=1.78, SD=0.34 respectively). The controlling dimension was observed most
461 often (Table 3), albeit with weak emphasis (M=1.33, SD=0.82). In fact, controlling behaviours were
462 weak or non-existent for three of the coaches and only a moderate emphasis for the other three coaches
463 (Table 3). Concerns over participants’ safety was a primary reason coaches adopted more control. These
464 concerns were often a result of consideration of participants’ ability in relation to the physical
465 environment in which they were performing as well as changes in weather and conditions. For example,
466 C4 commented: “So if there is higher risk I might give them a little bit less control, but if they have the
467 ability to understand that risk they may get more control.” C5 commented: “I end up being in control
468 of the session for safety... The weather might change and then we need to get on with it to keep them
469 safe.”

470 *Buffering control with relatedness support.* Despite some controlling behaviours the perceptions of the
471 participants was that an empowering climate was maintained. An explanation for this somewhat
472 contradictory finding is that it was clear the coaches believed that when control was exerted the
473 participants’ well-being was central to this decision-making. This suggested a demonstration of care for
474 participants which is a feature of relatedness support. C5 commented:

475 “People might be feeling a little bit nervous [then] it might be more controlled, but I try not to
476 be authoritative... a couple of folks struggled with confidence a lot and they wanted a bit more
477 of a ‘hand on their shoulder’... “it’s okay guys, I’ve got the situation under control.”

478 Another feature of relatedness support that may have also contributed was the development of a sense
479 of connection or relationship between coaches and participants. C2 commented: “You’ve got to

480 establish that initial kind of connection with someone.” C6 articulated the connection with control: “a
481 sense of partnership, I think that’s kind of central to me... I think there’s a partnership and it is finding
482 that balance of steer.” Furthermore, participants recognised this relatedness support, rating it highly,
483 second only to structure, in the climate dimensions ($M=4.41$, $SD=0.50$). Observed relatedness support
484 was strong for two coaches and moderate for the other four coaches whilst relatedness thwarting was
485 non-existent for four coaches and weak for the other two coaches.

486 **Discussion**

487 The purpose of this study was to explore the coaching practices of coaches working in non-competitive
488 adult sport, specifically to examine the motivational climate created by expert adventure sport coaches
489 and perceived by adult participants. In our detailed analysis of the motivational climate, we sought to
490 determine the extent to which the climate was empowering/disempowering and how and why the
491 coaches created the climate. The study’s findings contribute to our understanding of how coaches work
492 with adult participants in non-competitive adventure sport settings by providing insight into: 1) adult
493 sport participants’ perceptions of the motivational climate; 2) the motivational climate in adventure
494 sports, a growing adult physical activity context; 3) the climate created by expert coaches and how and
495 why they create it; 4) the challenges coaches’ experience fostering an empowering motivational climate.
496 This study adds to the research on coaching adult sport participants, which to date has focused primarily
497 on describing perspectives of athletes, specifically those involved in competitive sport (i.e., Masters
498 athletes) (e.g., Callary et al., 2015; Ferrari et al., 2017; Medic et al., 2012). Although Callary et al.,
499 (2017) and MacLellan et al. (2019) explored coaches’ perspectives, our study is the first to examine
500 coaches’ and athletes’ perspectives within the same study, therefore enabling direct comparison of
501 stakeholders’ perceptions. It also adds to the research by adopting a theoretically grounded approach
502 through our focus on the motivational climate. In doing so, the study also extends research on the
503 motivational climate, which has typically focused on youth and collegiate team sports (Appleton &
504 Duda, 2016; Harwood et al., 2015; Occhino et al., 2014; Smith et al., 2015; 2016), by examining the
505 motivational climate experienced by adult participants in individual non-competitive sports, in
506 particular adventure sport.

507 Our findings indicate that the motivational climate created by the expert adventure sport coaches and
508 perceived by adult participants was empowering and not disempowering. These findings are consistent
509 with findings from observational studies in youth sport that have found coaches typically create a more
510 empowering and less disempowering climate (Smith et al., 2015; 2016). Furthermore, an empowering
511 motivational climate has much in common with the andragogic approach MacLellan et al. (2019)
512 identified in their interview-based case study of a coach of Masters athletes. An empowering (autonomy
513 supportive, task involved, socially supportive) climate has been associated with adaptive motivational
514 and affective outcomes for sports participants, including adults (Cronin, Walsh, Quayle, Whittaker, &
515 Whitehead, 2018). Whilst it was not the purpose of this study to assess outcomes associated with
516 particular motivational climates, the combination of our findings with those from existing research
517 suggest adventure sport participation may also be associated with these adaptive outcomes for adult
518 participants.

519 Two important features of our findings were: 1) the provision of *both* structure and autonomy; and 2)
520 role of relatedness support. The coaches in the current study provided support for autonomy (e.g.,
521 opportunities for input, rationale for tasks), a task-involved emphasis (e.g., individualized
522 improvement competence feedback), and structure (e.g., guidance through activities) within a
523 relationship that supported relatedness (e.g., warm communication style, ensuring participants are
524 included in activities). According to Smith et al. (2015), “structure refers to the instructions,
525 organization and guidance provided by the significant other (e.g., the coach) that informs his or her
526 athletes about how to achieve success and meet the objectives of the activity at hand” (p.6). Used
527 together, structure and autonomy enabled coaches to assist participants to improve their actual
528 competence, supporting competence need satisfaction, through actively engaging participants in the
529 learning process (autonomy supportive). This approach is consistent with research in education that
530 has demonstrated teachers’ provision of *both* autonomy support and clear expectations (i.e., structure
531 for competence support) were related to adaptive motivational outcomes for students (Vansteenkiste
532 et al., 2012). There are also similarities with research examining coaching in Masters sport, where
533 Callary et al. (2017) found that coaches reported explaining why athletes were engaging in training
534 activities, encouraging self-direction, and individualising learning strategies and activities (Callary et

535 al., 2017). Furthermore, athletes preferred coaches who considered the athletes' perspectives and
536 desires and provided training sessions that were planned, challenging and included constructive
537 feedback to help them improve performance (Callary et al., 2015; MacLellan, Callary, & Young,
538 2018).

539 Autonomy and competence support also occurred within a deliberately fostered relationship between
540 coach and participants that demonstrated care and genuine interest in participants. Research in education
541 has demonstrated that teachers' support of students' sense of relatedness is associated with students'
542 intrinsic motivation (Sparks, Dimmock, Whipp, Lonsdale, & Jackson, 2015). In adult sport, Cronin et
543 al. (2018) found that coaches' autonomy support balanced with some direction within a caring
544 relationship was important to support women's return to netball after some time away from the sport.
545 Furthermore, findings in Masters sport suggests coaches' endeavor to relate well to athletes and athletes
546 prefer coaches who are friendly and care about them (Callary et al., 2015; 2017; MacLellan et al., 2018).

547 The actions of the coaches in our study, similar to those in research on adult sport (Callary et al., 2015;
548 2017; Cronin et al., 2018; MacLellan et al., 2018; 2019), were likely to satisfy participants'
549 psychological needs of autonomy, competence, and relatedness which SDT predicts will lead to
550 intrinsic motivation and enhanced well-being (Ryan & Deci, 2000; Mageau & Vallerand, 2003).

551 Furthermore, consistent with SDT (Deci & Ryan, 2000; Ryan & Deci, 2000) and Mageau and
552 Vallerand's (2003), our study findings serve as a clear reminder that it is not only the provision of
553 autonomy support that is important for motivationally adaptive outcomes for participants, competence
554 support (structure and task-involvement) and relatedness support are as important. Therefore, future
555 research should continue to examine the combined influence of these behaviours on the motivational
556 climate created as well how and why the climate is created.

557 The empowering motivational climate created by the coaches in the current study was the result of
558 intentional coaching strategies that aligned with their beliefs about coaching. Yet the resultant climate
559 was, perhaps, more tacit as opposed to explicitly planned. That is, the climate was the result of how
560 they ordinarily went about their coaching, largely second nature to them, rather than a specific focus.

561 These findings are similar to Gray and Collins' (2016) findings that expert adventure sport coaches had
562 well-developed intuitive interpersonal skills that were used to good effect but were not consciously or

563 declaratively employed in coaching sessions, or used at a strategic level to enhance participants'
564 development. Acting 'intuitively' can, however, present a challenge for those working with coaches to
565 develop their practice, because the coaches may not be aware of what they are doing or have not
566 consciously considered why they behave as they do (Partington & Cushion, 2013). Therefore,
567 supporting other coaches to create an empowering motivational climate could be enhanced by starting
568 with a focus on raising awareness of how their current practices may create differing climates before
569 discussing strategies that create an empowering climate.

570 An explanation for the intentional yet tacit nature of the empowering motivational climate is the
571 connection we found between coaches' beliefs and values about how to approach coaching and the
572 climate they worked to create. Although Mallet (2005) suggests an in depth understanding of motivation
573 is required to create an empowering environment, this research would conclude differently. The
574 coaches' beliefs and values drove the climate rather than their understanding of motivation per se.
575 Beliefs and values are identified as a key part of a coaching philosophy which determines why they do
576 what they do and how they behave in their coaching role, ultimately guiding and directing their coaching
577 practice (Bennie & O'Connor, 2010; Nash, Sproule, & Horton, 2008). Research suggests that
578 philosophies are not always enacted unless intentionally planned (Nash et al., 2008) and may be
579 inhibited by organizational barriers (Cushion & Partington, 2016). However, similar to findings of
580 research on other expert coaches, (e.g., Gould, Pierce, Cowburn, & Driska, 2017; Hodge, Henry, &
581 Smith, 2014), the coaches in the current study had clear beliefs about what was important in how they
582 approached coaching and had translated this into coaching strategies. Therefore, the current study
583 provides valuable understanding of why the coaches created an empowering climate. Furthermore, this
584 finding supports Mageau and Vallerand's (2003) proposed relationship between the coaches' personal
585 orientation towards autonomy support and their autonomy supportive behaviour. To date, few
586 researchers have examined antecedents of autonomy supportive coaching behaviours (Occhino et al.,
587 2014), therefore this finding adds to our understanding of autonomy support provision as well as
588 extending it by demonstrating that coaching philosophy was an antecedent of behaviours that also
589 support relatedness and competence.

590 Despite strong consistent evidence of an empowering motivational climate, there was, however, some
591 evidence of disempowering, particularly controlling, behaviours. This was explained by the coaching
592 context (e.g., dynamic physical environment, weather, water levels) and characteristics of the
593 participants (e.g., ability) which can thwart or support coaches' ability to behave as they desire (Hodge,
594 Henry, & Smith, 2014; Iachini, 2013; Mageau & Vallerand, 2003; Occhino et al., 2014). Our findings,
595 therefore, demonstrate interactions between personal orientation, the coaching context, and perceptions
596 of participants' motivation and behaviour as antecedents of autonomy supportive behaviours (Mageau
597 & Vallerand, 2003; Occhino et al., 2014).

598 For the coaches in the current study it was challenging, at times, to be empowering. This finding is
599 similar to Callary et al. (2017) in their study of coaches of Masters sport, where some coaches felt it
600 was risky and potentially problematic to give participants control over training. Some coaches in the
601 Callary et al. study were concerned that giving participants' choice would disrupt their plans for the
602 participants' workouts and there were tensions between the coaches' need for control and participants'
603 desire for self-direction. In contrast, in the current study, the coaches' aimed to relinquish control and
604 empower participants to be more independent performers, however, they felt they were not always able
605 to do this. Constraining factors for the adventure sport coaches included: pressure, dynamic
606 environment, and participants' wants and ability match. Consistent with others' findings (Iachini, 2013;
607 Occhino et al., 2014), pressures on coaches' delivery, in our case due to limited time and/or prescribed
608 course content, challenged coaches' ability to facilitate the desired empowering motivational climate.
609 In addition, to our knowledge, this is the first study to identify the dynamic physical environment, along
610 with participants' ability, and its implications for participants' safety as an antecedent of what might be
611 viewed as less empowering and more disempowering coaching behaviours such as controlling
612 behaviours.

613 Consideration should be given, however, to the role and interpretation of controlling behaviours. We
614 found that in circumstances where participants' safety was in question, the coaches' actions were more
615 controlling and yet in doing so the coaches demonstrated care (relatedness support) for the participants
616 at the same time. Occhino et al. (2014) suggested that there may be times when it is appropriate for
617 coaches to be more empowering and times when it is appropriate to be less so. Participant safety may

618 be one of these times and if the need is recognised by participants it may lead them to freely ‘give up’
619 their autonomy, therefore negating potentially negative consequences (Gilchrist & Mallett, 2017). In
620 addition, as Appleton and Duda (2016) proposed, the undesirable consequences of a disempowering
621 climate (e.g. over controlling) might be buffered when the climate is also empowering and this may
622 have been the case in the current study. The climate the coaches created through emphasising
623 relatedness support along with the provision of structure for competence development in an autonomy
624 supportive manner is likely to have fostered trust and acceptance that there may be times where, in the
625 best interests of the participants, coaches ‘need to be’ more controlling. Future research should continue
626 to explore the conditions under which coaches feel constrained, the impact this has on their coaching
627 behaviours, the subsequent motivational climate created and how coaches can be supported to cope with
628 these constraints. Future research might also explore ‘acceptance’ by participants of controlling actions
629 from those in leadership positions, such as coaches, and the circumstances in which it is accepted (or
630 not), along with the subsequent motivational outcomes.

631 There was little difference between participants’, coaches’ and observers’ perceptions of the
632 empowering/disempowering motivational climate. Furthermore, the coaches, if anything, tended to
633 underestimate the empowering nature of their coaching behaviours compared with the participants and
634 observers. This is in direct contrast to Smith, Smoll and Curtis’s (1978) findings where the coaches’
635 perceptions were generally overestimated. Smoll and Smith (1989) suggested that participants were
636 considerably more accurate perceivers of coaches’ behaviours than coaches and suggested coach self-
637 report methodologies should be used with caution. Our findings suggest otherwise. A plausible
638 explanation for this difference is that the coaches in the current study were expert professional coaches
639 whereas those in Smoll and Smith’s research, although not described in detail, were likely to be
640 volunteer, amateur, and possibly inexperienced coaches. Being an expert does not automatically mean
641 the coach is more self-aware, however, research does suggest that expert coaches have a clearer
642 coaching philosophy (Nash et al., 2008), the underpinning beliefs and values of which were a key
643 contributor to the motivational climate created by the coaches in the current study. Future research
644 should more fully describe the backgrounds of coaches to enable potential explanations for
645 discrepancies in findings when data are collected from multiple sources.

646 **Limitations and future directions**

647 The focus of this study was to develop an in-depth examination of the motivational climate experienced
648 by adult adventure sport participants. As a result our sample was limited in size, demographic and
649 coaching context. Future research should continue to examine adult participants' perceptions of the
650 motivational climate in a range sports including those with a competition-focus and non-competition
651 focus as well as how the coaches create the climate, and the consequences for participants. The insight
652 gained will be useful for coaches and organisers of adult sport to encourage adults into or back to sport
653 and retain them as part of a physically active lifestyle, in particular when competition is not a central
654 interest. An important contribution from our study, however, was the initial evidence of constraints to
655 fostering an empowering climate. Future research should continue to explore both constraints and
656 enablers to further our understanding of why and when coaches' do and do not create an empowering
657 and/or disempowering motivational climate. Another limitation of the research was the difference in
658 the dimensions in the observation tool (MMCOS, Smith et al., 2015) and the subscales in the perceived
659 climate questionnaire (EDMCQ-C, Appleton et al., 2016). For example, structure and relatedness
660 thwarting are not part of the EDMCQ-C. This limits exploration of participants' perceptions of these
661 dimensions. The coaches' version of EDMCQ-C questionnaire also requires further testing to confirm
662 its reliability.

663 **Conclusion**

664 This study explored the coaching practices of coaches working in adult non-competitive settings,
665 specifically examining the motivational climate in adult adventure sports from multiple perspectives,
666 and was grounded in a multidimensional theoretical perspective which combines AGT and SDT (Duda,
667 2013). Perceptions of the environment were consistent across coaches, participants, and observers and
668 demonstrated that the climate created by expert coaches was strongly empowering with only weak
669 disempowering dimensions. The study provides valuable insight into the motivational climate created
670 by adventure sport coaches. The climate was founded in coaches' beliefs about coaching which aligned
671 with an empowering approach. These beliefs were translated into observable strategies that were
672 intentional because they emanated from the coaches' beliefs. However, the resultant empowering
673 motivational climate perceived by the adults being coached and by the observers, was tacit, almost

674 second nature, to the coaches. Structure had a clear place in the empowering climate and appeared to
675 support rather than constrain autonomy. Relatedness support was also a prominent feature of the climate
676 and perhaps buffered the potentially negative consequences of the few controlling behaviours coaches
677 felt, at times, were needed often related to the interaction between the challenges presented by the
678 physical environment and the adults' ability or perception of ability. These findings extend previous
679 research that has largely focused on competitive sport participants and especially youth and collegiate
680 participants' perceptions. The study demonstrates the value of employing a multiple methods approach
681 to provide detailed analysis of the motivational climate with different participants and sporting contexts.

682 **References**

- 683 Abraham, A., Collins, D. & Martindale, R. (2006). The coaching schematic: validation through expert
684 coach consensus. *Journal of Sports Sciences*, 24(6), 549-564.
- 685 Adie, J. W., Duda, J.L. & Ntoumanis, N. (2008). Autonomy support, basic need satisfaction and the
686 optimal functioning of adult male and female sport participants: A test of basic needs theory.
687 *Motivation & Emotion*, 32, 189–199.
- 688 Allen, J. B. & Hodge, K. (2006). Fostering a learning environment: coaches and the motivational
689 climate. *International Journal of Sport Science & Coaching*, 1(3), 261-277.
- 690 Ames, C. (1992). Achievement goals, motivational climate and motivational processes. In G. C.
691 Roberts (Ed). *Motivation in Sport and Exercise* (p. 161-176), Human Kinetics, Champaign, IL.
- 692 Appleton, P.R. & Duda, J.L. (2016). Examining the interactive effects of coach-created empowering
693 and disempowering climate dimensions on athletes' health and functioning. *Psychology of Sport
694 & Exercise*, 26, 61-70.
- 695 Appleton, P. R., Ntoumanis, N., Quested, E., Viladrich, C. & Duda, J. L. (2016). Initial validation of
696 the coach-created empowering and disempowering motivational climate questionnaire
697 (EDMCQ-C). *Psychology of Sport and Exercise*, 22, 53-65.
- 698 Bartholomew, K. J., Ntoumanis, N., & Thøgersen-Ntoumani, C. (2009). A review of controlling
699 motivational strategies from a self-determination theory perspective: implications for sports
700 coaches. *International Review of Sport and Exercise Psychology*, 2(2), 215-233.
- 701 Bennie, A. & O'Connor, D. (2010). Coaching philosophies: Perceptions from professional cricket,
702 rugby league and rugby union players and coaches in Australia. *International Journal of Sports
703 Science & Coaching*, 5(2), 309-320.
- 704 Berry, M., Lomax, J, & Hodgson, C. (2015). *Adventure Sports Coaching*. Routledge, London.
- 705 Callary, B., Rathwell, S., & Young, B.W. (2015). Masters swimmers' experiences with coaches: What
706 they want, what they need, what they get. *SAGE Open*, 5, 1–14.
- 707 Callary, B., Rathwell, S., & Young, B.W. (2017). Alignment of masters swim coaches' approaches
708 with the andragogy in practice model. *International Sport Coaching Journal*, 4, 177 -190.

709 Collins, L. & Collins, D. (2012). Conceptualizing the adventure-sports coach. *Journal of Adventure*
710 *Education & Outdoor Learning, 12*, 81-93.

711 Collins, L. & Collins, D (2016). Professional judgement and decision making in adventure sports
712 coaching: The role of interaction. *Journal of Sports Sciences, 34*, 1231-1239.

713 Cooper, D. & Allen, J. (2018). The coaching process of the expert coach: a coach led approach. *Sports*
714 *Coaching Review, 7*(2), 142-170.

715 Côté, J., Salmela, J., Trudel, P., Baria, A. & Russell, S. (1995). The coaching model: A grounded
716 assessment of expert gymnastic coaches' knowledge. *Journal of Sport and Exercise*
717 *Psychology, 17*, 1-17.

718 Cresswell, J. W. & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory in*
719 *Practice, 39*, 124-130.

720 Cronin, C., Walsh, B. Quayle, L., Whittaker, E., & Whitehead, A. (2018). Carefully supporting
721 autonomy – learning coaching lessons and advancing theory from women's netball in England.
722 *Sports Coaching Review*, DOI: 10.1080/21640629.2018.1429113

723 Cushion, C. & Partington, M. (2016). A critical analysis of the conceptualisation of 'coaching
724 philosophy', *Sport, Education and Society, 21*(6), 851-867, DOI:
725 10.1080/13573322.2014.958817

726 Deci, E. L. & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-
727 determination of behavior. *Psychological Inquiry, 11*, 227-268.

728 Duda, J. L. (2013). The conceptual and empirical foundations of Empowering Coaching: Setting the
729 stage for the PAPA project. *International Journal of Sport and Exercise Psychology, 11*, 311-
730 318.

731 Ferrari, G., Bloom, G.A., Gilbert, W.D., & Caron, J.G. (2016). Experiences of competitive Masters
732 swimmers: Desired coaching characteristics and perceived benefits. *International Journal of*
733 *Sport and Exercise Psychology, 15*, 409-422.

734 Gilchrist, M. & Mallett, C. (2017). The theory (SDT) behind effective coaching. In R. Thelwell, C.
735 Harwood, & I. Greenlees (Eds.) *Psychology of Sport Coaching: Research and Practice* (pp. 38-
736 53), Routledge: London.

737 Gould, D., Pierce, S., Cowburn, I., & Driska, A. (2017). How coaching philosophy drives coaching
738 action: a case study of renowned wrestling coach J Robinson. *International Sport Coaching*
739 *Journal*, 4, 13-37 <http://dx.doi.org/10.1123/iscj.2016-0052>

740 Gray, P., & Collins, D. (2016). The Adventure Sports Coach: All show and no substance? *Journal of*
741 *Adventure Education and Outdoor Learning*, 16, 160-171.

742 Harwood, C. G., Keegan, R. J., Smith, J. M. J., & Raine, A. S. (2015). A systematic review of the
743 intrapersonal correlates of motivational climate perceptions in sport and physical
744 activity. *Psychology of Sport and Exercise*, 18, 9-25.

745 Hodge, K., Henry, G. & Smith, W. (2014). A case study of excellence in elite sport: Motivational
746 climate in a world champion team. *The Sport Psychologist*, 28, 60-74.

747 Iachini, A. L. (2013). Development and empirical examination of a model of factors influencing
748 coaches provision of autonomy-support. *International Journal of Sports Science & Coaching*,
749 8, 661–676.

750 International Council for Coaching Excellence. (2013). *International Sport Coaching Framework*.
751 Champaign, IL: Human Kinetics

752 Jenkins, S. (2010). Coaching philosophy. In J. Lyle & C. Cushion (Eds.), *Sports coaching:*
753 *Professionalization and practice* (pp. 233–242). New York: Churchill Livingstone.

754 Keegan, R. J., Spray, C. M., Harwood, C. G. & Lavalley, D. E. (2014). A qualitative synthesis of
755 research into social motivational influences across the athletic career span. *Qualitative*
756 *Research in Sport, Exercise and Health*, 6, 537-567.

757 Kerr, J. H. & Mackenzie, S. H. (2012). Multiple motives for participating in adventure sports.
758 *Psychology of Sport and Exercise*, 13, 649-657.

759 Lorimer, R. & Holland-Smith, D. (2012). Why Coach? A case study of the prominent influences on a
760 top level UK outdoor adventure coach. *The Sports Psychologist*, 26, 571-583.

761 MacLellan, J., Callary, B., & Young, B. (2017). Same coach, different approach? How masters and
762 youth athletes perceive learning opportunities in training. *International Journal of Sports*
763 *Science and Coaching*, 13(2) 167–178.

764 MacLellan, J., Callary, B., & Young, B.W. (2019). Adult learning principles in masters sport: A
765 coach's perspective. *The Canadian Journal for the Study of Adult Education*, 31(1), 31-50.
766 <https://cjsae.library.dal.ca/index.php/cjsae/article/view/5424>

767 Mageau, G. A. & Vallerand, R. J. (2003). The coach athlete relationship: a motivational model.
768 *Journal of Sport Sciences*, 21, 883-904.

769 Mallett, C. J. & Hanrahan, S. J. (2004). Elite athletes: why does the 'fire' burn so brightly?
770 *Psychology of Sport and Exercise*, 5, 183–200.

771 Mallet, C, J. (2005). Self-determination theory: A case study of evidence-based coaching. *The Sport*
772 *Psychologist*, 19, 417-429.

773 Medic, N., Young, B.W., Starks, J.L., & Weir, P.L. (2012). Relationship between having a coach and
774 Masters athletes' motivational regulations for sport and achievement goal orientations.
775 *International Journal of Coaching Science*, 6, 65–79.

776 Nash, C., Martindale, R., Collins D. & Martindale, A. (2012). Parameterising expertise in coaching:
777 past, present and future. *Journal of Sports Sciences*, 30, 985-994.

778 Nash, C, Sproule, J & Horton, P. (2008). Sports coaches' perceived role frames and philosophies.
779 *Journal of Sports Science & Coaching*, 3, 539-555.

780 NHS Digital (2017). Statistics on Obesity, Physical Activity and Diet – England 2017: Report.
781 Available at [https://www.gov.uk/government/statistics/statistics-on-obesity-physical-activity-](https://www.gov.uk/government/statistics/statistics-on-obesity-physical-activity-and-diet-england-2017)
782 [and-diet-england-2017](https://www.gov.uk/government/statistics/statistics-on-obesity-physical-activity-and-diet-england-2017)

783 Nicholls, J. G. (1984). Achievement motivation: Conception of ability, subjective experience, task
784 choice and performance. *Psychological Review*, 91, 328-346.

785 Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. New York, NY: McGraw-Hill.

786 Occhino, J. L., Mallett, C. J., Rynne, S. B. & Carlisle, K. N. (2014). Autonomy-supportive
787 pedagogical approach to sports coaching: Research, challenges and opportunities. *International*
788 *Journal of Sports Science & Coaching*, 9, 401-415.

789 O'Connell, T. S. (2010). The effects of age, gender and level of experience on motivation to sea
790 kayak. *Journal of Adventure Education & Outdoor Learning*, 10, 51-66.

791 Partington, M., & Cushion, C. (2013). An investigation of the practice activities and coaching
792 behaviors of professional top-level youth soccer coaches. *Scandinavian Journal of Medicine
793 and Science in Sports, 23*(3), 374-382.

794 Patton, M.Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA:
795 Sage.

796 Potrac, P., Jones, R., & Nelson, L. (2014). Interpretivism. In L. Nelson, R. Groom, & P. Potrac (Eds.)
797 *Research Methods in Sports Coaching*, (pp. 31-41). Routledge, London.

798 Purdy, L. (2014). Interviews. In L. Nelson, R. Groom, & P. Potrac (Eds.) *Research Methods in Sports
799 Coaching*, (pp. 161-170). Routledge, London.

800 Quested, E., & Duda, J. L. (2010). Exploring the social-environmental determinants of well- and ill-
801 being in dancers: a test of Basic Needs Theory. *Journal of Sport & Exercise Psychology, 32*,
802 39-60.

803 Reinboth, M., Duda, J. L., & Ntoumanis, N. (2004). Dimensions of coaching behavior, need
804 satisfaction, and the psychological and physical welfare of young athletes. *Motivation and
805 Emotion, 28*, 297-313.

806 Ryan, R. M. & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic
807 motivation, social development, and well-being. *American Psychologist, 55*, 66-78.

808 Santi, G., Bruton, A., Pietrantonio, L., & Mellalieu, S. (2014). Sport commitment and participation in
809 masters swimmers: The influence of coach and teammates. *European Journal of Sport Science,
810 14*, 852–860.

811 Scottish Government (2017). The Scottish Health Survey 2016. Main report. Available at
812 <http://www.gov.scot/Resource/0052/00525472.pdf>

813 Smith, N., Tessier, D., Tzioumakis, Y., Quested, E., Appleton, P., Sarrazin, P., Papaioannou, A. &
814 Duda, J. L. (2015). Development and validation of the multidimensional motivational climate
815 observation system. *Journal of Sport & Exercise Psychology, 37*, 4-22.

816 Smith, N., Tessier, D., Tzioumakis, Y., Fabra, P., Quested, E., Appleton, P., Sarrazin, P.,
817 Papaioannou, A., Balaguer, I. & Duda, J. L. (2016). The relationship between observed and

818 perceived assessments of the coach created motivational climate and links to athlete motivation.
819 *Psychology of Sport and Exercise*, 23, 51-63.

820 Smith, R. E., Smoll, F. L. & Curtis, B. (1978). Coaching behaviours in Little League Baseball. In F.
821 L. Smoll & R. E. Smith (Eds.). *Psychological Perspectives in Youth Sports*, (p.173-201)
822 Hemisphere, Washington, DC.

823 Smoll, F. L. & Smith, R. E. (1989). Leadership behaviours in sport: A theoretical model and research
824 paradigm. *Journal of Applied Social Psychology*, 19, 1522-1551.

825 Sparks, C., Dimmock, J., Whipp, P., Lonsdale, C., & Jackson, B. (2015). “Getting connected”: High
826 school physical education teacher behaviors that facilitate students’ relatedness support
827 perceptions. *Sport, Exercise, and Performance Psychology*, 4, 219-236.

828 Sport England (2017). Review of evidence on the outcomes of sport and physical activity. Report for
829 Sport England, May, 2017. Available at [https://www.sportengland.org/media/11719/sport-](https://www.sportengland.org/media/11719/sport-outomes-evidence-review-report.pdf)
830 [outomes-evidence-review-report.pdf](https://www.sportengland.org/media/11719/sport-outomes-evidence-review-report.pdf)

831 Vansteenkiste, M., Sierens, E., Goossens, L., Soenens, B., Dochy, F., Mouratidis, A., & Beyers, W.
832 (2012). Identifying configurations of perceived teacher autonomy support and structure:
833 Associations with self-regulated learning, motivation and problem behavior. *Learning and*
834 *Instruction*, 22, 431–439.

835 Webster, C. A., Wellborn, B., Hunt, K., LaFleche, M., Cribbs, J. & Lineberger, B. (2013). MPOWER:
836 An observation system for assessing coach autonomy support in high school varsity boys’
837 soccer practices. *International Journal of Sports Sciences & Coaching*, 8, 741-754.

838 World Health Organisation (2018). Physical Activity Fact Sheet. Available at
839 <http://www.who.int/news-room/fact-sheets/detail/physical-activity>

840 Young, B. W. (2011). Psycho-social perspectives on the motivation and commitment of Masters
841 athletes. In N. Holt & M. Talbot (Eds.), *Lifelong engagement in sport and physical activity* (pp.
842 125–138). London: Routledge & ICSSPE.

843

844 Table 1. Summary of the expert coaches' background.

Code	Age	Adventure Sport	Years coaching experience	Qualifications*
C1	44	Winter mountaineering	17	MIC, BA Degree
C2	30	Skiing	10	MIC, MSL, BASI L3
C3	41	White water kayaking	17	BCU L5 Coach, BSc Degree
C4	38	Rock climbing	17	MIC, Climbing development coach, PGCE
C5	25	Mountain biking	10	BC L3 MTB Leader, UKCC L2, BA Degree
C6	48	Canoeing	22	BCU L5 Coach, UKCC L4, MSc

845 * MIC = Mountain Instructor Certificate; MSL =Mountain Ski Leader; BASI L3 = British Association of
 846 Snowsport Instructors Level 3; BCU L5 Coach; British Canoe Union Level 5 Coach; PGCE = Postgraduate
 847 Certificate in Education; BC L3 = British Cycling Level 3 Mountain Bike Leader; UKCC = United Kingdom
 848 Coaching Certification
 849

850 Table 2. Descriptive statistics for participants' and coaches' perceptions of environmental dimensions and overall motivational climate

	Coach												Coaches (N=6) <i>M (SD)</i>	Learners (N=25) <i>M (SD)</i> <i>alpha</i>
	1	2		3		4		5		6				
Dimension	Coach	Learners (n=4) <i>M (SD)</i>	Coach	Learners (n=5) <i>M (SD)</i>	Coach	Learners (n=4) <i>M (SD)</i>	Coach	Learners (n=2) <i>M (SD)</i>	Coach	Learners (n=8) <i>M (SD)</i>	Coach	Learners (n=2) <i>M (SD)</i>		
Task-involving	3.67	4.17 (0.35)	4.11	4.22 (0.52)	4.56	4.39 (0.42)	4.00	4.44 (0.47)	3.78	4.33 (0.35)	3.22	4.06 (0.39)	3.89 (0.45)	4.28 (0.38) 0.75
Autonomy-supportive	4.00	4.20 (0.33)	4.40	4.12 (0.36)	4.20	4.35 (0.47)	4.40	4.50 (0.14)	4.60	4.20 (0.47)	4.20	4.00 (0.00)	4.30 (0.21)	4.22 (0.38) 0.43
Socially-supportive	4.00	4.00 (0.27)	4.33	4.67 (0.41)	4.33	4.42 (0.42)	4.33	4.50 (0.71)	4.00	4.38 (0.63)	4.00	4.67 (0.47)	4.17 (0.18)	4.41 (0.50) 0.78
Ego-involving	1.71	1.50 (0.59)	2.00	1.23 (0.30)	1.43	1.43 (0.45)	1.86	1.43 (0.40)	2.00	1.38 (0.34)	2.00	1.43 (0.61)	1.83 (0.23)	1.38 (0.38) 0.84
Controlling	1.80	1.60 (0.65)	1.70	1.46 (0.40)	1.60	1.38 (0.15)	1.80	1.70 (0.28)	1.40	1.48 (0.33)	2.40	1.50 (0.14)	1.78 (0.34)	1.50 (0.35) 0.79
Overall Climate														
Empowering	3.89	4.12 (0.25)	4.28	4.34 (0.36)	4.36	4.39 (0.42)	4.24	4.48 (0.44)	4.13	4.30 (0.43)	3.81	4.24 (0.29)	4.12 (0.22)	4.30 (0.35)
Disempowering	1.76	1.55 (0.61)	1.85	1.34 (0.32)	1.51	1.40 (0.29)	1.83	1.56 (0.34)	1.70	1.43 (0.32)	2.20	1.46 (0.35)	1.81 (0.23)	1.44 (0.35)

851 Note. Mean values scale range is 1 to 5: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree

852

853

854 Table 3. Potency of observed environmental dimensions and overall motivational climate

Dimension	C1				C2				C3				C4				C5				C6				M (SD) ICC
	T1 ¹	T2 ¹	T3 ¹	Tot ²	T1	T2	T3	Tot	T1	T2	T3	Tot	T1	T2	T3	Tot	T1	T2	T3	Tot	T1	T2	T3	Tot	
Autonomy-supportive	2	2	2	6	3	2	2	7	2	3	3	8	2	3	3	6	2	2	3	6	2	3	3	8	6.83 (0.98)
Task-involving	2	2	1	5	3	3	2	8	1	2	2	5	2	2	2	5	2	2	2	7	2	2	2	6	6.00 (1.26)
Relatedness-supportive	2	2	2	6	2	2	2	6	2	3	3	8	2	2	2	6	2	2	2	6	3	3	2	8	6.67 (1.03)
Structured	3	3	3	9	3	3	3	9	3	2	3	8	2	3	2	9	3	3	3	9	3	3	2	8	8.67 (0.52)
Controlling	1	1	0	2	1	0	0	1	1	1	0	2	0	0	1	2	1	0	0	1	0	0	0	0	1.33 (0.82)
Ego-involving	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (0.00)
Relatedness-thwarting	1	1	1	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.67 (1.21)
Overall climate¹																									
Empowering ³				2				3				3				3				2				3	2.67 (0.52)
Disempowering ³				1				0				0				0				1				0	0.33 (0.52)

855 ¹ Maximum score out of 3: 0 = Not at all; 1 = Weak emphasis; 2 = Moderate emphasis; 3 = Strong emphasis; ² Maximum score out of 9: 0 = Not at all; 1-3 = Weak emphasis;
856 4-6 = Moderate emphasis; 7-9 = Strong emphasis; T = 10 min period at start (T1), middle (T2), and end (T3) of coaching session; ³ Overall climate potency was
857 determined for the session as a whole; ICC = interclass correlations

858 Table 4: Frequency of observed empowering behaviours collapsed across all coaches' sessions

Climate dimension	Coaching behaviours	Total
Empowering dimensions		
Autonomy- supportive	Provides opportunity for learner input	94
	Provides rationale for tasks	80
	Encourages intrinsic interest	64
	Provides meaningful choice	60
	Acknowledges feelings & perspective	60
Task-involving	Emphasized task-focused competence feedback	76
	Emphasizes/recognizes effort and/or improvement	58
	Uses cooperative learning	38
Relatedness-supportive	Adopts a warm communication style	88
	Ensures athletes are included in drills/activities/exercises	83
	Shows care and concern for athletes	47
Structured	Provides guidance through drills/activities/exercises	87
	Provides instruction and organization	68
	Offers expectations for learning	48
Disempowering dimensions		
Controlling	Uses controlling language	10
	Devalues learners' perspective	1
	Uses extrinsic rewards	0
	Relies on intimidation	0
	Demonstrates negative conditional regard	0
	Uses overt personal/physical control	0
Ego-involving	Punishes mistakes	0
	Emphasizes/recognizes inferior/superior performance and ability	0
	Encourages inter/intra group rivalry	0
Relatedness thwarting	Restricts opportunities for interactions and conversation	8
	Excludes athletes from certain drills/activities/exercises	0
	Shows a lack of care and concern for learners	0
	Belittles (makes attempt to embarrass) learners	0
	Adopts a cold communication style	0

859

860 **Acknowledgements**

861 The authors would like to thank the expert coaches and adult adventure sport participants for their
862 willingness to engage with the project and share their perspectives. Without their co-operation this
863 research would not have been possible.

864

865